TAJIKISTAN

REDUCING THE IMPACT OF PRICE SURGE AND AGRICULTURE REHABILITATION PROGRAMME

APPRAISAL DOCUMENT

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Food and Agriculture Organisation of the United Nations (FAO)

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Acronyms and Abbreviations

ADB	Asian Development Bank	MEDA	Mennonite Economic Development Associates
AI	Avian Influenza	MOA	Ministry of Agriculture
AKF	The Agha Khan Foundation	NGO	Non-Governmental Organisations
CBO	Community-Based Organisation	NMTPF	National Medium Term Priority Framework
CFW	Cash For Work	O&M	Operation and Maintenance
CID	Canadian International Development Agency	PISU	Programme Implementation Support Unit
CRI	Crop Research Institute	PPG	Poultry Producer Group
EC	European Commission	PRA	Participatory Rural Appraisal
ECHO	European Commission Humanitarian Organisation	SAT	Seed Association of Tajikistan
FAO	Food and Agriculture Organisation	SIDA	Swedish International Development Assistance
FFS	Farmer Field School	SPA	Seed Producer Associations
FFW	Food For Work	SSA	State Statistical Agency
FMD	Foot and Mouth Disease	SVD	State Veterinary Department
FP	Facilitating Partner	TAAS	Tajik Academy of Agricultural Sciences
GAFP	Good Agric. Field Practices	USAID	United States Agency for International Development
GDP	Gross Domestic Product	VAM	Vulnerability Assessment and Mapping
ICPM	Integrated Crop and Pest Management	VDC	Village Development Committee
IFC	International Finance Corporation	WB	The World Bank
IP	Implementing Partner	WFP	World Food Programme
LCDI	Low Cost Drip Irrigation	WUA	Water User Association
LIFDC	Low-income Food Deficit Country		

Introduction

A Food and Agriculture Organisation (FAO) Mission[1] visited Tajikistan between 27 April and 18 May 2008 to prepare an emergency agricultural rehabilitation Project following a harsh winter and a surge in food and agricultural input prices. Following initial meetings in Dushanbe with FAO and WFP staff and some members of the joint FAO/WFP/UNICEF Food Security, Livelihoods, Agriculture and Nutrition Assessment team, the mission made extensive field visits to selected districts in Khatlon, RRS and Sughd provinces. A full mission schedule is attached (Annex 3.)

The mission held extensive discussions with the District (Nahia) departments of agriculture, livestock, and irrigation. Extensive individual and group discussions with farmers, households and Village Development Committees (VDC) were held in almost all districts that were visited. VDCs had been established only in some villages but not all. The Mission split into several thematic groups to cover as much area as feasible within a short period of time. Private silk processing and trading firms (joint ventures) in Khujand and Dushanbe were visited, who provided significant information on the silk sub-sector. The mission benefited from experts provided by the Ministry of Agriculture, Ministry of Land Reclamation and Water Resources, State Potato, Wheat and Horticulture Research Institutes. The Mission also visited a number of traders and markets in various parts of the country, including Dushanbe, Khujand, Kulyab and other district markets. In Dushanbe the Mission discussed its findings and the proposed Project activities along with implementation strategy in separate meetings with the government and international partners (The UN agencies, WB, ADB, EU and other multilateral and bilateral donors and potential implementing partners. Comments and suggestions from national and international partners have been incorporated in the proposed project document.

The mission is indebted to the generous assistance and guidance received from government departments, FAO staff in Tajikistan and other international agencies at both national and sub-national levels.

[1] The preparation mission consisted of: Aziz Arya (FAO-Mission leader), Nassim Jawad (International Consultant, Livelihoods Specialist), N.S. Tunwar (International Consultant, Seed Specialist), J.H.H Maehl (International Consultant, Livestock Production Specialist), Safar Ali Naimov (FAO National Consultant, Agronomist-Seed Specialist), Anvar Kamaludinov (Ministry of Land Reclamation and Water Resources – Irrigation Specialist), Hussein Khalov (Institute of Horticulture, Horticulture and Forestry Specialist).

Background

FAO conducted a preliminary assessment in February-March 2008, which reported some disturbing developments in the food and agricultural sectors following the coldest winter in living memory. The initial assessment was followed by a more comprehensive Joint FAO/WFP/UNICEF Food Security, Livelihoods, Agriculture and Nutrition Assessment, the results of which is still being analysed and a joint report on the assessment findings are expected shortly.

The preparation mission follows from the two assessments, which provides the justification for fielding the mission and the proposed interventions. Last winter Tajikistan experienced one of the coldest temperatures in living memory, which affected crops, livestock and orchards with varying degrees in different areas. Years of incoherent policies, economic and natural resource mismanagement have rendered the agricultural sector highly vulnerable to even minor shocks. In addition to unusually cold temperatures last winter, precipitation has also been far below average. Snow covers in the mountains are thin and below average, which provides the much-needed water for the extensive irrigation systems in the country throughout the year. Most of the rivers and reservoirs are already below critical levels at a time when they should be at full-capacity. Meteorological forecasts for the region indicate much warmer temperatures during summer, which is bound to increase crop demand for a limited supply of water. In view of the winter temperatures, most winter and spring crop plantings are late by at least one month, which will not only affect yields but will also further increase crop demand for water at a time when water is at a critically low supply.

Agricultural input prices, mainly fuel, mineral fertilisers and improved seed varieties, have more than doubled over the past months compared with the same time last year. Land preparation and the use of mineral fertilisers have become prohibitively expensive, further compromising crop and livestock production in the country.

Tajikistan depends on food imports to meet consumption requirements with an average wheat import amounting to about 300 000 – 500 000 MT per year, depending on the level of domestic production. International and domestic food prices have more than doubled over the past few months. Access to food by a large number of households is tight and the rising prices combined with reduced food production due to cold weather conditions last winter, will make it very difficult for a significant part of the population to access sufficient food. The combination of tight food supply and rising food prices that has already limited access to food by many households may easily turn into crisis. Experience in some countries following food shortages and surge in prices should make it urgent to assist farmers to increase food production in the country. If not addressed, it is a real possibility that a protracted crisis and relief operation will be necessary. Therefore, it is imperative to assist Tajik farmers to increase food

production in the next season but also take appropriate measures to ensure sustainable food production in the medium term.

It would have been ideal to replant areas of cotton and other crops that could not be planted, due to unfavourable winter conditions, with spring and summer crops such as maize, sunflower, potatoes and other crops. However, it is operationally not feasible to supply the necessary inputs to farmers within the planting season. The project aims to mainly support wheat, potato, vegetables and small-scale livestock production as well as support to small scale irrigation and horticulture. Wheat, potato and vegetables account for most of the daily diet in Tajikistan.

A. The National Economy

Since its independence from the Soviet Union, Tajikistan has gone through several economic phases. The country faced serious economic difficulties in the early 1990s arising from the collapse of the USSR and the transitional period: the end of budget subsidies from the Soviet Union, loss of markets; aggravation of socio-political situation and civil war, which cost the country's economy more than 7 billion USD; a steep decline in production; macroeconomic instability; and rapid impoverishment of the population, among other things.[2]

From 1992 to 1996, the devastating civil war reduced Tajikistan's Gross Domestic Product (GDP) to a third of its pre-war level, inflation rose to several thousand percent and performance of the economic sectors fell to a minimum, causing poverty of unprecedented scale. The civil war and the following socio-economic depression forced many qualified people into migration, draining the country of its best brains that slowed down the economic rehabilitation process further.

With the end of the war in 1996 and stabilization of socio-political situation in the country, positive economic growth was recorded for the first time in 1997, following a series of economic policies and reform processes. Between 1997 and 2000, the Government of Tajikistan introduced a series of social and economic reforms and began the implementation of vital economic policies and strategic plans, including a land reform that enabled the privatization of state and collective farms. Annual growth in GDP was 9.3% during 2000-2005; inflation fell to 6-7%; and external debt, which was equal to 108% of GDP in 2000, dropped to 38.9% of GDP.[3]

The strong growth and macroeconomic stabilisation over the past five years also contributed to a drop in the country's poverty rate, from 81% in 1999 to 64% in 2003. The size of interregional differences in the poverty rate also declined, since the poorest regions reported the most significant reductions in poverty.

[2] National Development Strategy of the Republic of Tajikistan for the Period to 2015, Regional Conference on MDG based NDS and PRSP, Dushanbe 15-17 March 2007
[3] National Development Strategy, et al

The difference in poverty rates among the regions remains high, however, with a figure of 84% in Gorno-Badakhshan Autonomous Region (GBAO) and 45% in Regions of Republican Subordination (RRS).[4]

From 2005, Tajikistan began a new phase of socio-economic development: national development strategy was further developed and revised to allow for institutional and structural changes and adjustments; the land reform was revised and additional land was distributed to farming communities through a Presidential decree. The latter further emphasised land reform, through the transfer of 75 000 ha of state land to rural households in the form of small household plots. These plots, known as "presidential plots,'' significantly increased the area of land traditionally allocated for household plots and have made a substantial contribution to poverty reduction by increasing the capacity of rural households to meet their own food requirements.

The Agricultural Sector

Agriculture is a key sector in the economy, accounting for about 24 percent of the GDP and 66 percent of employment, 26 percent of the export and 39 percent of the tax revenue. Nearly 64 percent of the population directly depend on agriculture for their livelihoods. A substantial amount of fruit and vegetable products are exported in the region making the bulk of the export income in the country.

Cotton is the dominant crop, contributing about 40 percent of agricultural GDP, a quarter of export earnings, and one third of the State's tax revenues. Following the collapse of other economic sectors, caused primarily by the break-up of the former Soviet Union and the subsequent civil war, agriculture has played a vital role as a last resort in providing the population with a social safety net.

With much of the country's 143 000km^2 covered by mountains, the area available for arable crop production is confined to about 960 000 hectares, or 7 percent of the total surface area. Permanent pastures cover about 3.6 million hectares. Overall, arable land is in short supply with around 0.15ha per capita, or 0.2ha per capita of rural population. Much of the arable area is arid or semi-arid, and cropping is dependent on irrigation systems covering about 720 000ha.

With more than 64% of the population directly depending on agriculture for their livelihoods, the sector requires serious attention in the following areas:

1. Land reform: Since the introduction of the land reform in 1997, almost half of the arable land in Tajikistan has been privatised. Household plots with a total land area of around 195 000 hectare, 22% of total arable land, contribute almost 54% to the Agriculture GDP, followed by Dehkan (peasant) farms with a total land area of 240 000, about 28% of the total land, making around 20% of

[4] National development Strategy, et al

the agriculture GDP. State and collective farms cover 451 800 hectare of arable land, almost 51% of the total arable land, contributing only 26% to the agriculture GDP. These figures clearly indicate the importance of private enterprises in increased food production in the country. While household plots owned by individual families show a clear lead in the production, privatised collective and state farms still lag behind due to lack of appropriate mechanisms in the implementation of land reform. Several Dehkan farms surveyed during the joint comprehensive assessment (FAO, WFP and UNICEF) in different parts of the country report the following as the major issues related to privatisation process and farm management:

- A large number of state and collective farms have been technically privatised, but farm management remains unchanged. Farm managers, previous Safkhoz and Kalkhoz managers are still fully in charge and make decisions on farm management, cultivation, utilisation and other issues, without consultation with shareholders. Shareholders refusing to abide by manager's decision are expelled from the farm. This seriously limits farmers' choice of agriculture products.
- In many privatised farms, it was found that the privatisation certificate, list of shareholders and other documentation are kept at the Jamoa'at and farm management offices, while farmers are not even aware of their share. Most work as labourers with little payment and no share in the profit of the products sold in the markets. In many cases, farm managers lease privately owned farms to outsider for a season or year with no benefit to the farmers/shareholders. For instance, where cotton is grown in the farms, farmers reported they get one single payment for six months for all the work they carry out until cotton is collected and then paid for each kilo gram of cotton individual farmers collect, but no payment for the sale of cotton. When asked why would farmers continue working on such farms, many reported their only benefit from the cotton farm is collecting the bushes that provide a secure source of fuel for heating and cooking in winter.
- Farms that have been privatised and handed over to shareholders are too small for individual farming family to survive on. Therefore, in most cases, groups of villagers and larger families have joined hand and are cultivating the farms jointly. The size of new group farming mechanism ranges from 10 farmers with a land size of up to 20 hectare to 30 families with a land size of up to 60 hectare. These farmers have lost all the farm machinery, facilities and support systems and severely lack technical and material input and supplies.
- Large proportions of "Presidential Plots" that farming household had worked hard to build up have ended up in the hands of farm managers and local authorities and have been replaced by land of lowest quality and potential for productive farming.

2. Irrigation: The irrigation system in many areas has ceased functioning due to poor maintenance and breakdowns, far beyond the capacity of farmers to repair them. Where water exists and irrigation system has been maintained, lack

of power supply and absence of alternative energy to operate irrigation pumps limit farmers' access to water to 1-2 hours per day. While increased amount of power supply is expected from May, but demand for irrigation water and hence power supply is the highest during March and April. Water shortage has caused severe setbacks especially in horticulture, fruit and vegetable production, the most attractive cash crops that helps the households keep a nutritious balance in the food intake, but is also considered as a source of income when surplus is sold in the local and national markets. There are significant opportunities to develop small-scale non-mechanised irrigation, which can be managed by groups of farmers directly.

3. Agriculture services and inputs: Access to seed, fertiliser, pesticide, animal health and veterinary services are very limited, with the exception of a few places where international organisations through specific projects deliver some services. Orchards, vegetable gardens and vineyards are in continuous decline both in area and productivity due to a whole chain of issues: lack of access to sufficient water, pesticide and other chemicals, loss of mechanised technology, heavy cutting of fruit and non-fruit trees to cover fuel demands for cooking and heating, among others. Consequently, most orchards produce a minimum amount of products and in most cases it simply covers the household requirements. Where products do reach the market, farmers do not earn much because of bad quality. Lack of access to veterinary services and animal health, as well as a severe shortage of animal feed and limited access to pastures has reduced the animal and poultry population significantly. Animal population around the country is too weak and production and productivity has dropped drastically. The harsh winter of 2007/2008 had severe impact on an already weakened sub-sector, causing death of thousands of animals and poultry. Nurseries, demonstration plots, seed production and multiplication centres and similar facilities and support services have ceased in most districts visited and farming communities have neither financial resources nor the technical knowledge to re-establish and/or rehabilitate them. As a result, most farmers use degenerated seeds and have none or little access to seedlings and saplings.

Finally, national policies and strategies have been developed with the help of international partners, most have either not been adopted or approved, and leaving specially agriculture without a government approved policy and strategy. Rehabilitation and development of Tajikistan's agriculture sector will be severely handicapped by the absence of approved policies and strategies and a lack of clear strategic plans and longer-term goals and objectives.

Tajikistan's agriculture sector rehabilitation will depend much on its manpower. If the current migration rate to Russia and other countries in the region continues, it is feared that the country will be drained of its manpower in the next 2-3 years with serious social and economic consequences.

Tajikistan has great opportunities for sustainable socio-economic development: large potential for hydropower and fresh water; diverse mineral resources; potential for tourism development; availability of agriculture land and raw

material for industrial; processing and marketing; large areas of undeveloped agricultural land; favourable conditions for environmentally friendly agriculture and animal husbandry products; and access to regional markets. With appropriate policies and strategies in place and effective implementation and execution of reforms and structural changes, and with fundamental institutional changes and improved capacities, the country has great opportunities to become self-reliance in food production and capture the regional markets.

B. Emergency Challenge: Country Context, Recovery Strategy, and Rationale for Proposed Programme

Country and Emergency Context

Tajikistan is the poorest country in Central Asia, with 64% of the population living below the poverty line of USD 2/day. It is a country of diverse geographic and ecological systems and accompanying production systems. The landlocked country ranks 122nd of 177 on the Human Development Index, down from a ranking of 103rd in 2001 and 112th in 2002.[5] Compared to other Central Asian countries, Tajikistan has the highest number of female-headed households, partly due to labour migration. The unofficial unemployment rate is estimated at 33% and labour migration is a major source of household income.[6] Aside from labour, the country has relatively few exports, the most significant being cotton and aluminium, limited domestic industry and is a food deficit country and net food importer.

Prior to the break up of the Soviet Union, Tajikistan was considered the poorest of the Soviet state. The devastating civil war in late 1991 and early 1992 further deteriorated a weak economy and had lasting impact on the economy as a whole and on agriculture in particular. In addition, natural hazards (drought, earthquakes, landslides, floods, and high winds) are frequent eroding community coping capacities and compromising long-term development of the agricultural and other productive sectors.

Although most rural households have access to land, with an average plot size of 0.13 ha per household, production provides a maximum of 50 percent of a family's annual food needs. Food purchases made to supplement household production can consume up to 80 percent of cash income of the poorest households at the expense of other essential needs such as health care and education.[7]

A national nutrition survey undertaken by the Ministry of Health in 2006 found that the prevalence of global acute malnutrition and global chronic malnutrition are 7.6 and 20.7 percent respectively. Moderate and severe underweight prevalence amongst children in the 0-59 month age group is 17 percent, of

[5] Tajikistan: Flash Appeal 2008, Compound Crisis, United Nations, February 2008
[6] Flash Appeal, et al
[7] Integrated Food Security and Humanitarian Phase Classification, Pilot in Tajikistan, World Food Programme, January 2008

which 4 percent are severely underweight. Nearly 27 percent are stunted, of which 9 percent severely stunted and 7 percent are classified as wasted[8].

The last food security and vulnerability study conducted in Tajikistan (WFP, VAM 2005) identified 10 percent of the rural population, currently estimated at around 500 000 people, to be chronically food insecure. Another 17 percent, or some 850 000 people, are highly vulnerable to food insecurity, experiencing food gaps at different times of the year. Twenty seven percent, or 1.3 million, are classified as borderline cases, easily becoming food insecure when affected by shocks such as natural disasters, crop failures, debts, and high food prices. Consequently, under normal circumstances (2005/06) some 54 percent of Tajikistan's population are highly vulnerable to food insecurity with very little coping capacities.

Graph 1 below shows average retail prices of main food items in five main markets. Food prices in the country has more than doubled in 2008 compared with the same time in 2006 and 2007. Fuel and fertiliser prices (the two main inputs in agriculture) has nearly tripled over the past six months compared with the same time in previous years. Tajikistan is a low income food deficit country (LIFDC) and imports nearly 50 percent of its cereal needs (wheat as the main staple). Price transmission from international markets to domestic markets are rather efficient and fast. International price rises were felt almost immediately in domestic markets.

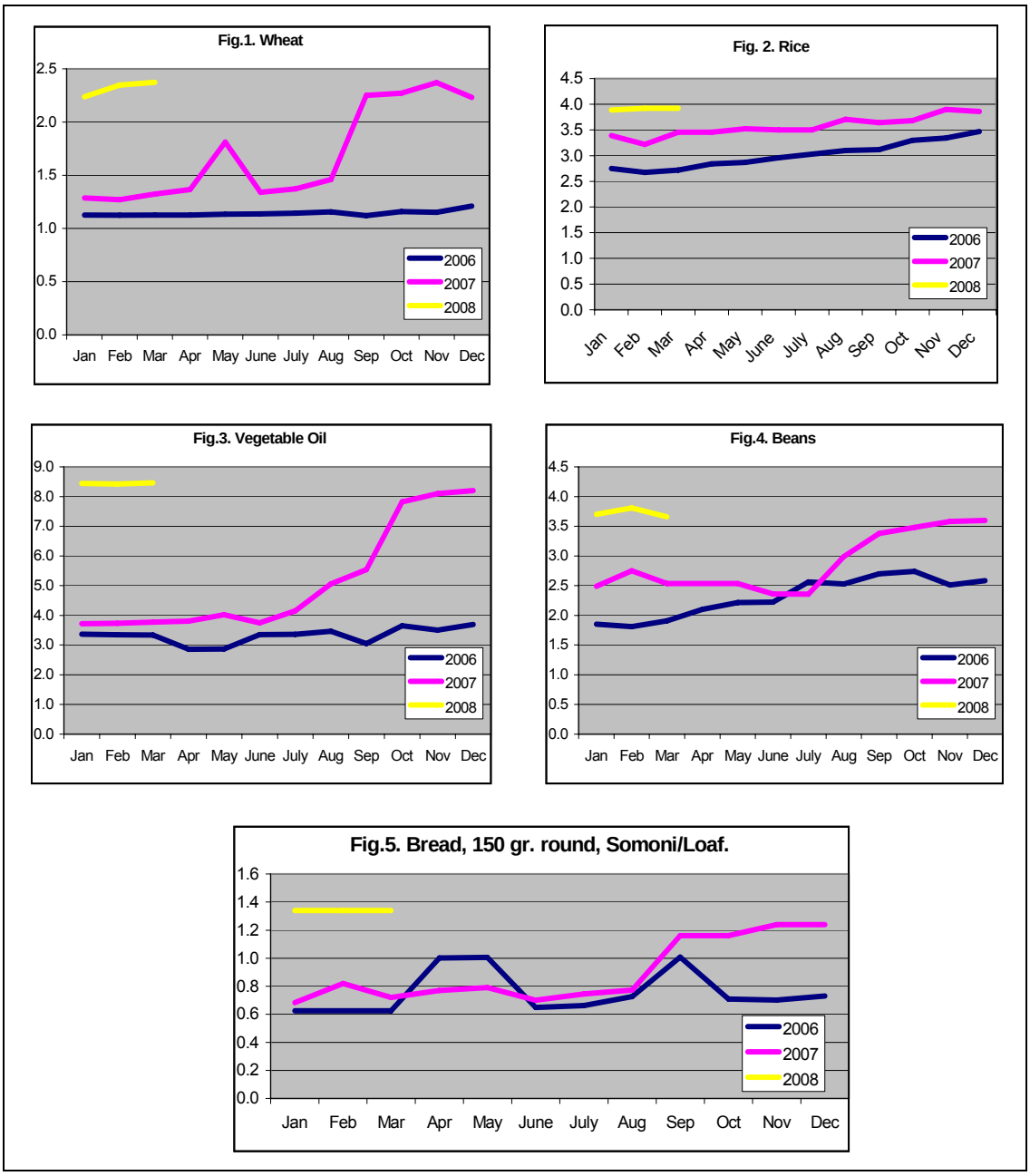
In addition, wheat production in the country is expected to be down by nearly 20 percent compared with 2007, while potato (the second most important staple) is down by more than 50 percent following the coldest winter in living memory. Orchards were also severely damaged and food production is down by almost 40 percent, which is the main source of income for a large number of households.

The compound crisis of the last few years - droughts, floods and loss of industries has forced many male household members into labour migration in the region, especially to Russia, draining the country of its workforce and many other social and economic consequences. Women in both the rural and urban areas currently undertake most of agriculture and other economic sector work. Current estimates indicate that almost a million of Tajikistan's six million population reside in Russia as migrant labourers. It is feared that the this year's compound crisis caused by exorbitantly high food and agricultural input prices as well as low agricultural production will force many more male household members to migrate in search of work with obvious consequences for the agricultural and other productive sectors as well as social repercussions.

In view of the high poverty prevalence, low agricultural production and very high food prices, it is likely that an exceptionally large number of households will not be able to access food in winter. It is therefore, rather urgent to ensure that rural households are able to increase food production in the coming season to fend off an impending crisis.

[8] Multiple Indicator Cluster Survey (MICS) 2005, Oct 2006

Graph 1. Average food retail prices in Tajikistan, Jan 2006-March 2008.



Source: WFP, Tajikistan, April 2008.

Assessment Methodology

FAO conducted a preliminary assessment in February-March 2008, which reported some disturbing developments in the food and agricultural sectors. This assessment used Participator Rural Appraisal (PRA) methods to obtain a

snapshot of the situation in the country. The initial assessment was followed by a more comprehensive Joint FAO/WFP/UNICEF Food Security, Livelihoods, Agriculture and Nutrition Assessment. The assessment mission was assisted by the AKF and Mission East. A joint report on the assessment findings are expected shortly. The joint assessment prepared a series of detailed questionnaires at household, community and district levels. Some 60 surveyors were trained to conduct the survey in groups of six following a 2-day testing of the questionnaire in the field. The survey teams covered some 19 agro-ecological zones, 114 villages in 23 sub-districts and 19 districts. Each survey team consisted of different specialists covering their respective areas. Detailed assessment methodology is presented in the joint assessment report.

The preparation mission extensively used the joint assessment findings to design the proposed programme. The assessment indicated that vegetable and food crop production, in particular wheat and potato, as well as production of poultry, small ruminants and the development of small-scale irrigation were the most effective means of improving household food security. In addition, the assessment assisted the mission in the choice of target districts and villages.

Recovery Strategy

The proposed recovery strategy is based on two main strategies: the national Development Strategy for 2015 and the FAO National Medium-Term Priority Framework (NMTPF) 2007-2009. In addition, the proposed recovery strategy has drawn on lessons learned from various FAO projects, international partners such as the WB, ADB, AKF and others. The international partners in their recent strategy papers, in particular emphasise the need to directly target rural households, where poverty is rampant. Community participation in natural resource management and participatory rural development have also been emphasised.

The recently developed FAO National Medium-Term Priority Framework (NMTPF) 2007-2009 emphasises support to individual farmers, formation of water user associations and improved institutional arrangements and structures to better manage natural resources and provide adequate services to rural communities.

The National Development Strategy of Tajikistan for 2015 emphasises decentralised decision making, adapting policies conducive to increasing productivity and improving household and national food security. Measures to improve food security includes increasing a diversified food production to improve nutrition and improving access to markets by rural households.

The proposed programme aims to directly target some of the most vulnerable and food insecure households in the worst affected areas by linking emergency input provision of staple food crops and medium term rehabilitation efforts. The programme envisages the supply of wheat, potato and vegetable seeds, as well as the provision of poultry and small ruminants to vulnerable households in selected areas. These emergency activities are directly in support of improving

access to improved seed varieties, home-based poultry, sheep and goat production as well as improving on-farm irrigation water use-efficiency. The proposed programme will be implemented with the direct participation of VDCs in target villages. This will improve community participation in decision making and ensure sustainable rural development in the long-run.

Other Agencies involved in the sector

Asian Development Bank (ADB): has been engaged in Tajikistan from 2002 in a series of programmes, including infrastructure development in water, power and roads rehabilitation; in social sector rehabilitation, especially support to health and education and nutrition; facilitation in regional trade and customs cooperation and regional power and gas transmission, as well as capacity building and institution strengthening in administrative sector and structural enhancement.
Between 2002 and 2008, ADB has been involved in a number of rural development and agriculture rehabilitation and development programmes that include: Agriculture sector rehabilitation, including irrigation rehabilitation; sustainable food fortification; rural development initiatives, such as rural poverty reduction, micro finance system development, with an emphasis on rural enterprise development. ADB's investment programmes are a mix of long-term soft loans and grants.

World Bank (WB): Similar to ADB, the World Bank uses a mix of long-term soft loans and grants for its involvement in Tajikistan. To-date, the World Bank has supported projects aimed at structural reform; agriculture and rural development; health, education and social security; energy, water resources and other infrastructure rehabilitation and development, and disaster management. The bank has also developed and produced a series of social, economic and sector reports, strategy and policy documents and gives recommendations to the Government of Tajikistan on how to move forward economic and sector reforms based on their findings and the Bank's extensive development knowledge and expertise. These include a series of detailed strategy and policy documents and notes for the agriculture sector.
Given the importance of agriculture to the livelihoods of more than half the country's population, the World Bank has helped the country restructure collective farms on some one third of the country's arable land. Pilot poverty-alleviation projects have also improved the lives of over one and a half million people in the poorest areas of Tajikistan, reduced the number of school dropouts, and improved the quality of primary healthcare services in the selected districts of Tajikistan. Support was also provided to the central government to build and strengthen institutions needed for the country's longer-term development.

Canadian International Development Agency (CIDA): CIDA finances a umber of initiatives in various fields implemented by the UN agencies, NGOs and other national and international development agencies. While support to the rehabilitation and development of agriculture sector and water management

cover most of its funding, other areas of support include: sanitation, hygiene, HIV/AIDS, educational institutional support, mine action.

Over the past several years, CIDA's program in Central Asia has focused on Tajikistan in the sectors of agriculture and water resources management. Current projects in Tajikistan include: 1) Support to FAO for brucellosis control; strengthening national capacity in food security vulnerability assessment; agricultural assistance to food insecure female-headed households; monitoring of land reform process. 2) Support to the Aga Khan Foundation for Community Based Agriculture Sector Development. 3) Support to International Finance Corporation (IFC) for the First Micro finance Bank of Tajikistan. 4) Support to IFC for the Farmers Ownership Model in Southern Tajikistan. 5) Support to FAO for Disease-Free Potato Seed Production. 6) Support to Mennonite Economic Development Associates (MEDA) for Pro-Poor Agricultural Development in Northern Tajikistan. 7) Support to Canadian Centre for International Studies and Cooperation (CECI) for Facilitating Agricultural Reform and Marketing in Sughd. 8) Support to McGill University and ICWC for water management training centre in Central Asia. 9) Support to McGill University for water scarcity and drought initiative in Tajikistan. 10) Support to World Bank for drought mitigation study in Central Asia.

European Commission (EC): The European Commission has been involved in Tajikistan since 1996, supporting programmes in humanitarian, food security, human rights and democratic processes, as well as macro-finance assistance, through direct budgetary support and through UN agencies and NGOs. Support to the rehabilitation and development of the agriculture sector and food security is one of European Commission's major activities, both through budgetary support to the Government of Tajikistan and through international NGOs. Budgetary support in this area includes land reform, agriculture and social allowances. In terms of support for structural reforms, the programme focuses on accelerating the land reform process, improving agricultural services and enhancing the targeting of the social safety net for the most vulnerable.

The European Commission's humanitarian arm, ECHO provides funding to international organisations implementing humanitarian assistance programmes. ECHO's mandate is to respond to emergency humanitarian crises in the immediate aftermath of a natural or man-made disaster, or conflict, with the aim of saving lives. The priority sectors of intervention are health (medical, training), drinking water and sanitation and household food security. ECHO also funds some disaster preparedness activities in Central Asia, with a focus on Tajikistan, through its programme DIPECHO. The overarching objectives of the food security programme are improved food security coupled with poverty reduction, increased rural income through the promotion of favourable environment for agricultural production and land reform and support to the development of a well-targeted and sustainable social protection system, by involving in the development of effective policy framework.

United States Agency for International Development (USAID): Among other activities, such as political process, education, health and social, civil society developing, trade and enterprises, USAID is also involved in water management, agriculture rehabilitation, humanitarian assistance and food security. Improved use of trans-boundary water resources and effective preservation of soil as part of an effort towards sustainable use of natural resources are among the major interventions.

National and International NGOs: There is a large number of international NGOs in Tajikistan, most of whom came to the country during and soon after the civil conflict with a series of humanitarian assistance programme. By 1998/99, most agencies shifted their focus from emergency to rehabilitation interventions, with a significant number of them involved in food security and agriculture sector. Among them is CARE International, OXFAM (UK and OXFAM Novib (Netherlands), the Aga Khan Foundation and Focus Humanitarian Assistance, German Agro Action (Deutche Welthungerhilfe), Mission East, Action Against Hunger (Action Contre La Faime), and Save The Children Alliance. Tajikistan's NGO community did not have the opportunity to grow as a large number of international organisations were already well established and the absence of NGOs after the independence made it difficult for them to rise to an effective level to be able to compete with the international NGO community. There are several smaller national NGOs that work mainly at local levels, mostly funded by the international community. The largest national NGO, the Mountain Society Development Support Programme (MSDSP), supported by the Aga Khan Development Network, especially the Aga Khan Foundation, is perhaps the most effective and efficient national NGO in the country. MSDSP operates mainly in Gorno-Badakhshan, the Rasht Valley and in the mountainous parts of the Khatlon province.

German Agro Action (Deutche Welt Hunger Hilfe): German Agro Action (DWHH/GAA) has been implementing a string of projects within the LRRD continuum since 1994. These projects have included efforts such as the rehabilitation of rural infrastructure/food security, agriculture (including grain production, grassland for livestock and orchard production) that has been adopted by farmers in targeted communities and districts throughout Tajikistan. Since 2003, emphasis has been placed upon community resource management, food security intervention goals and disaster risk management programmes. All programmes have a strong community-based approach with community interest groups being utilized as primary entry points.

OXFAM (GB): OXFAM has been in Tajikistan since 2001, following two years of severe draught. OXFAM helps women-headed households to restart cultivating small plots of land, providing them with seeds and technical advice. Crop rotation schemes, green houses and other agricultural techniques have helped to restore and conserve soil fertility, increase crop yields, and increase the length of the growing season.

In East Khatlon, OXFAM is helping people to increase the quantity and variety of food that they grow on their small land plots. They are enhancing community-based marketing strategies, providing seeds and tools, and providing people

with information and legal advice on access and use of land. OXFAM is encouraging farmers and rural people to work together, setting up village communities and providing loans.

Mercy Corps: Since 1994, Mercy Corps has been working to help communities in Tajikistan in several areas, including a project aimed at Increasing Food Production and Access. Several food-related programs focus on reducing malnutrition and food insecurity through mother and child health, increasing agriculture production, processing and marketing, and improving the counseling skills of community health promoters and the spread of low-cost hygiene technologies. Mercy Corps also supports two local financial institutions, which provide individual and group loans for the development of enterprises, including agri-business.

CARE-International: Has established an office since 2000. Among activities in environmental protection, education and distribution of humanitarian assistance, CARE is also working to increase food production in the long term by teaching farmers new farming techniques and building irrigation systems.

The Aga Khan Foundation (AKF) and the Mountain Society Development Support Programme (MSDSP): AKF has been in Tajikistan for more than a decade with programmes in rural development, health and education, operating in Gorno-Badakhshan, the Rasht Valley and mountainous districts of the Khatlon Oblast. The MSDSP is AKF's partner in rural development. MSDSP's activities are implemented in three categories: promoting micro- and small-scale enterprises, strengthening Community-Based Organisations (CBOs) at the village and sub-district levels, and supporting economic activities targeting the most vulnerable. A major proportion of MSDSP's intervention in rural development and economic activities is concerned with rehabilitation and development of community-based agriculture.

United Nations Organisations: Almost all UN agencies are represented in Tajikistan, coordinated through United Nations Office for Coordination of Humanitarian Assistance (UNOCHA). The Rapid Emergency Assessment Coordination Team (REACT), a joint UN and NGO partnership with the Government of Tajikistan coordinate all emergency interventions. There are several Sectoral Coordination working groups in place – recently changed into Clusters – including a food security and agriculture cluster, jointly chaired by the World Food Programme (WFP) and the Food and Agriculture Organisation (FAO). Other members of the food security cluster include the United Nations Development Programme (UNDP) and several international NGOs. Relevant Government of Tajikistan representatives have been invited occasionally to these meetings, to-date no active government participation has been secured to the cluster meetings. Cluster meetings also invite the donor representatives to specific meetings, especially the Asian development Bank, the World Bank, USAID, DFID and others.

Food and Agriculture Oragnisation of the United Nations (FAO): The FAO is among key players in the agriculture sector. With the overall objective to support the Government of Tajikistan in its efforts towards a sustainable agriculture development. FAO's activities are around four main pillars: Animal

Health and Production; Community-Based Land and Water Resources Development; Policy Advice on Food security and Land Tenure; and Crop Production and Marketing. Current Projects include:

- **Enhanced Livestock and Pasture Rehabilitation:** through the EC funding, the project is designed to improve livestock production in remote rural areas.
- **Monitoring Food Security:** through funding provided by CIDA, aims to improve the Government's ability to monitor the food security situation. Similar but smaller projects focus on developing a Food Security Strategy and work on Cotton Sector Recovery and Poverty Reduction.
- **Animal Health:** Supporting the State Veterinary Department in enhancing the delivery of clinical veterinary services, through SIDA funding.
- **Avian Influenza:** The project support by the World Bank is designed to control the spread of Avian Influenza.
- **Land Reform:** Focuses on supporting private farmers or those seeking access to land, particularly women. Supported by CIDA and implemented in collaboration with UNIFEM.
- **Disease Control:** Reducing livestock production losses caused by infection disease across Central Asia, supported by the Government of Italy.

Government Organisations: The most prominent government agencies involved in the agriculture sector are: the Ministry of Agriculture; the Ministry of Irrigation and Water Resources, the state Agency for Environmental Protection and Forestry, and the State Committee for Land Reform. The Committee of Emergency Situations of the Republic of Tajikistan coordinates all emergency issues and interventions and is member of the REACT. Major Government of Tajikistan institutions involved in training, education and research institutions include:

Tajikistan Agrarian University: Established in 1931, the Tajikistan Agrarian University provides training to graduate and post–graduate level in twenty-five different specialist subjects. Some 600 to 700 students graduate annually with a B.Sc. of which 10-15 percent will go on to do post-graduate studies. Probably 55–60 percent of the graduates find jobs in the agriculture industry, the remaining 40–45 percent go into other government service, police etc. The University is funded from the budget and fees from private students (about 40 percent). Students either enter directly from secondary schools or through the Agricultural Colleges (see below). Some faculties such as the Farming Department and Agro-Business Department are self-funding.

The University appears to have made good progress in adjusting curricula to train people able to deal with the market economy and private farming. However, given the run-down state of agricultural mechanization and the agro-processing sector, there is a major gap between the techniques that can be taught and the opportunities for applying them on-farm.

The University established a Farming Department in 1995 to respond to the need to train a new breed of private farm managers. The Department is operated on a commercial basis and self-financed. Its qualified teachers train

specialists in plant cropping, husbandry, mechanization and rural economy. There are 1 873 hectares of land attached to the Department where students can do practical work. The Department has 600 students and the first graduated in 2000.

Agricultural Colleges: There are four Agricultural Colleges (Khujand, Tursunzoda, Bokhtar and Mastchoh) giving a 3-year course leading to a junior specialist qualification. Students enter the college at 18 having completed secondary school. Students achieving good results will go on to the Agrarian University, Dushanbe, to obtain a B.Sc. after one further year and subsequently a Masters degree.

The Khujand Agricultural College, which was established in 1998, has 230 full time (115 in each year) and 130 part-time students. There is a staff of twenty-five. Students pay an equivalent of USD 50 per annum and the college is self-funding. Courses include training of farm managers, agro-business specialists, livestock and veterinary specialists, rural and mechanical engineers, and horticulturists.

Agricultural Research System

Academy of Agricultural Sciences: The Academy of Agricultural Sciences (AAS) is responsible for all scientific research in the sector. The AAS was established in 1994 to bring together the Scientific Research Institutes to work on different problems in the sector. The AAS oversees eight scientific research institutes, namely: Crop Research, Horticulture, Soil Science, Livestock Breeding, Veterinary, Foot and Mouth Disease, Mechanization, and Agricultural Economics. In total, there are four branches (covering the main agro-ecological zones), eleven testing stations and nine experimental farms.

The AAS is an independent institution, comprising a total research staff of 161: 5 Academics, 7 Corresponding members, 20 PhDs, and 129 Candidates of Science. Since independence, some 40–50 percent of the scientific staff have left for abroad or other occupations. With salaries at the equivalent of USD10–20 per month and small or non-existent budgets for research programs, there is little incentive for young scientists and it is a struggle to prepare a new generation of scientists.
International links have been established through two projects: Soil & Water Management (Central Asia Program) with ICARDA under ADB funding; and
wheat breeding and seed production with CIMMYT under GTZ funding.

Crops Research Institute (CRI): The CRI has branches in the Vakhsh valley (300ha) and Leninobod (200ha), an experimental farm at Hissor (1 000ha of which 450ha irrigated), three testing stations at Danghara, Panjakent (tobacco) and Kolkhozobod (silk) each with 400–700 ha, and sub-stations at Shahriston and Darband. CRI headquarters at Hissor were levelled by the 1988 earthquake and have been only partially rebuilt with wooden offices and laboratories. In 2000, there were 34 scientific staff and reports indicate that some 40% of

research staff has left the CRI since independence. There are fourteen departments with five covering major crops (cotton, wheat, other grains including barley and forage, oilseeds, maize), plant protection, irrigation, grains seed breeding, cottonseed breeding, information, library, and administration. The experimental farms play an important role in cottonseed production, producing Super Elite and Elite seed on MOA orders for sale to the Government Seed Multiplication Farms. The CRI has branches in Vakhsh and Leninobod.

Extension Services: Under the Soviet system, extension services went directly to the managements of sovkhozes and kolkhozes and the concept of extension or advisory services with a range of clients did not apply. At present, any dissemination of research results from the State sector is limited primarily because contacts between staff on the experimental stations and farmers, and most of this is still directed at the sovkhozes and kolkhozes. The emerging private farmers have no access to advisory services and in many districts even staff of the local administration is not properly aware of recent legislations.

Ministry of Agriculture Central Services: MoA's Department for Scientific Research and Dissemination has made a good start on using the media to promote new technology through Production of a small run of technical bulletins since 1998; Launching of a monthly newspaper – although lack of funds had stopped publication since March 2000; A daily program of 45 minutes on national radio after lunch dealing with technical problems; and a 30-minute TV program once a week dealing with new technology recommendations. The Variety Testing Organization has also produced technical bulletins with GTZ funding for distribution.

Rayon Departments of Agriculture: The Rayon Departments of Agriculture (DOA) comprise a group of specialists who provide some limited support services to farmers. Each rayon DOA is staffed with 8–10 specialists including Agronomist, Economist, Veterinary Specialist, Animal Husbandry, Mechanical Engineer, Farm Planner and Irrigation. At present the credibility of the Rayon DOA staff must be under some pressure given the lack of transparency in the land reform process and it is questionable whether the necessary confidence can be established.

Associations of Dehkan Farms: Concerned that the private farms would be operating in something of a vacuum, the associations of dehkan farms were established by government with the objective of holding together the dehkan farms created out of the previous sovkhoz or kolkhoz structure. The objective is to promote the common use of resources (particularly water, supply facilities for inputs and machinery) and to provide a forum for resolving legal programs. Government was clearly concerned that without such support the dehkan farms might collapse; on the other hand, it could be seen as a way for Government to continue to exercise control over cropping plans. The associations of dehkan farms take various forms including what appears to be a vehicle to exercise control over cotton production in Khatlon, to a more genuine supportive

approach in Leninobod, to Gorno-Badakhshan where the Aga Khan Foundation project has replaced local government with a village-level organization.

The associations of dehkan farms range from dehkan collective farms, which are no more than ex-brigades each managed by the brigade leader, to one that represents the farmers on a large part of an ex-kolkhoz. District associations of dehkan farms have been set up in some areas (e.g. Uroteppa) to facilitate contacts between input suppliers and farmers and provide some advice to its member associations, in return for a fixed annual fee. There is also a National Association of Dehkan Farms.

C. The Programme

1. Programme development objectives

The overall programme objectives are to ameliorate the impact of surge in food and agricultural input prices and drop in food production by supporting food crop and livestock production. The immediate objective of the proposed programme is to ensure that vulnerable and resource-poor farmers have access to critical inputs to maintain or increase food production levels during the ensuing cropping season. The medium term objectives are to ensure that farmers have a sustainable access to improved seed varieties, irrigation water, increase livestock (poultry, goats and sheep) and improve farming techniques.

2. Summary of programme components

The proposed programme consists of the following components:

Component I: Support to Agriculture Production (USD 3.65 million)

Sub-Component I.1. Emergency Seed and fertiliser provision and multiplication

The Overall objective of this sub-component is to improve the livelihood of Dehqan and small farm household farmers through increase in the short, medium and long-term availability of quality seeds of recommended improved varieties. The sub-component envisages the establishment of community-based revolving seed scheme in selected areas by improving coordination of the Seed Programme through seed producer associations and Village Development Committees (VDC). The following activities have been envisaged under this sub-component.

A. Wheat Seed and Mineral Fertiliser Provision (USD 908 000)

The main purpose of this activity is to increase the production of an important staple food crop of the country, through the provision of improved and disease free varieties of wheat. Some 5 000 vulnerable and food

insecure farmers in 8 selected districts shall be supported with 50 kg of improved wheat seed varieties and 50Kg of mineral fertilisers each, which enable each beneficiary to plan some 0.4 hectare of land. The beneficiaries will be selected in collaboration with the VDCs. Each beneficiary shall devolve 100 kg of seeds from their harvest to the VDC, who will in turn distribute the improved seeds to other eligible farmers in the village. Some 10 000 farmers shall receive improved wheat seed varieties in the following year. An facilitating partner, a local NGO, shall implement this activity at village level in close collaboration with the VDCs and the relevant government authorities. In addition, the farmers will be provided with adequate training in seed production technology and Integrated Crop and Pest Management (ICPM) practices.

B. Vegetable Seed Provision for Kitchen Gardens (USD 784 000)

This activity aims to improve the livelihood and nutrition intake and diversification of some 10 000 small household farmers by improving the quality and yield of vegetable crops through the distribution of quality seed packages of recommended and improved varieties along with fertilisers. Different varieties of winter and summer vegetable seeds and 50 kg of DAP fertilisers will be provided to some 10 000 vulnerable rural households in 12 districts. In addition, the target beneficiaries will be provided with adequate training in improved vegetable production.

C. Potato Seed and Mineral Fertiliser Provision (USD 394 000)

The main purpose of this activity is to increase the production of potato, which is one of the most important staple food and cash crop of the country, through the provision of improved and disease-free varieties of potato to targeted Dehqan and small household farmers. Some 2 000 potato farmers will each receive 100 kg of high yielding-disease free potato seeds and 50 kg of DAP fertlisers in 3 selected districts. The following year these farmers shall each devolve 200 kg of high quality potato seed to the VDC, who will in turn distribute them to twice as many eligible farmers. The programme, under this activity, shall also provide training and assistance to promote on-farm seed production scheme and establish community-based revolving seed schemes.

Sub-Component I.2. Medium Term Agricultural Rehabilitation

A. National Seed Policy and Legislation (USD 70 000)

This activity aims to develop an appropriate seed policy and legislation that would best reflect and serve the current and prospective agricultural strategy by reviewing existing national seed policy and legislation and proposing a revised policy and legislation. A seed and a legal specialists (FAO international experts) shall engage with national and international partners to review and revise the seed policy and legislation.

B. Assistance to Crop Research Institute, Potato Research Institute and Republic Quarantine and Seed Analysis Laboratory (USD 250 000)

The main purpose of this activity is to rehabilitate the basic technical and operational capacity of the concerned research institutes to produce foundation and pre-basic seeds and to ensure quality control according to standard certification procedures. Necessary expendable and non-expendable equipment as well as training and other technical assistance will be provided to Crop Research Institute, Tajik Academy of Agriculture Sciences (AAS) and Institute of Plant Physiology and Genetics and Republic Quarantine and Seed Analysis Laboratory. Much of these activities will be building on current and past efforts to improve the efficiency of these institutions.

C. Formation of Wheat and Potato Seed Producer Associations (USD 917 000)

The main purpose of this activity is to strengthen national capacity to produce certified wheat and potato seeds through the formation of Seed Producer Associations (SPAs). Some 250 wheat seed and 100 potato seed producers will be formed into 10 and 5 SPAs, respectively. The programme shall provide technical assistance (training and some exposure visits) as well as initial inputs as a revolving capital to form the SPAs. If successful, the combined effects of the SPAs and demonstration effects would meet a significant proportion of the national seed demand for wheat and potatoes.

Component II: Home-Based Livestock Rehabilitation (USD 1.43 million)

Sub-Component II.1. Poultry (USD 443 000)

This sub-component aims to improve the livelihoods, food security and nutrition of some of the most vulnerable and food insecure households in rural areas through distribution of improved brooding hens coupled with training on better poultry management under local home-based semi-intensive conditions. The proposed programme under this sub-component envisages the introduction of bio-secure poultry production system in the villages. The recent outbreaks of Avian Influenza (AI) in a number of countries, thankfully not in Tajikistan, have made it more urgent to ensure bio-security production systems are introduced throughout the system. Each primary beneficiary household will receive a package of inputs (19 chicken, 1 rooster, construction material and some feed) as well as training in poultry bio-security and marketing. The primary beneficiaries, after one year at the latest, will return 20 chicks to the VDC, who will in turn redistribute these 20 chicks to other eligible beneficiaries within their community (Revolving Fund approach). A total of 1 875 food

insecure and vulnerable households in 15 districts shall be the primary beneficiaries.

Sub-Component II.2. Sheep & Goats (USD 853 000)

This sub-component aims to support vulnerable and resource poor households in rehabilitating sheep and goat assets as an important element in their livelihood system and at the same time to raise productivity levels of their sheep and goats through improved management and husbandry practices. A total of 750 vulnerable and food insecure rural households in 15 selected districts will receive a pair of goat or sheep (depending on the beneficiary choice) together with training in feeding, hygiene and disease control. The first off-springs will be given to the VDC, who will in turn give them to eligible households in the village.

COMPONENT III: Small-Scale Irrigation Rehabilitation (USD 3.03 million)

A. Small-Scale Gravity Irrigation (USD 1.35 million)

This sub-component aims to increase agricultural output by rehabilitating and constructing small-scale gravity irrigation in areas with appropriate sources of water that can be easily tapped. These irrigation structures will be entirely under the management of the beneficiary communities. In addition, the programme under this sub-component will provide training to farmers through the Farmer Field Schools (FFS) in efficient water use, Integrated Crop and Pest Management (ICPM) and the formation of Water User Associations (WUA). If successful, a total of 1 600 food insecure farmers would have improved their agricultural output from a total land area of 2 270 hectares of rain-fed or under-irrigated areas. An average of 5 800 tonnes of wheat equivalent incremental output is expected per year.

B. Rehabilitation of tube-well for irrigation lands near village (USD 503 000)

The objective of this sub-component is to increase food production and hence improve food security through the rehabilitation of irrigation tube-wells that have been given to groups of farmers but are in a dilapidated state and beyond the capacity of farmers to repair. A total of 36 tube wells belonging to some 1 050 groups of vulnerable farmers in areas with positive environmental impacts would be rehabilitated. This expected to result in the irrigation of about 1 575 hectares of prime agricultural land with an incremental expected output of 4 100 tonnes per year.

C. Household Low cost drip irrigation (USD 85 000)

This sub-component aims to improve household food security and nutrition by increasing vegetable production at home garden all year round through the introduction of low-cost – low-tech drip irrigation (LCDI) at home-

gardens. A total of 240 vulnerable rural households will benefit from a set of drip irrigation with the capacity for water storage to enable vegetable production throughout the year. In addition, the target beneficiaries will also benefit from training in improved vegetable production. A total of 23 hectares will come under drip irrigation. The demonstration effects of the technology is expected to be highly significant.

D. Mahalla small water harvesting reservoir (USD 684 000)

This sub-component aims to increase water availability for household consumption purposes (washing and other), animals and limited irrigation by harvesting rainwater and excess surface water when available for use during dry season. This will increase water availability during the dry season when water is very scarce in some parts of the country. The programme under this sub-component envisages the construction of 23 Mahalla (sub-village) water harvesting reservoirs. The reservoir will capture rainwater and other surface water when available, which can then be used when surface water dries up. Most households during dry periods go to extreme lengths to access water for domestic uses, their livestock and some areas for high value vegetable crops. This will have significant impact on human and animal health as well as increase the production of nutritious and diversified food. In addition, 155 hectares of land will come under irrigation with obvious production impact.

Component IV. Support to Horticulture Rehabilitation (USD 418 000)

A. Home-based Nursery Development (USD 190 000)

The main purpose of this activity is to increase the availability of fruit and other environmentally beneficial saplings and provide a source of income for some of the most vulnerable households in rural Tajikistan by establishing home-based nurseries. The programme also envisages the supply of appropriate species through the village development committees (VDCs) for environmental protection purposes. The main environmental issues are rampant soil erosion, high winds and desertification. Some of the saplings will be used by the VDCs to address these environmental issues at the village level. The demand for fruit saplings are very high and the increased availability of saplings may encourage the rehabilitation of some high yielding orchards. Some 400 vulnerable households will be provided with a package of inputs and training to establish and manage nurseries in their home-gardens. A total of 1.2 million saplings will be available for planting in the following year and the VDCs would have planted some 240 000 saplings to protect the village environment.

B. Rehabilitation of Horticulture Genetic Collection Farm (USD 191 000)

This sub-component aims to rehabilitate four horticulture collection farms in strategically important areas through the establishment of nurseries and rehabilitation of existing farms. The programme shall rehabilitate some of the equipment and provide initial inputs to rehabilitate the dilapidated farms, including nurseries. If successful some of the most important genetic resources will be preserved and available for planting in the country. In addition, improved fruit tree varieties will be available for the development of orchards in the years to come. The collection farms would serve as a seed bank for the horticulture sector of the country. The main implementing partner will be the Horticulture Institute of the Republic of Tajikistan (HIRT).

Component V. Programme Implementation Support Unit (PISU) and VDC development (USD 989 000)

The programme intends to establish a project implementation support unit (PISU) who will be responsible for the implementation, supervision and coordination of the proposed programme at national and sub-national levels. The programme intends to employ the services of qualified local and international NGOs as well as the private sector to facilitate the implementation of specific activities under the programme. All programme activities will be closely coordinated with relevant sub-national government authorities, national and international partners to fully utilise synergies with planned and on-going projects and programmes. Once operational, the PISU shall establish mechanisms to effectively coordination and liaise programme activities at all levels. The PISU shall also establish an effective mechanism for reporting and provision of information to all relevant stakeholders. The proposed programme will be implemented by the PISU under the direct supervision of the FAO Emergency Coordinator in Tajikistan and the technical supervision from relevant Technical Divisions in FAO Head Quarters.

Almost all components of the proposed programme will be implemented in close collaboration with the VDCs. The PISU will utilise existing VDCs and where not available shall endeavour to establish VDCs.

Summary Programme Costs

Table 1. Summary Programme Costs by Component.

		Value, in 000s USD								
		Year 1 - trimester				Year 2 - trimester				
	Main Activities	1 -3	4- 6	7- 9	10 - 12	1 -3	4- 6	7- 9	10 - 12	Total
I. Food Production and Agric. Rehabilitation Component										
	Sub-total Food Crops	2,311	913	250	33	26	31	15	77	3,656
II. Small-Scale Home-based livestock Production										
	Sub-total Livestock	789	114	112	37	112	114	112	37	1,426
III. Small-Scale Irrigation Rehabilitation										-
	Sub-Total Irrigation	1,348	1,687	-	-	-	-	-	-	3,034
IV. Horticulture Rehabilitation										
	Sub-Total Horticultrue	265	36	11	29	45	2	31	-	418
V. Implementation and Institutional Support										-
	Sub-Total PISU, VDC	265	164	125	87	87	87	87	87	989
Total Programme Costs		4,978	2,913	498	186	270	234	245	201	9,524

3. Consistency with government strategy on poverty alleviation and the MDGs

Tajikistan's National Development Strategy (NDS) for the period 2015 and its Poverty Reduction Strategy (PRS) have been designed with an overall objective to enhance the capacities of national an local organisations and institutions to achieve the Millennium Development Goals in time. The NDS prescribes the development of a national food security strategy as one of the main objectives in its economic development processes, while completion of the land reform process is seen as an important pre-requisite for economic reform and development. Development of effective policies and strategies, along with appropriate mechanisms to implement approved policies and strategies will play a vital role in the achievement of Tajikistan's Millennium Development Goals (MDGs), especially when considering the fact that almost 65% of Tajikistan's population and their livelihoods depend on agriculture. The success and failure of NDS and PRS and accompanying policies and strategies depend much on a wide range of structural reforms at national, regional, district and local levels. Capacity enhancement and institutional strengthening interventions will be vital if government and non-government institutions and organisations are to achieve greater economic reforms in production sector and to become more effective and efficient in boosting productivity.

The government in 2005 approved Tajikistan's MDGs. The revised drafts of the NDS and PRS were approved in 2007. However, to-date little progress has been achieved in these areas due to a whole range of issues, including absence of institutional and organisational reform processes and effective mechanisms to

implement approved policies and strategies. In addition, Tajikistan witnessed a number of natural crises over the last three years, including draughts, floods, extreme rises in prices of food and fuel in 2007 and a harsh winter 2007/2008.

The country is going through a serious compound crisis with significant repercussions, especially for rural population. Labour migration is on the rise and the vast majority of households interviewed during the comprehensive assessment stated remittances from Russia as the main household income. Therefore, the consequence of no action will further deteriorate lives and livelihoods of almost 80% of the population that could eventually sink the country into deeper crisis, attracting more youth to get involved in drug trafficking and other illegal activities for survival and destabilising the country and the society.

The proposed programme, by directly targeting the most vulnerable households through efforts to increase and diversify food production is very much in support of the government strategies and the MDGs.

D. Monitoring and Evaluation

The PISU shall prepare a detailed monitoring and evaluation schedule and at the start of the programme. The programme monitoring and evaluation system consists of a set of impact/outcome indicators, derived from the programme immediate and mid-term goals and objectives to ensure effective assessment of progress and provide timely feedback for possible changes that might be required in the course of implementation due to unforeseen changes in the socio-economic context, as well as programme strategy.

Input and output indicators in each sub-sector, crops, horticulture, irrigation, livestock, will enhance regular monitoring and evaluation of programme performance, including identification of potential problems and/or success. The indicators will also be used to assess results during evaluation, including beneficiary satisfaction with results.

The selection of appropriate indicators is critical to result-oriented monitoring and evaluation system. They are signs showing changes in certain conditions or results from specific interventions. They also provide evidence of the progress of the programme in achieving the objectives of the strategy. While selecting indicators, the following criteria should be considered:

- What are the objectives of the programme?
- Who are the target groups and what are their needs and expectations?
- What changes are anticipated as a result of the programme?
- To what extent and how efficiently is the programme achieving its objectives?
- What are the criteria for judging the success of the programme?

Indicators must be appropriate in relation to immediate recovery and rehabilitation objectives of the programme. They should also include participation of stakeholders, the beneficiaries, government authorities and other relevant actors involved in the process. Indicators should be Specific; Measurable; Attainable; Relevant; and Traceable: SMART.

There are specific elements of Monitoring and Evaluation that need to be considered during project/programme formulation:

- Types and sources of data needed
- Methods and frequency of data collection
- Methods of data analysis
- Who will be responsible for data collection and analysis?
- Who will use the resulting information?

It is important to have baseline data when choosing output indicators. The baseline data will allow us to compare what has been there and what changes will the project bring about.

Following these basic and principle guidelines, a set of input and output indicators have been selected for each programme component, however, while baseline data for some of the activities has been collected from available government statistics, others are not available and require staff in the field to find estimated data that can be compared with selected indicators. Sufficient effort has been made to collect accurate baseline data from National and local authorities, both for the joint comprehensive assessment and by the advanced team, however, some of the data will need to be verified as data collection processes in the country are outdated and may not reflect actual situation in the field.

For monitoring purpose, it is essential that programme staff provides regular and accurate data and information at each interval, compared with selected indicators to closely monitor progress and to prevent any unnecessary diversion from programme plans. Therefore, regular reporting is essential for this purpose and it is, therefore, suggested that weekly/biweekly reports are submitted during the initial stage of the implementation (first three months), especially during the time-critical phase, while monthly reports might suffice thereafter.

With regard to evaluation, the programme will carry out regular internal evaluation, for instance three-monthly; to ensure effectiveness and efficiency of programme design and where required, necessary measures can be taken. Internal evaluations will make substantial contribution to avoiding total diversion in due time, provide a platform to collate lessons learned and best practices applied.

This document has enlisted a number of input and output indicators, along with means of verification that will help the process of monitoring and evaluation.

However, the programme will need to develop a set of outcome indicators for the evaluation process, using the overall objective and specific objectives of the programme and the individual projects as the basis.

Two external evaluations are proposed for the programme, a mid-term evaluation at end of year one and a final evaluation at the end of the programme.

One of the basic characteristics of monitoring and evaluation system is to include measures to track systematically the key interventions and processes over time and space and to see how they change as a result of the programme strategy and its activities. These will include:

- Measuring and analysing the sustainability of the intervention.
- Monitoring the implementation of the programme strategy.
- Evaluating the results of the strategy.
- Reporting and analysing the findings.

Another important element in monitoring and evaluation system is the roles and responsibilities of stakeholders, the FAO, the donors, the government and, more importantly the target communities/beneficiaries. While their inclusion in the system is vital, it is also important to feed back key messages to stakeholder groups, through regular reporting and dissemination of findings, to enable them to continuously improve their role in the effective implementation of the programme, the programme itself and its component activities. Regular feedback and dissemination of findings will also enable all stakeholders to improve the quality of the programme delivery and to make informed judgment about the programme and to improve future programme designs and implementation processes.

Annex 1

Component I. Support to Agricultural Production

The overall objective of this component is to reduce food insecurity by making available kits of quality seed of improved varieties, fertilisers and transfer of appropriate technology to support the sustained production of improved crop varieties especially of wheat, potato and vegetables.

The following two sub-components are envisaged under this component:

Sub-Component I.1. Emergency Seed and other input provision and multiplication

The Overall objective of this sub-component is to improve the livelihood of Dehqan and small farm household farmers through increase in the short, medium and long-term availability of quality seeds of recommended improved varieties. The sub-component envisages the establishment of community-based revolving seed scheme in selected areas by improving coordination of the Seed Programme through seed producer associations and Village Development Committees (VDC).

A. Wheat Seed and Mineral Fertiliser Provision

Rationale

The main purpose of this activity is to increase the production of an important food crop of the country, through the provision of improved and disease free varieties of wheat to targeted Dehqan and Small household farmers in 8 selected districts of Tajikistan. The programme, under this activity, shall also provide training and assistance to promote on-farm seed production scheme and establish community-based revolving seed schemes.

The majority of rural households use seeds saved from the previous crop year-after-year and seed renewal hardly exists. Due to degeneration and physical admixture, the quality of such seed is usually very poor. Use of low productivity varieties coupled with sub-standard seed production and quality assurance technology gives rise to poor germination, mixed plant population and non-uniform grains. Variety concept is almost non existence and despite availability of some improved varieties farmers continue to use nondescript seed resulting in poor grain quality and yield.

Target Beneficiaries

The programme intends to assist some 5 000 Dehqan and small household farmers with emergency distribution of quality wheat seed through community-based revolving seed schemes. These beneficiaries will be selected on the basis of the following criteria:

- families who have lost production assets due to cold weather or any other reason.
- families who have not received any assistance from any other source.
- families who have sufficient arable land to plant 50 kg wheat seed (0.4 ha is required to plant 50 kg wheat seed)
- families who are headed by women would get preference
- main source of income for the family is agriculture.

Activities

The following activities have been envisaged to achieve the objectives of this activity and to effectively target relevant beneficiaries.

1. organisation of preliminary meetings between FAO and relevant NGOs currently active in the wheat seed field;
2. in consultation with donor and Government counterparts, selection of the most suitable NGOs;
3. preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this programme component for the emergency supply of seeds to selected beneficiaries;
4. selection of priority villages through consultations with governmental bodies at Joma'at level, NGOs and Community Based Organization (CBO) such as Village Development Committee (VDC);
5. implementation of field level surveys for the selection of beneficiaries;
6. based on field level surveys, prepare lists of target beneficiaries in consultation with VDCs;
7. planning of input distribution to beneficiaries in collaboration with the VDC (distribution points and field warehouses will be located in the areas assisted by the programme);
8. purchase of inputs by FAO according to FAO procurement rules and regulations and specifications;
9. distribution of inputs (quality seeds with a matching quantity of fertilizers) by the NGOs staff under the supervision of FAO programme staff;
10. draw up programmes for specific training of relevant personnel and arrange the conduct of the training sessions at selected locations in collaboration with all programme partners;
11. technology transfer on Good Agricultural Field Practices (GAFP) for crop and seed production in the districts surrounding the programme focal points through training of trainers and farmer seed growers;
12. participatory Farmer Training (Farmer Field School model) provided to selected farm households on improved crop management, Integrated Crop and Pest Management (ICPM) and on-farm quality seed production of specific crops.
12. Agronomist from each concerned Joma'at and at least one member from each VDC responsible for seed collection trained for different aspects of seed production and,

13.100 in-country training workshops (1 day each) for farmer groups (50 farmers in each group) on-farm seed production practices conducted.

Inputs

Attachment-1 presents a list of wheat varieties along with their technical specifications and sources of procurement, cropping calendar and other specifications. Each eligible household shall receive a package of inputs presented in Table-1 below. The type of wheat seed varieties will depend on the specific agro-ecological zone. In addition to this package the households shall also receive training in on-farm seed production. Table-2 below shows the total amount of inputs required to target 5 000 vulnerable households.

Table1. Value and quantity of wheat seed and Fertilisers received by each beneficiary.

Inputs	Quantity	Unit Cost/household (USD)	Total Amount USD
Wheat Seeds	**50 kg**	**1.2/kg**	**60.00**
Fertilizer (DAP)	**50 kg**	**0.6**	**30.00**
Training Cost/1			**67.4**
Total			**157.4**

1. See training cost estimation in Annex-2 Table-7

Table 2. Value and quantity of aggregate wheat seed and Fertilisers, targeting 5 000 farmers.

Inputs	Quantity	Unit Cost/household (USD)	Total Amount USD
Wheat Seeds	**250 MT**	**1 200**	**300 000**
Fertilizer (DAP)	**250 MT**	**600**	**150 000**
Training Costs/1			**337 000**
Total			**787 000**

1. See Annex 2, Table-1a for total cost estimation.

Implementation Arrangements

This component will be implemented through the services of suitable NGOs who will act as programme implementing partners (IP). For the initial establishment of community-based revolving seed schemes and on-farm seed production, 5 000 beneficiaries will receive a package of wheat seed with a matching quantity of fertilizers for seeding in Autumn 2008. At the end of the crop season these 5 000 beneficiaries will devolve twice the amount of seed received from the programme to a revolving seed scheme managed by VDC under the coordination and supervision of the NGO and local Agronomist.

Seeds devolved to the programme by beneficiaries through the revolving seed schemes will be twice the amount initially received as there will be no cost recovery on fertilizers. Therefore, the amount of seeds collected from 5 000 beneficiaries at the end of the crop season should be sufficient for distribution to 10 000 additional beneficiaries for the following seasons, making a total of 15 000 beneficiaries for this component. Attachment 2 presents detailed work plan.

Expected Outcomes

Within Autumn 2008 implementation of the programme, a minimum of 5 000 beneficiaries in 8 districts will have improved the quality and quantity of their agricultural production with the emergency distribution of mini-kits of 50 kg wheat seed and 50 kg DAP fertilizer.

Community-based revolving seed schemes will have been established and the initial 5 000 beneficiaries of the seed/fertilizer mini-kits will have returned twice the amount of seeds received from the programme for further distribution to approximately 10 000 beneficiaries in the next planting season.

A significant number of seed/agronomy personnel selected from various Joma'at, participating NGOs and members of VDCs and some selected farmers would have been trained to acquire Good Agricultural Practices (GAP), ICPM and basic seed production knowledge to be able to play their various roles and 5 000 beneficiaries would have received training in on-farm seed production technology.

B. Vegetable Seed Provision for Kitchen Gardens

Rationale

This activity aims to improve the livelihood and nutrition intake and diversification of some 10 000 small household farmers by improving the quality and yield of vegetable crops through the distribution of quality seed packages of recommended and improved varieties along with fertilisers.

Vegetables have direct bearing on food security. Vegetables with long shelf life like potato and pumpkin can be consumed in case of shortage of staple food. Improving vegetable production at the home gardens will ensure round the year availability of vegetables, except a few months of winter season, both for consumption and marketing. Fast growing crops like radish can ensure a stable and year round supply.

Traditionally, almost all rural households and farmers grow vegetables at the backyard of their house. Nearly 94% of rural households have access to agricultural land, including household plots/kitchen gardens and presidential

land plots. Kitchen gardening of improved vegetable varieties with good quality seed may offer the following advantages to these land owners:

- Nutritional security (Vegetables as a food group is an important component of a balanced diet enriching the local diet with vitamins and minerals);
- Production of more biomass (For forage or humus);
- Reduction in malnutrition;
- Economical to grow;
- Well fitting in sustainable farming systems;
- Suitable for intercropping between fruit trees traditionally planted in kitchen gardens;
- More and almost round the year income per unit of land;

The majority of rural households use seed saved from the previous crop year-after-year and seed renewal hardly exists. Due to degeneration and physical admixture, the quality of such seed is usually very poor. Use of low productivity varieties coupled with sub-standard seed production and quality assurance technology gives rise to poor germination, mixed plant population and non-uniform plant produce. The outcome is poor yield.

The unprecedented cold temperatures last winter has severely damaged the seed either in the field or during storage. If not addressed, most of the households will not be able to produce sufficient vegetables during the ensuing season with consequences of increased food insecurity and malnutrition. The provision of quality vegetable seeds and some fertilisers along with some training in improved vegetable production and seed technology will have significant impact on food security, nutrition and livelihoods of vulnerable households.

Target Beneficiaries

The programme intends to assist some 10 000 small household farmers with emergency distribution of quality packages of vegetable seeds of recommended and improved varieties along with fertilisers. These beneficiaries will be selected on the basis of the following criteria:

- families who have lost production assets due to cold weather or any other reason.
- families who have not received any assistance from any other source.
- families who have minimum 0.1 ha as kitchen garden adjacent to their houses
- families who are headed by women
- main source of income for the family is agriculture.

Activities

The following activities have been envisaged to achieve the objectives of this activity and to effectively target relevant beneficiaries.

1. organisation of preliminary meetings between FAO and relevant NGOs currently active in the vegetable seed field;
2. in consultation with donor and Government counterparts, selection of the most suitable NGOs;
3. preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this programme component for the emergency supply of seeds to selected beneficiaries;
4. Identification of suitable varieties for the target area;
5. Identification of potential suppliers preferably in the region;
6. Preparation of technical specifications and issuance of tenders for purchase of seed and fertilizer;
7. Identification and selection of beneficiary in consultation with Village Development Committee (VDC);
8. Identification of storage and distribution points;
9. Reception and transfer of inputs to distribution points;
10. Coordination with VDC
11. Distribution of inputs to the selected beneficiaries;
12. Training of women groups.

Inputs

Attachment-1 presents a list of vegetable species along with their technical specifications – showing suitability in various agro-ecological zones, cropping calendar and other specifications. Each eligible household shall receive a package of inputs presented in Table 3 below. The type of vegetable seed varieties will depend on the specific agro-ecological zone (See attachment-1) In addition to this package the households shall also receive training in Good Agricultural Field Practices (GAFP) for vegetable production in the kitchen garden. Table 4 below shows the total amount of inputs required to target 10 000 vulnerable households.

Table 3. Individual Package of vegetable seed and other inputs.

Inputs	**Quantity kg**	**Unit Cost/household (USD)**	**Total Amount USD**
Vegetable seeds	**0.304**	**17**	**5.00**
Seed Potato	**10**	**0.7**	**7.00**
Fertilizer (DAP)	**50**	**0.6**	**30.00**
Training Cost (*)	**1 Nos**	**14.25**	**25.00**
Total			**67.00**

** Only women will receive training. One-day training, see Annex 2, Table 7.*

Table 4. Value and quantity of aggregate vegetable seed and Fertilisers.

Inputs	**Quantity kg**	**Unit Cost/household (USD)**	**Total Amount USD**
Vegetable seeds	**3 040**	**17.00**	**52 000**
Seed Potato	**100 000.00**	**0.70**	**70 000**
Fertilizer (DAP)	**500 000.00**	**0.58**	**300 000**
Training Cost	**2 000 women**	**14.25**	**50 000**

Total	**472 000**

Implementation Arrangements

The proposed activity will be implemented as one of the components of the Support to Agriculture Rehabilitation. The national and international programme staff will be responsible for the implementation of the specified activities and ensuring timely distribution of the kits to eligible beneficiaries. A suitable implementing partner, NGO, will be identified to assist in carrying out field activities, under the technical guidance and close supervision of FAO and in close collaboration with the district and Joma'at administrations.

Expected Outcomes

Within Autumn 2008 and spring 2009 implementation of the programme, a minimum of 10 000 beneficiaries in 12 districts will have improved the quality and quantity of their vegetable production with the emergency distribution of seed packages comprising vegetable seed enough for an average kitchen gardening of 0.1 hectare.

C. Potato Seed and Mineral Fertiliser Provision:

Rationale

The main purpose of this activity is to increase the production of potato which is one of the most important staple food and cash crop of the country, through the provision of improved and disease-free varieties of potato to targeted Dehqan and small household farmers in 3 selected districts of Tajikistan. The programme, under this activity, shall also provide training and assistance to promote on-farm seed production scheme and establish community-based revolving seed schemes.

The majority of rural households use seeds saved from the previous crop year-after-year and in this process seed gets degenerated and poor yields are obtained. Agro-ecological conditions of Tajikistan are favourable to potato cultivation. Considering the favourable agro-ecological situation for potato growing, and under condition of improved cultural methods, current yields can easily be considerably increased per hectare with short cycle varieties. Therefore, this activity has a considerable potential to contribute to food security in the country, and particularly in high altitude isolated areas.

Target Beneficiaries

The programme intends to assist some 2 000 Dehqan and small household farmers with emergency distribution of quality seed potato through community-based revolving seed schemes. These beneficiaries will be selected on the basis of the following criteria:

- families who have lost production assets due to cold weather or any other reason.
- families who have not received any assistance from any other source.
- families who have sufficient arable land to plant 100 kg seed potato (0.03 ha is required to plant 100 kg seed potato)
- preference to families who are headed by women
- main source of income for the family is agriculture.

Activities

The following activities have been envisaged to achieve the objectives of this activity and to effectively target relevant beneficiaries.

1 organisation of preliminary meetings between FAO and relevant NGOs currently active in the Potato seed field;
2 in consultation with donor and Government counterparts, selection of the most suitable NGOs;
3 preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this programme component for the emergency supply of seeds to selected beneficiaries;
4 selection of priority villages through consultations with governmental bodies at Joma'at level, NGOs and Community Based Organization (CBO) such as Village Development Committee (VDC);
5 iplementation of field level surveys for the selection of beneficiaries;
based on field level surveys, prepare lists of target beneficiaries in consultation with VDCs;
6. planning of input distribution to beneficiaries in collaboration with the VDC (distribution points and field warehouses will be located in the areas assisted by the programme);
7 purchase of inputs by FAO according to FAO procurement rules and regulations and specifications;
8 distribution of inputs (quality seeds with a matching quantity of fertilizers) by the NGOs staff under the supervision of FAO programme staff;
9 draw up programmes for specific training of relevant personnel and arrange the conduct of the training sessions at selected locations in collaboration with all programme partners.
10 Technology transfer on Good Agricultural Field Practices (GAFP) for crop and seed production in the districts surrounding the programme focal points through training of trainers and farmer seed growers.
11 Participatory Farmer Training (Farmer Field School model) provided to selected farm households on improved crop management, Integrated Crop and Pest Management (ICPM) and on-farm quality potato seed production.
12 Agronomists from each concerned Joma'at and at least one member from each VDC responsible for seed collection trained for different aspects of seed production.
13. Forty in-country training workshops (1 day each) for farmer groups (50 farmers in each group) on-farm seed production practices.

14 Design and adapt a strategy to initiate a community-based programme for the sustainable production and distribution of quality seed potato in future in the selected areas.

Inputs

Attachment-1 presents a list of potato varieties along with their technical specifications – showing suitability in various agro-ecological zones, cropping calendar and other specifications. Each eligible household shall receive a package of inputs presented in Table-5 below. The type of potato seed varieties will depend on the specific agro-ecological zone. In addition to this package the households shall also receive training in on-farm seed production. Table-6 below shows the total amount of inputs required to target 2 000 vulnerable households.

Table 5. Value and quantity of potato seed and Fertilisers received by each beneficiary.

Inputs	Quantity	Unit Cost/household (USD)	Total Amount USD
Potato Seeds	**100 kg**	**0.7/kg**	**70.00**
Fertilizer (DAP)	**50 kg**	**0.6/kg**	**30.00**
Training Cost/1			**66.00**
Total			**166.00**

1. See Annex 2 Table-7 for training cost estimation, 1-day training cost.

Table 6. Value and quantity of aggregate Potato seed and Fertilizer, targeting 2 000 farmers.

Inputs	Quantity	Unit Cost (USD)	Total Amount USD
Potato Seeds	**200 MT**	**700**	**140 000**
Fertilizer (DAP)	**100 MT**	**600**	**60 000**
Training Costs/1			**132 000**
Total	**40 workshop**	**2 034**	**332 000**

1. 1. See Annex 2, Table 2.a for total cost estimation.

Implementation Arrangements

This component will be implemented through the services of suitable NGOs who will act as programme implementing partners. For the initial establishment of community-based revolving seed schemes and on-farm seed production, 2 000 beneficiaries will receive a package of Potato seed with a matching quantity of fertilizers for seeding in Spring 2009. At the end of the crop season these 2,000 beneficiaries will devolve twice the amount of seed received from the programme to a revolving seed scheme managed by VDC under the coordination and supervision of the NGO and local Agronomist.

Seeds devolved to the programme by beneficiaries through the revolving seed schemes will be twice the amount initially received as there will be no cost recovery on fertilizers. Therefore, the amount of seeds collected from

2 000 beneficiaries at the end of the crop season should be sufficient for distribution to 4 000 additional beneficiaries for the following seasons, making a total of 6 000 beneficiaries for this component. Appendix 2 presents detailed work plan.

Expected Outcomes

Within Spring 2009 implementation of the programme, a minimum of 2 000 beneficiaries in 3 districts at higher elevation will have improved the seed tubers quality and availability of well adapted existing varieties. Each beneficiary would have received a mini-kit of 100 kg seed Potato and 50 kg DAP fertilizer.

Community-based revolving seed schemes will have been established and the initial 2 000 beneficiaries of the seed/fertilizer mini-kits will have returned twice the amount of seeds received from the programme for further distribution to approximately 4 000 beneficiaries in the next planting season. A community level scheme for quality planting material production will have been established in each of the three selected potato growing districts at high and medium elevations

A significant number of seed/agronomy personnel selected from various Joma'at, participating NGOs and members of VDCs and some selected farmers trained to acquire Good Agricultural Practices (GAP), ICPM and basic seed production knowledge to be able to play their various roles and 2 000 beneficiaries would have received training in on-farm seed production technology.

Sub-Component I.2. Medium Term Agricultural Rehabilitation

A. National Seed Policy and Legislation

Rationale

The Government of Tajikistan has taken significant steps to develop a commercial agricultural sector. Achievements, though significant, have left much to be desired. The seed policy and legislation continue to reflect the centrally planned Soviet system, even if that system has been extinct for nearly two decades. Over the recent past many national and international organisations, including FAO, have been active in promoting a private seed systems, in particular for wheat and potato crops. However, the various activities in the seeds sector have managed to utilise certain loopholes in the existing seed legislation and policy to achieve their objectives.

The development of a sustainable private seed system requires a clear seed policy and legislation that fully defines the roles of various institutions, private and public at all levels. The clarity in purpose and agenda will encourage the private sector involvement and increase investment in such an important sector. In addition, the various government institutions will be able to clearly

understand and effectively implement their perceived roles and responsibilities, some of which are currently ambiguous. The revised seed policy and legislation will also highlight the type and level of expertise that will be necessary at all levels to develop the seed sector.

The revised seed policy and legislation will be in line with the International Plant Protection Convention (IPPC). Therefore, facilitating Tajikistan's accession into the IPPC, which will increase the country's access to various international scientific resources.

Purpose

This activity aims to develop an appropriate seed policy and legislation that would best reflect and serve the current and prospective agricultural strategy by reviewing existing national seed policy and legislation and proposing a revised policy and legislation.

Activities and inputs

The programme envisages the following activities to achieve the aforementioned purposes:

1. The assignment of an international seed specialist and legal expert to review the national seed policy and legislation – the international experts shall closely work with national experts on the subject;
2. Organise a national stakeholder workshop to review existing legislations and exchange views on the prospective seed policy and legislation;
3. Revise the seed policy and legislation, incorporating comments from the stakeholder workshop;
4. Organise a national policy forum with participation from relevant government institutions, NGOs, international organisations and others – to review the revised policy and legislation;
5. Present a final National Seed Policy and Seed Legislation document with details of implementation arrangements at national and sub-national levels to high level government stakeholders.

Inputs to cover costs of this activity are presented in Annex 2, Table 2.d.

Assistance to Crop Research Institute:

B. Assistance to Crop Research Institute, Potato Research Institute and Republic Quarantine and Seed Analysis Laboratory:

Rationale

A functioning and sustainable crop breeding research and its linkage to the seed programme is the first step toward a seed rehabilitation programme with far reaching effects on the production and distribution of seed. At present the

research programme in the country is inadequately equipped with weak linkages to seed production and multiplication efforts. However, the research staff are highly competent with significant experience, which is a great asset for the establishment of an effective seed system in the country.

The main purpose of this activity is to rehabilitate the basic technical and operational capacity of the concerned research institutes to produce foundation and pre-basic seeds and to ensure quality control according to standard certification procedures.

Certified seed proposed to be produced is destined for commercial distribution to a large number of farmers on a regional and national basis for the purpose of crop production. All steps involved in the production of foundation, pre-basic, basic and certified seed are undertaken under the control/approval of the officials in charge of certification. The production of quality seed is therefore the result of a complete chain of production activities, in which a mix of governmental, private staff and infrastructure leads to the production of the certified seed which is needed by the majority of farmers. A successful seed system requires efficient operations throughout the seed system chain. The private sector in Tajikistan is unable to undertake research and internalise all costs and benefits from research. However, the government sector is not an efficient player in areas where the private sector can internalise all costs and benefits of an investment. Therefore, the programme envisages a clear role for both the state and private sectors in the seed production system under the existing circumstance.

An efficient production chain not only provides certified seeds in the right amount and with the right physical and genetic quality, but also the varieties of quality seeds most suitable for the local agro-climatic conditions. A reliable supply of quality wheat and potato seeds, two most important staple crops in Tajikistan, will significantly contribute to improved food security.

Target Beneficiaries

Crop Research Institute, Tajik Academy of Agriculture Sciences (TAAS) and Institute of Plant Physiology and Genetics and Republic Quarantine and Seed Analysis Laboratory will be direct beneficiaries of this programme. Beside this a minimum of 350 members of the seed producer association (SPA) who will participate as contract seed growers in production of certified wheat and potato seeds.

Indirect beneficiaries of this programme will be the large farming community which, in the long-term, will benefit from better access to quality seed at reasonable prices.

Activities

To improve the capacity of Crop Research Institute, Tajik Academy of Agriculture Sciences (TAAS) and Research Institute of Plant Physiology for production of higher generation seed following activities will be initiated.

1. Draw up list of essential equipment needed;
2. Purchase of equipment by FAO according to FAO procurement rules and regulations and specifications;
3. Installation of the procured machinery and equipment;
4. Commissioning of the equipment and conduct 'hands-on' training for staff;
5. Identify suitable candidates from the institutes and seed laboratory for regional study tours and training of technicians within the country.
6. Arrange specialized training within and outside the country for the scientists and seed laboratory technicians, seed inspectors and agriculture instructors.
7. Integration of the activities of the institutes with the certified seed production programme
8. Implement follow-up activities with study tour participants to ensure that the lessons learned were implemented in the seed activities.

Inputs

Attachment-3 presents a list of equipment with technical specifications. Costs are presented in Annex 2, Table 2.d. Each institute shall receive a package of inputs presented in Table-7 below to upgrade its facilities and improve delivery of high quality foundation seeds to private seed producers and associations.

Table7. Equipment to make available to each beneficiary institute.

Name of the Institute	Inputs	Amount in USD
Research Institute of Plant Physiology and Genetics of the Tajik Academy of Agriculture Sciences (TAAS), Dushanbe.	**Non Expandable Equipment**	**38 000**
	Expandable Equipment	**34 200**
	Training*	**15 000**
		87 200
Crop Research Institute of the Tajik Academy of Agriculture Sciences (TAAS), Hissar	**Non Expandable Equipment**	**132 000**
	Expandable Equipment	**17 500**
	Training*	**9 000**
		158 500
Production of pre-basic seed	**Expandable**	**7 000**

Total	**252 700**

** 3-day training cost of the staff of Republic Quarantine and Seed Analysis Laboratory, see Annex 2, Table 7.*

Implementation Arrangements

The programme will enter into contractual agreements with the Research Institute of Plant Physiology and Genetics of the Tajik Academy of Agriculture Sciences (TAAS), Dushanbe and Crop Research Institute of the Tajik Academy of Agriculture Sciences (TAAS), Hissar for providing higher generation seed to ensure that seed of new and improved varieties are regularly available for use by the seed producer associations. Similarly arrangement for seed quality control inspection and testing will be made with Republic Quarantine and Seed Analysis Laboratory to ensure that high quality seed is produced.

The programme also envisages linking research laboratory with field by multiplying micro tuber into mini tuber and production of foundation seeds under micro propagation programme. It would result in the production of sufficient quantity of seed potato under disease-free environment. The present facility at Jirgital will receive technical assistance and initial operation costs of pre-basic potato seeds (micro and mini tuber production) covering 12 ha.

The programme aims to strengthen the selected institutes by providing equipment which are essential to carryout activities but not available with the institutes. Some of the essential equipment include seed planter, inter-row cultivation equipment, small harvester, portable seed cleaner, moisture meter, weighing scale and seed packaging material to crop research institute and Micro centrifuge and rotor, balances, incubators, microscopes, thermal cycler and glassware, etc. The Swedish International Development Assistance (SIDA) has provided adequate equipment to the Seed Testing Laboratory to ensure seed testing in the country. The proposed programme envisages training of the seed analysts and technicians.

Expected Outcomes

Linkage of higher generation seed production activities of the Agricultural Research System with wheat and potato seed producer associations' activities established and strengthened. This linkage will ensure the sustainability of the research centre as well as a functioning seed system in the country.
A fully equipped and functioning basic wheat seed production centre established at Hissar as part of the national Quality Seed Production Programme.

A fully equipped and functioning Tissue Culture Laboratory with trained staff and adequate micro tuber production capacity as part of a national plan.

C. Formation of Wheat and Potato Seed Producer Associations

Rationale

The main purpose of this activity is to strengthen national capacity to produce certified wheat and potato seeds through the formation of Seed Producer Associations (SPAs). Seed technology is a technical enterprise requiring additional skills and resources, which require pooling technical and other resources among farmers as an association. The PSA will allow many farmers to benefit from economies of scale and provide a sustained and reliable source of high-quality seeds.

The other important purpose is to enhance the capacity of local farmers to adopt suitable high-yielding agricultural technologies.

Farmers use year-fter-ar seed saved from the previous crop and, therefore, seed replacement rate is very poor. Poor seed of degenerated and disease-susceptible varieties is a major cause of low yields. The programme is particularly directed at increasing farm-level productivity through the use of high quality seed of high-yielding varieties of crops suited to the local environment.

Target Beneficiaries

350 farmers (250 for wheat and 100 for potato) who will participate as contract seed growers in the rehabilitation of the production chain of certified seeds of wheat and potato. These farmers will be selected based on the following criteria:

- Belonging to vulnerable groups such as Dehqan and small household farmers;
- Selection endorsed/approved by members of his/her own village development committee (VDC);
- confirmed capacity to produce certified quality seed (availability of land, water, etc.);
- interested to acquire technical knowledge in crop/seed production;
- capacity/interest to participate in training sessions on certified seeds production;
- Commitment to abide by the terms and conditions of the contract seed grower schemes.

Activities

The following activities have been envisaged to achieve the objectives of programme and to effectively target relevant beneficiaries.

1. Organisation of preliminary meetings between FAO and relevant NGOs having capacity to carryout the certified seed production activities under formal seed production system;

2. In consultation with relevant counterparts, selection of the most suitable NGOs;
3. Preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this programme component;
4. finalise modalities for the participation of VDCs in programme implementation;
5. Organization of a programme inception workshop with the participation of main stakeholders from Ministry of Agriculture (MoA), Tajik Academy of Agricultural Sciences (TAAS), FAO, NGOs. Seed Association of Tajikistan (SAT) and the private sector;

Based on the workshop recommendations and proceedings:

6. A Programme Steering Committee (PSC) is formed to supervise the overall implementation of this programme. The PSC will be composed of designated representatives of the Ministry of Agriculture (MoA), FAO and its Implementing Partners, and the Donor;
7. Seed production and certification procedures in line with the revised "National Seed Policy" and "Seed Act" are established**.**
8. Formulation of a standard seed grower contract approved by the programme steering committee (PSC) for the 350 beneficiaries involved in the production of certified seeds of wheat and potato.
9. Rehabilitation of a basic technical and operational capacity at the level of Crop and plant physiology institutions and seed lab to produce higher generation seed and to ensure quality control according to standard certification procedures;
10. Purchase of equipment and inputs by FAO according to FAO procurement rules and regulations and specifications;
11. Installation of the purchased equipment in the institutes;
12. Formation of 10 wheat seed producer association with 25 members each and 5 potato seed producer association with 20 members each and strengthening the capacity of seed producer associations (SPAs) to produce certified seeds;
13. Purchase of seed processing and cleaning equipment and other inputs by FAO according to FAO procurement rules and regulations and specifications
14. Install seed production, conditioning, handling and storage equipment and facilities at strategic locations;
15. Arranges supply of the pre-basic or basic seed to seed producers to produce targeted quantity of certified seed.
16. Draw up programmes for specific training of relevant personnel and arrange the conduct of the training sessions at selected locations in collaboration with all programme partners;
17. Technology transfer on Good Agricultural Field Practices (GAFP) for crop and seed production in the districts surrounding the programme focal points through training of trainers and seed growing farmers;
18. National Professional staff and manager prepare a Train-the-Trainer programme for seed producers, agronomist, NGO staff and leading

farmers to emphasise the principles of the Farmers' Field School approach to technology transfer;

19. Participatory Farmer Training (Farmer Field School model) provided to selected participants on improved crop management, Integrated Crop and Pest Management (ICPM) and certified seed production of wheat and potato crops;
20. Maintain a follow-up programme to ensure the successful receipt of the technical transfer messages;
21. Direct particular attention to those seed producers enrolled themselves as members of seed producer association (SPA) to produce certified seed under contract;
22. Ensure that contract seed producers are fully trained in all aspects of the production of quality non-cereal seeds;
23. Identify suitable candidates from the staff of implementing partners and leading seed producers for regional study tours and make arrangements for study tours;
24. Implement follow-up activities with study tour participants to ensure that the lessons learned were implemented in the national seed activities.

Inputs

Tables 8 and 9 below respectively show the type and amount of assistance 10 wheat and 5 potato seed producer association would receive under the programme. Details of all costs and assumptions are presented in Annex 2, Tables 2b and 2c.

Table 8. Value and quantity of inputs received by 10 Wheat Seed Producers Associations (250 members)

Association	Inputs	Amount(USD)
Wheat Seed Producers Association	Basic Wheat Seed	75 000
	Fertilizer DAP	15 000
	Urea	7 500
	Non Expandable Equipment	88
	Expandable Equipment	94 000
	Training	156 000
Total		347 588

Table 9. Value and quantity of inputs received by 5 Potato Seed Producers Associations (100 members)

Association	Inputs	Amount(USD)
Potato Seed Producers Association	Basic Potato Seed	300 000
	Fertilizer DAP	6 000
	Urea 100 kg	3 000
	Non Expandable Equipment	1 500
	Expandable Equipment	94 000

	Training	**156 000**
Total		**554 506**

Implementation Arrangements

This activity will be implemented in line with policies of the Government of Tajikistan with regard to certified seed production and quality control inspections. On that basis, FAO will act as the implementing agency and will manage this programme in line with FAO rules and procedures for programme implementation. This activity will be implemented through the services of suitable NGOs who will act as programme implementing partners.

At field level, the programme will be coordinated by a national consultant Programme Coordinator who will have extensive experience in seed programme development, under the overall responsibility of the FAO's Emergency Coordinator and technical units which will provide the adequate follow-up through backstopping missions and general supervision. The agronomists employed by the Joma'at administration will ensure the necessary technical assistance in formation of associations and in technical aspects.

Crop Research Institute, Plant Physiology Institute and Seed Lab will facilitate access to baseline information as required to support programme implementation.

Seed certification will follow national rules and procedures in line with the National Seed Policy to ensure the certification of seeds of genuine certified quality. Pre-basic and basic seeds will be procured from concerned institutes of TAAS. For a quick start of programme activities within the first 12 months of programme implementation, a first delivery of basic seed will be purchased by the programme from existing sources within the country or outside the country. Certified seeds will be produced by the contract seed producers according to the National Seed Policy and Seed Act, and the fundamental principles guiding the formulation of seed producer contracts will be discussed and approved at the programme inception workshop.

Certified seeds produced through the programme will be commercially distributed through marketing channels agreed by SPA, NGO and VDC. The detailed procedure will also be further discussed and agreed upon by all programme stakeholders at the programme inception workshop. The programme will provide the initial inputs fertilizers, registered seeds, chemicals, tools and bags on a cost recovery basis to the 350 contract seed producers. The recovered costs will become part of the Association's assets. Meanwhile, considering that most of contract seed producers will not have the capacity to make the initial investment for the payment of these inputs, cost recovery will take place only at the time of marketing the certified seeds that they have produced.

Certified Seed Revolving Fund will be managed by a committee composed of the following members:

At Association level

On behalf of the Government of Tajikistan: Government Agents, preferably Agronomist of concerned Joma'at to oversee the functioning. He/she will not be a signatory of the bank account.
On behalf of contract seed producers: Three representatives of the concerned association.
The committee will open a special bank account with at least two signatories of association for this particular purpose.
The partner NGO will assist the SPA in management of its assets, group dynamics and other technical issues. Modalities of cost recovery procedures will have to be discussed and agreed upon between programme stakeholders at the programme inception workshop. NGO/IP will assist the SPA to manage the funds.

Expected Outcomes

Community-based seed producers schemes with a total of 350 trained contract seed growers will have been established to produce certified quality seeds.
Programme will also contribute to the establishment of commercially viable seed producers' cooperatives to be further developed in the long-term.
Programme National Professional staff, IP staff and leaders from SPAs trained as trainers to lead the training and implementation of the Farmers' Field Schools programme. At least 3 000 farmers involved in a Farmers' Field School programme in the use of current on-farm seed production techniques and to increase the awareness to use quality seeds of improved varieties.

Component II: Home-Based Livestock Rehabilitation

The overall objective of this component is to strengthen sustainable livelihoods and food security of vulnerable resource poor households -with a clear focus on women-headed households- by enhancing the productivity of their livestock through improved management practices, inputs and marketing opportunities.

The following two sub-components are envisaged under this component:

Sub-Component II.1. Poultry

This sub-component aims to improve the livelihoods, food security and nutrition of some of the most vulnerable and food insecure households in rural areas through distribution of improved brooding hens coupled with training on better poultry management under local home-based semi-intensive conditions.

Rationale

Village poultry production addresses both food insecurity issues and the income generation needs of the households. Poultry provide scarce animal protein and can be sold or bartered to generate income. For example, eggs are

an ideal complementary food for children in that they are a hygienic source of high quality protein and vitamin A. Poultry also provide soil nutrients for use on household garden plots. Village poultry require the lowest capital investment of any livestock species and production can begin in a relatively short period of time.

Issues of priority for improving production levels of village poultry systems include:

- Appropriate feeding
- Disease prevention
- Managing input supply (feed, medications, and vaccines)
- Marketing of products

These needs can be addressed through:

- Production of appropriate technical reference materials
- Effective training programs conducted by women
- Active extension services
- Organization of poultry producers for training, input supply, and marketing

In 2006 some 77% of the total poultry population of 2.6 million birds was owned by private household farmers. The system of poultry rearing in rural areas can be termed as "backyard scavenger poultry production" . The system is characterised by low inputs and low outputs. There is insufficient awareness about proper feeding, hygiene, diseases and vaccination, housing etc. Input supply and veterinary or extension services are non-existent or poorly developed. As a result poultry productivity levels especially under village conditions are very low. On top of this the last harsh cold period in January /February 2008 has caused severe damage especially to the poultry of the most vulnerable and resource poor sections of the rural population, among them women-headed households (landless or with small garden plot or "presidential land").

At the same time about 70% of all poultry products (egg , meat) are imported from outside suggesting that there could be a great opportunity for local producers –including organised village poultry producer groups / associations- to fetch a bigger market share than is currently the case.

The proposed programme under this sub-component envisages the introduction of bio-secure poultry production system in the villages. The recent outbreaks of Avian Influenza (AI) in a number of countries, thankfully not in Tajikistan, have made it more urgent to ensure bio-security production systems are introduced throughout the system. This will be a great opportunity to introduce bio-secure production methods in home-based poultry production, which will also have significant demonstration effects. The concept proposed here includes the following key elements of breeding stock multiplication (by Model rearers) and egg/meat production (by 'key rearers') at village level :

- Introduction/purchase of improved, suitable birds from specialised breeding farms- well-tested and adapted species;

- Training of 'specialised' village poultry production households at village level:
  a) Model Rearer: produces hatching eggs; brooding, hatching, rearing breeding hens / cocks;
  b) Key Rearer: production of table eggs, meat for consumption
- Brooding hens are used instead of hatcheries
- Poultry is kept under confined, semi-intensive management system
- Vaccinations, health care, advice is provided preferably by specially trained women, or if not available by private veterinary service.
- Organisation of women into 'poultry producer groups' could allow for more cost effective input supply / product marketing.

Target Beneficiaries

The main target beneficiaries are resource-poor, food insecure and vulnerable households with the priority given to vulnerable women-headed households. The target beneficiary should also have an interest in poultry rearing and willing to invest their time in this activity. The selected beneficiaries should also agree with the clause that they will give 20 one-month old chicks to the VDC, who will in turn distribute it to other vulnerable households in the village. The initial beneficiaries will also act as instructors bio-secure production systems to other households.

Activities

The following activities have been envisaged for achieving the objective and to effectively target relevant beneficiaries:

- Identify and contract FP (National /International NGO)
- Planning workshop with all relevant stakeholders
- Prepare steps for procuring inputs (specifications, identify suppliers, tendering)
- Survey target villages to identify and select direct beneficiaries in consultation with VDC;
- Prepare for preventive measures/contingency plan against AI in collaboration with Governent Veterinary Services and FAO-AI Programme staff in the planned target areas;
- Select and train poultry field officers (women) as master trainers and supervisors for village poultry development;
- Prepare appropriate training modules, covering technical and management aspects of home based smallholder poultry production activities (breeding; feeding; vaccinations & health care including AI; housing; input supply and product marketing);
- Carry out initial and follow up trainings according to FFS approach;
- Construction of Improved chicken sheds at beneficiary households;
- Reception and transfer of inputs to distribution points;

- Distribute "Starter Package" to poultry breeders (Package: 1 rooster & 19 chicks of 2 months of age; supplementary feed for about 3-4 months; vaccinations; material for poultry shelter);
- Regular vaccination and treatment campaigns for poultry of participating and other households in target areas;
- Additional training workshops for group leaders for strengthening management capabilities of Producer Groups.

Attachment 4, Table 1. shows detailed work-plan for this sub-component indicating the main activities, responsibilities and timing of their implementation.

Inputs

Each primary beneficiary household will receive a package of inputs as specified in Table 10 below on condition that after one year at the latest they will return 20 chicks to the VDC which in turn will redistribute 20 chicks to other eligible beneficiaries within their community (Revolving Fund approach).

Table 10. Household Improved Poultry Package

		Unit Cost			
Item	**Unit**	**Som /1**	**USD**	**Qantity**	**Value**
Improved Chicks/2	head	14	4	20	82
Vaccinations /3	LS/head	1	0	20	6
Mixed feed /4	kg		1	50	25
Support for coops construction /5	LS				
-Poles	piece		2	8	16
-Feeder	piece		5	1	5
-Drinker	piece		5	1	5
-Wire mesh /6	meter	12	4	10	35
Total					**175**

Note:

1 ɔE: 1 USD = Somoni 3.40

2 19 females/1 male, 2-month old, improved breed from local breeding farms

3 vaccinations on breeding farm before delivery to project

4 Assumed about 2.5 kg per head for up to 100 days

5 Size: 4sqm x 2.5m high; beneficiary: to contribute material like wood etc; to contruct coop according to design by Project.

6 width of 1.5 m

Besides above inputs the Programme would envisage the following training inputs:

1. Women beneficiaries will undergo a series of 1-day trainings along the principles of the Farmer Field School (FFS) approach. The training would cover among others: aspects of bio-secure management of chicken at household

level; poultry hygiene; disease detection; vaccination; feed preparation and feeding; housing/shelter; etc.
2. This will be preceded by an intensive (about 20 days) training of trainers on participatory training tools along the FFS concept, and technical aspects of improved poultry management.
3. In support of decentralised decision making VDC staff will receive training on Programme Cycle Management, Participatory Planning, Monitoring, Reporting, Revolving Fund, etc. ; three one-day trainings per person are assumed.

For estimated unit cost per training refer to Annex 2, Table 7.

Implementation Arrangements

This activity will fall under the portfolio of the FAO regional coordination office, Duschanbe. A national resource person /Livestock Specialist recruited for this Programme will be responsible for: supervision of the FP's field programmes, technical and managerial backstopping, coordination with other stakeholders at national level.

For implementation of field activities FAO will first recruit a Facilitating Partner NGO. Primary roles of FP include to:

- Identify locations (Jamoats /Villages) for Programme operations in the designated target districts
- Collaborate with local communities (eg VDCs where they exist) in the Programme areas to develop and transfer information on Programme activities to rural communities;
- Identify and select eligible beneficiaries for Programme activities following an agreed protocol of selection criteria (in consultation with VDCs or other local community organisations),
- Prepare detailed annual work programme / budget for assigned tasks in collaboration with VDCs, farmer group representatives and MOA/SVD provincial officers;
- Recruit, train, and supervise qualified field staff/trainers in their Programme area (intensive training of trainers from the target Jomaáts);
- Organise training for beneficiaries and provide technical assistance to communities during implementation;
- Contract trusted and known breeding farms to provide 2-mont old chicks with all the necessary vaccination already applied;
- Procure poultry feed and poultry health kits;
- Coordinate the supply and distribution of pre-defined kits to beneficiaries;
- Supervision of target beneficiaries by field staff at least once per week;
- Maintain records of physical and financial activities;
- Monitor and report on progress,

For provision of veterinary services on cost basis the Programme will collaborate as appropriate with the network of VFUs (run by FAO and various NGOs) and/or with the district level units of the SVD. In order to contain the

risk of spreading of Avian Influenza (AI), the Programme will have direct links with the WB-funded AI Programme.

With the aim to strengthen the role and responsibilities of local communities in the development of rural livelihood systems -here poultry development- the FP will be required to carry out field activities through active involvement of VDCs or farmer organisations where they exist.

Private sector will be involved directly through the supply of required inputs such as birds, feed, vaccines and treatments, etc.; the possible organized marketing of poultry and poultry products at certain demand centres.

In order to benefit from other Programme's experience, there is great need for close coordination /information exchange, which could be pursued eg through regular coordination meetings, occasional workshops, seminars, etc. This will be pursued through the Programme Implementation Support Unit (PISU) at central and provincial levels.

Distributing poultry packages to beneficiaries

When deciding on the number of households per village to be included in the initial distribution of the "poultry package", priority should be given to the aspect of having a sufficiently big 'critical mass' of poultry households per village or cluster of neighbouring villages to support the creation of women producer groups and hence the development of a sustainable poultry producer association.

Expected Outcomes

- Direct and indirect Programme beneficiaries will increase their number of birds leading to improved food security, livelihood opportunities and improved nutritional status through increased production of eggs and meat;
- An adapted semi-intensive , bio-secure system for producing hatching-eggs and rearing chicks will be sustainable under local village conditions;
- Greater awareness among women poultry owners on improved poultry production practices and on issues of input supply and marketing;
- Capacity of local communities to plan and manage the rehabilitation and development of livestock as a key pillar of rural household economies will be strengthened through active involvement of VDCs, groups of women beneficiaries, and district authorities;

Sub-Component II.2. Sheep & Goats

This sub-component aims to support vulnerable and resource poor households in rehabilitating sheep and goat assets as an important element in their livelihood system and at the same time to raise productivity levels of their sheep and goats through improved management and husbandry practices.

Rationale

Small ruminants form an important livelihood asset for the majority of Tajikistan's rural households, providing nutrition, income, and serving as 'bank' or buffer in times of social, natural or financial emergency situations. This is particularly true for resource poor small-scale farms, among which women-headed households are particularly vulnerable.

About 77% of Tajikistan's 3.2 million sheep and goats are kept under low-cost management systems in small flocks on small-scale household farms (SSA, 2006). Breeds of sheep are mainly fat tailed and suited for meat production.

Sheep and goats generally go to summer pastures for the summer, returning to village pastures for the winter period, except in some cases where the owners cannot afford the costs of shepherding. In these situations, the animals are kept on overgrazed village pastures all year round. As a result of deteriorating carrying capacities of winter pastures and insufficient quantity and quality of winter fodder animals usually pass the winter at about half of what would be their normal winter feed requirements, thus ending the winter period in an emaciated body condition. The imbalance between winter fodder production and summer grazing resources is a major constraint to production (Table 11)

Table 11. Seasonal Livestock Fodder and Grazing Resources

Winter Fodder	**100 000 ha**	**Arable land, in village**
Early Winter Pastures	**1 139 000 ha**	**Medium altitude, far from village (300-500 m asl)**
Spring/Autumn Pastures	**411 000 ha**	**Low altitude, near village (200 m asl)**
Summer Pastures	**1 535 000 ha**	**High altitude, far from village (500-1000 m asl)**

Source: GOSCOMSTAT

Productivity is very low as a result of this inadequate nutrition. Low lambing percentages and long conception periods severely reduce the number of progeny born per year. In 2004 sheep on state farms reared about 70 offspring for 100 ewes (with a range of 57-90 between Oblasts), and goats reared 125-130 offspring per 100 ewes. (There are no equivalent performance records for private farms). The poor condition of breeding stock also results in low birth weights, and increased mortality, and growth rates are low for the animals that do survive.

Inappropriate management practices exacerbate the problems created by under nutrition, and further reduce production and productivity. Mating occurs all year round, rather than being timed to ensure that birth coincides with spring pasture growth; and females are allowed to mate too young. Bad housing, with

inadequate ventilation also increases the risk of disease. Selected indictors of livestock productivity are presented in Table 12 below.

Table 12. Productivity Indicators from State Farms in Tajikistan

	Sheep	Goats
Progeny reared per 100 females mated (N)	**70**	**125-130**
Birth Weight (kg)	**3**	**2.5**
Age at weaning (Months)	**3-4**	**2.5-3**
Live weight at weaning (kg)	**10-12**	**8-10**
Growth rate (grams /day)	**69**	**65-78**
Age at slaughter (years)	**1.5**	**n.a.**

Source: GOSCOMSTAT

Poor nutrition and management also pre-dispose to animal disease and contribute to high livestock mortality rates. Pasteurellosis, pox and parasitic worms are present in sheep and goats. Mortality levels are unknown. Brucellosis and parasites are the main causes of low productivity. Helminths are the main internal parasites, including flat worms and gastro-intestinal roundworms.

Shortages of vaccines impede disease control, and clinical veterinary service is not adjusted to treat the majority of livestock kept by a large number of small-scale private households.

The recent extreme cold spell during winter 2007/2008 has hit an already very weak animal population. Losses in sheep and goats are estimated at about 4%, corresponding to an estimated total value of USD 11.7 million in the country.

The present proposal is based on the following guiding principles for its implementation. They include:

- A focus on women and women-headed households;
- To avoid / reduce overgrazing;
- To increase animal productivity (=performance per animal) and not just animal numbers;
- To create awareness about the use of modern low-cost technologies in small ruminant production;
- To support/strengthen farmer based institution building whenever meaningful;

Under the proposed rehabilitation programme, beneficiaries receiving sheep/goats will therefore be advised to keep animals at their household under improved feeding, husbandry and disease management. This is expected to result in a significant rapid increase in output.

Target Beneficiaries

Targeted beneficiaries would be women in vulnerable and resource poor households having limited or no access to grazing areas away from their homesteads during spring ,summer, autumn. Typically they should be mixed crop-livestock smallholders, i.e. having a household plot, kitchen garden, or small 'presidential plot' thus allowing to add value to manure from their animals.

There will be indirect beneficiaries also receiving sheep/goats through revolving of offspring returned by primary beneficiaries.

Other stakeholders like VDCs, public or private health service, DOA district level authorities will benefit from capacity building activities in the targeted communities.

Activities

The following activities are envisaged for achieving the objective and to effectively target relevant beneficiaries:

- Identify and contract FP (National /International NGO)
- Planning workshop with all relevant stakeholders
- Prepare steps for procuring sheep/goats (identify suppliers, tendering)
- Survey target villages to identify and select direct beneficiaries in consultation with VDC;
- Prepare training modules for smallholder sheep and goat production covering technical and management aspects (controlled breeding; feeding; fodder conservation; community management of village pastures; vaccinations & health care; housing; organising livestock owners for better access to micro credit, inputs &services, product marketing);
- Carry out initial and follow up trainings according to FFS approach ;
- Reception and transfer of sheep and goats to distribution points;
- Distribution of ewes or does to beneficiaries (2 head per beneficiary);
- Regular vaccination and treatment campaigns on cost basis for sheep/goats of participating and other households in target areas
- Organisaton of participating and other livestock owners into interest groups (including election of group leaders) for cost effective access to inputs & services and improved marketing.
- Train VDC staff on participatory planning, revolving fund management, monitoring and reporting of field activities, etc. ;
- Additional training workshops for group leaders for strengthening management capabilities of livestock producer groups.

Attachment 4, Table 2 presents detailed work plan, including main activities, responsibilities and timing of their implementation.

Inputs

Each woman beneficiary will receive either 2 ewes or 2 goats depending on her preference. The animals are handed over after being vaccinated and treated against internal parasites. Cost of the sheep/goat support package are shown in Table 13 below. The initial beneficiary will agree to return 2 weaned lambs (about 3 months old) to the VDC which in turn will be redistributed to other eligible beneficiaries within their community (Sheep/goat banking approach.)

Table 13. Household Sheep & Goat Package and costs

Item	Unit	Unit Cost Som /1	Unit Cost USD	Qantity	Value
Sheep or Goat Breeding Female /2	head	300	88	2	176
Quarantine of 3 days /3	LS /head		3	2	6
Total					**182**

Note:
1 1 USD = Somoni 3.40
2 2 females per beneficiary household,(sheep or goat; age about 1 year)
3 Includes feeding, deworming, vaccination during 3 days quarantine

A package of training activities will complement the above in order to strengthen livestock owners' capacity to increase sheep and goat productivity. The following training inputs are planned:

1. Women beneficiaries to follow several 1-day training sessions along the principles of the Farmer Field School (FFS) approach. The training includes among others: Hygiene; disease detection; vaccination; feeding and winter fodder preparation; housing/shelter; breeding, etc.
2. This will be preceded by an intensive (about 15 days) training of trainers on participatory training tools along the FFS concept, and technical aspects of improved management of small ruminants;.
3. In support of decentralised decision making VDC staff will receive training on Programme Cycle Management, Participatory Planning, Monitoring, Reporting, Revolving Fund, etc. ; three one-day trainings per person are assumed.

For estimated unit cost per training refer to Annex 2, Table 7.

Implementation Arrangements

This activity will fall under the portfolio of the FAO regional coordination office, Duschanbe. A national resource person /Livestock Specialist recruited for this Programme will be responsible for: supervision of the FP's field

programmes, technical and managerial backstopping, coordination with other stakeholders at national level.

For implementation of field activities FAO will first recruit a Facilitating Partner NGO. Primary roles of FP include to:

- Identify locations (Jamoats /Villages) for Programme operations in the designated target districts;
- Collaborate with local communities (e.g. VDCs where they exist) in the Programme areas to develop and transfer information on Programme activities to rural communities
- Identify and select eligible beneficiaries for Programme activities following an agreed protocol of selection criteria (in consultation with VDCs or other local community organisations),
- Prepare detailed annual work programme / budget for assigned tasks in collaboration with VDCs, farmer group representatives and MOA/SVD provincial officers;
- Ensure recruitment, training, and supervision of technical field staff/trainers in their Programme area;
- Organise training for beneficiaries and provide technical assistance to communities during implementation;
- Coordinate the supply and distribution of inputs (animals) and services to beneficiaries;
- Maintain records of physical and financial activities;
- Monitor and report on progress.

For provision of veterinary services on cost basis the Programme will collaborate as appropriate with the network of VFUs (run by FAO and various NGOs) and/or with the district level units of the SVD.

With the aim to strengthen the role and responsibilities of local communities in the development of rural livelihood systems the FP will be required to carry out field activities through active involvement of VDC s or farmer organisations where they exist.

In order to benefit from other Programme's experience, there is great need for close coordination /information exchange, which could be pursued eg through regular coordination meetings, occasional workshops, seminars, etc.

Expected Outcomes

The following outputs are expected as a result of the activities of this sub-component:

-Beneficiaries are following better management practices for their sheep / goats in terms of feeding, disease prevention & treatment, housing and hygiene, breeding, marketing,

-Through farmer-interactive-exchange and demonstration activities, other households in the community have taken up sheep or goat rearing ;

-beneficiaries recognise the opportunities (income, food security, banking, etc) and threats (overgrazing, morbidity /mortality, etc) of investing in sheep& goats,

-household beneficiaries and other livestock owners are in a better position to actively participate in regular VDC meetings and to contribute to decentralized planning at Jamoat level of livestock related development issues.

-livestock owners are better prepared to mitigate future stress situations for their animals resulting from adverse weather conditions,

-Community based organisation like VDCs can promote / facilitate improved delivery of inputs& services to livestock owners on cost basis (animal health, extension, marketing, management of near village pastures)

COMPONENT III: Small-Scale Irrigation Rehabilitation

The overall objective of this component is to strengthen sustainable livelihoods and food security of vulnerable resource-poor households by enhancing the productivity of their farms through rehabilitation and development of Small-Scale Irrigation and improving water use efficiency and management.

The following sub components are envisaged under this component:

A. Small-Scale Gravity Irrigation

This sub-component aims to increase agricultural output by rehabilitating and constructing small-scale gravity irrigation in areas with appropriate sources of water that can be easily tapped. These irrigation structures will be entirely under the management of the beneficiary communities. In addition, the programme under this sub-component will provide training to farmers through the Farmer Field Schools (FFS) in efficient water use, Integrated Crop and Pest Management (ICPM) and the formation of Water User Associations (WUA).

Rationale

Much of the irrigation systems in Tajikistan is large-scale and in practice continues to be under the state management in various forms. These structures are in a dilapidated state with very high and inefficient use of energy and significant water losses. The small-scale irrigation structures have, by and large, been given to the farmer management. These structures are practically neglected and most of the farmers do not have adequate resources to rehabilitate them.

Yields from irrigated areas are nearly triple those of rainfed and in some areas crop production without irrigation is not at all feasible. In addition, irrigation will allow a second and third crop, therefore increasing income per unit of land and effort. Irrigation also makes it feasible to increase area under high-value cash and food crops. Irrigation, in Tajikistan has the highest impact on reducing rural poverty, where the backbone of the economy is agriculture. In addition to supplying irrigation water to areas with partial or no irrigation, the programme envisages training, using the FFS model, in improving water use efficiency and improved crop and pest management (ICPM). The programme also envisages assistance in the formation of WUAs in the target areas to improve water management and coordinate farming activities based on water availability.

In rocky and sandy areas, the use of PVC pipes will be necessary to transport water from a source to the field. This model is presented in Figure 1.b. below.

Target beneficiaries

This Sub-component will target beneficiaries and areas based on the following criteria:

- Each irrigation structure should at least serve 20 farmer households;
- The source of water should have water for at least 7-9 months per year;
- Diverting the flow of water should not directly and heavily penalise other users downstream;
- Investment costs for the structure (rehabilitation and new) should not exceed the envisaged costs (see Tables 14-16 below);
- Farmers should be willing to contribute labour and some local material to the envisaged works and be willing to form WUAs and provide the necessary resources for operation and maintenance (O&M);
- The target beneficiaries should be food insecure and vulnerable households.

Activities

The following activities have been envisaged to achieve the objectives of this sub-component.

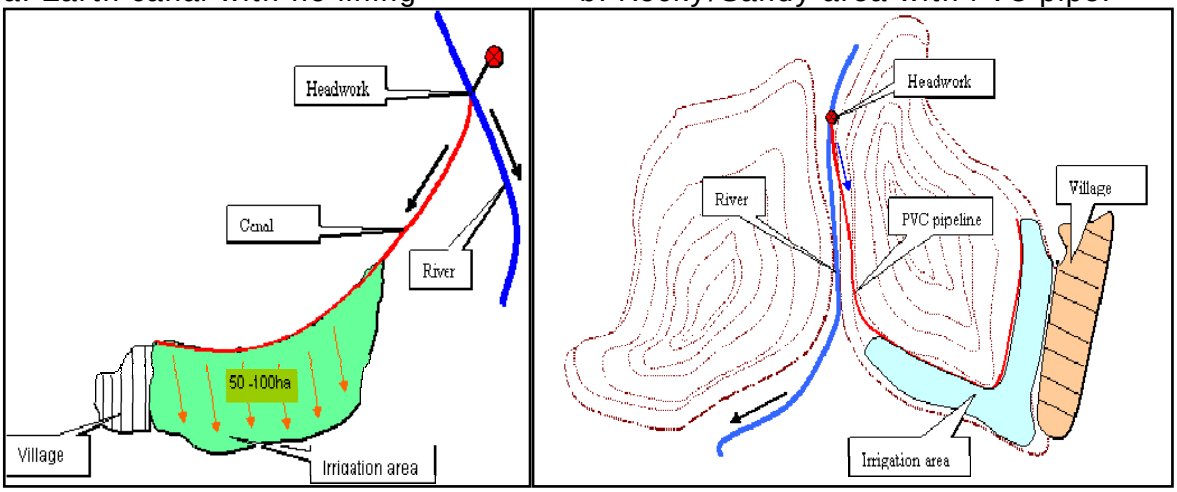
- Identification of project implementation area that meet the aforementioned criteria.
- In collaboration with VDCs, local Hukumat, State Water Management Unit, local irrigation and land management specialists assess the feasibility to increase water intake from existing water source.
- Planning meeting with all relevant stakeholders and VDC representatives, direct beneficiaries to assess operation and maintenance of the structures, water use efficiency, beneficiary contribution for works and the establishment of WUAs.
- Hiring a qualified local supervisor-engineer.
- Survey and design in close coordination with local Hukumat and State Water Management Unit.

- Assess the feasibility of using Food For Work (FFW) and Cash for Work (CFW) in collaboration with the World Food Programme for labour use.
- Sub-contract the civil works on the basis of open bidding.
- Initiate the envisaged works.
- The field engineer together with target beneficiaries and the VDC shall constantly monitor the envisaged works.
- Conduct training on efficient water use, ICPM, O&M and WUAs.
- Assist in the registration of WUA in the provincial government.

Detailed rehabilitation activities and timing of their implementation provided in Attachment 1. Figure 1 below shows the gravity irrigation model.

Figure 1. Small scale-Gravity Irrigation Models

a. Earth canal with no lining b. Rocky/Sandy area with PVC pipe.



Inputs

Table 14 below provides the costs of rehabilitating an existing but dysfunctional small-scale irrigation structure. Table 15 provides costs of building a small-scale gravity irrigation structure. Each structure will, on average, irrigate some 50 hectares of land belonging to at least 20-30 vulnerable and resource-poor farmers. Table 16 presents average cost of a gravity irrigation structure in rocky/sandy areas using a PVC pipe to transport water from intake to the field. Each one of these structures will be able to irrigate some 30 hectares of land. Detailed aggregate costs for these activities are provided in Annex 2, Table 4.a.

Table 14. Average costs of rehabilitating a small-scale gravity irrigation (50 Ha)

				In USD
Item	**Unit**	**Qty**	**Unit cost**	**Total cost**
Buldozer works in water intake area for improving of water intale from small river, including buldozer delivery to the work place located in a distance of 20km	m^3	150	0.7	105
Rehabilitation of metall gate size 80x150cm	piece	1	200	200
Concreate works on headwork rehabilitation	m^3	2.5	200	500
Manual canal cleaning and widening within the average length of canal 7 km	m^3	3500	2.5	8750
Total				**9555**

Table 15. Average costs of constructing a small-scale gravity irrigation (50 Ha)

ction expenditures				**In USD**
Item	**Unit**	**Qty**	**Unit cost**	**Total cos**
Topographic survey and designing	lump sum			500
Buldozer works in water intake area for improving of water intake from small river, including buldozer delivery to the work place located in a distance of 20km	m^3	250	0.7	175
Metall gate size 80x150cm	piece	1	300	300
Construiction of concreate headwork structure	m^3	5	200	1,000
Manual earthworks on canal construction with average length of canal 7 km	m^3	8400	2.5	21,000
Total				**22,975**

Table 16. Average Cost of Constructing a small-scale irrigation, PVC pipe (30ha)

				In USD
Item	**Unit**	**Qty**	**Unit cost**	**Total Cost**
Topographic survey and designing	ls			500
Intake structure, bulldozer earth works	m^3	50	0.7	35
Intake structure, manual earth works	m^3	20	2.5	50
Headwork concrete works	m^3	2	220	440
Metal parts of headwork (gate, trash rack)	tn	0.1	1800	180
PVC pipe dia 100 mm, t=4mm	m	3000	4.1	12,244
PVC pipe welding and mounting	m	3000	1.0	3,000
Manual earth works along pipe line	m^3	234	2.5	585
Total				**17,034**

Implementation Arrangements

Component V presents details of programme implementation support, which also includes the overall implementation and management of this component. In addition to the overall management issues, the following activities shall be considered to achieve the objectives of this sub-component.

The Programme Implementation Support Unit (PISU) through its irrigation specialist will ensure the following:

- Identify and select appropriate implementing partners (IP) for works;
- Organise meetings with target beneficiaries, VDCs, Hukumat (Local government), Districts State Water Management Units, and the IPs to select target areas and ensure that conflicts on water rights are not overlooked;
- Enter into agreements with target beneficiary groups, VDCs and the Hukumat on rights and obligations for the planned irrigation structure;
- Award a contract for the envisaged works to selected IPs;
- Identify and employ a local field engineer to monitor and implement the envisaged works,
- Organise a detailed plan for the various trainings in close collaboration with other members of the PISU, VDCs and the target beneficiaries;
- Register the WUAs in relevant government institution;
- Frequent monitoring and supervision of the works in all project areas.

The field engineer will be responsible for:

- Closely coordinate all activities with FAO irrigation specialist.
- Report to PISU on the implementation progress and process;
- Assist the VDCs, Hukumat and other stakeholders in the selection of appropriate project areas;
- Provide support to engineering design and survey for the envisaged works;
- Conduct and prepare on-farm irrigation trainings and O&M;
- Prepare detailed contracts for IPs on specific works;
- Continuously monitor and supervise the works implemented by IPs;

Expected outcomes

Successful implementation of this component is expected to result in:

- A total of 23 small-scale gravity irrigation structures would be rehabilitated and 14 new structures will be constructed;

- In rocky/sandy areas a total of 14 small-scale gravity irrigation will be constructed using PVC pipes;
- A minimum of 1 600 most vulnerable and resource-poor farm households will have increased their agricultural production and hence improved their livelihoods and food security within medium to long-term;
- A total of 2 270 hectares of rain-fed or under-irrigated land would come under reliable and low-cost irrigation resulting in about 5 800 MT of wheat equivalent incremental output per year (assuming a second crop is feasible and the current rain-fed yield could double – a rather conservative assumption);
- A minimum of 2 800 farmers would learn how to efficiently use water and learn ICPM practices (training provided to direct beneficiaries and other farmers as well);
- A total of 51 WUAs would have been established and registered with the local government authorities;
- In addition, demonstration effects of this activity is significant.

A detailed work plan is presented in Attachment 5.

B. Rehabilitation of tube-well for irrigation lands near village

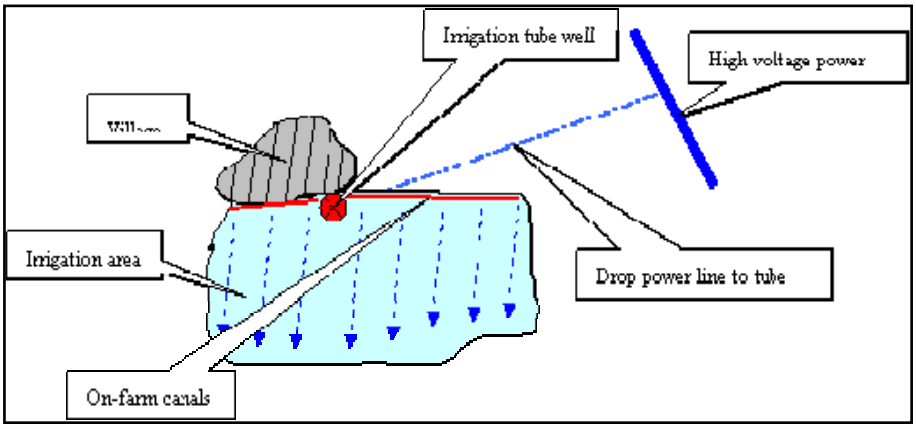
The objective of this sub-component is to increase food production and hence improve food security through the rehabilitation of irrigation tube-wells that have been given to groups of farmers but are in a dilapidated state and beyond the capacity of farmers to repair.

Rationale

A large number of tube-wells had been constructed under the Soviet system and the majority of them are in a dilapidated state. Some of these tube-wells have been given to groups of farmers as part of the land privatisation efforts. However, groups of farmers are not in a position to rehabilitate these tube-wells for lack of financial resources. Some of these tube-wells were built to prevent a rising water table and hence prevent salinisation. This environmental service is no longer performed by the great majority of the tube-wells as they do not function for lack of repair and maintenance.

The programme under this sub-component aims to rehabilitate a limited number of the tube-wells that have been given to groups of farmers and those that provide an environmental service in the area. Rehabilitating some tube-wells will not only increase production by, at least three times – doubling the yield and allowing for an additional crop, but will also maintain the water table by withdrawing excess water and hence prevent soil salinisation. Therefore, the beneficiaries will not be only those that directly benefit from tube-well irrigation water but other farmers in the area from reduced risk of salinisation. Figure 2 below shows a model for and irrigation tube-well.

Figure 2. Irrigation Tube-well model.



Target beneficiaries

This sub-component will only target the most vulnerable and food insecure group of farmers that depend on agriculture for their livelihoods. The tube-well has to be the collective property of a group of farmers and not an individual and it has to be in an area that does not cause negative environmental consequences by depleting underground water. By and large the rehabilitation efforts should result in positive environmental impact in the target area, in addition to increased agricultural output and improving the livelihoods of some vulnerable farmers.

Activities

The following activities have been envisaged to achieve the objectives of this activity and to effectively target relevant beneficiaries.

- Identify target programme area based on the target beneficiary criteria stated above;
- Identify and select appropriate implementing partners (IP) for works;
- Organise meetings with target beneficiaries, VDCs, Hukumat (Local government), Districts State Water Management Units, and the IPs to select target areas and ensure that conflicts on water rights are not overlooked;
- Enter into agreements with target beneficiary groups, VDCs and the Hukumat on rights and obligations for the planned tube-well rehabilitation;
- Award a contract for the envisaged works to selected IPs;

- Identify and employ a local field engineer to monitor and implement the envisaged works,
- Organise a detailed plan for the various trainings in close collaboration with other members of the PISU, VDCs and the target beneficiaries;
- Register the WUAs in relevant government institution;
- Frequent monitoring and supervision of the works in all project areas.
- Assist the VDCs, Hukumat and other stakeholders in the selection of appropriate project areas;
- Provide support to engineering design and survey for the envisaged works;
- Conduct and prepare on-farm irrigation trainings and O&M;
- Prepare detailed contracts for IPs on specific works;
- Continuously monitor and supervise the works implemented by IPs;

A detailed work plan is presented in Attachment 5.

Inputs

Table 17 below presents average costs of rehabilitating an irrigation tube-well for irrigation. Detained sub-component costs are presented in Annex 2, Table 4.b. In addition, all farmers will receive training in ICPM, group dynamics, WUAs, on-farm water use and O&M of the tube-well.

Table 17. Average cost estimates for rehabilitating a tube-well.

			In USD	
Item	**Unit**	**Qty**	**Unit cost**	**Total cost**
Rehabilitation of dameged parts of overhead power line 380V (VPP)	km	0.1	7,200	720
Replacement of transformer complete set (КТП 100/6)	piece	1	3,651	3,651
Replacement of control station (СУЗ)	piece	1	650	650
Replacement of power cables	m	100	5	500
Procurement and installation submersible pump type ECV 10-120-60 (ЭЦВ 10-120-60), N=32kWt, with capasity of 120l/h or 33l/sec	piece	1	3,120	3,120
Replacement of part of water lifting pipe dia 159mm (30%)	m	21	51	1,078
Valve, dia 200mm	piece	1	145	145
Pipe dia 200mm, t=5mm	m	6	30	180
Manometer	piece	1	30	30
Repair of shelter above tubwell	m^2	7.5	5	38
Replacement of fanse with gate	m	20	7	140
Total				**10,252**

Implementation Arrangements

Component V presents details of programme implementation support, which also includes the overall implementation and management of this component. In

addition to the overall management issues, the following activities shall be considered to achieve the objectives of this sub-component.

The Programme Implementation Support Unit (PISU) through its irrigation specialist will ensure the following:

- Identify and select appropriate implementing partners (IP) for works;
- Organise meetings with target beneficiaries, VDCs, Hukumat (Local government), Districts State Water Management Units, and the IPs to select target areas and ensure that conflicts on water rights are not overlooked;
- Enter into agreements with target beneficiary groups, VDCs and the Hukumat on rights and obligations for the planned irrigation structure;
- Award a contract for the envisaged works to selected IPs;
- Identify and employ a local field engineer to monitor and implement the envisaged works,
- Organise a detailed plan for the various trainings in close collaboration with other members of the PISU, VDCs and the target beneficiaries;
- Register the WUAs in relevant government institution;
- Frequent monitoring and supervision of the works in all project areas.

The field engineer will be responsible for:

- Closely coordinate all activities with FAO irrigation specialist.
- Report to PISU on the implementation progress and process;
- Assist the VDCs, Hukumat and other stakeholders in the selection of appropriate project areas;
- Provide support to engineering design and survey for the envisaged works;
- Conduct and prepare on-farm irrigation trainings and O&M;
- Prepare detailed contracts for IPs on specific works;
- Continuously monitor and supervise the works implemented by IPs;

Expected outcomes

The following outcomes are expected from the proposed investment under this sub-component:

- A total of 36 tube-wells would have been rehabilitated serving some 1 050 most vulnerable and food insecure farmers;
- A total of about 1 575 hectares would be adequately irrigated allowing for 2-3 crops per year, compared with one rain-fed crop now;
- Aggregate incremental output from this area is estimated at about 4 100 MT of wheat equivalent incremental output per year (assuming a second crop is feasible and the current rain-fed yield could double – a rather conservative assumption);
- A minimum of 1 500 farmers would learn how to efficiently use water and learn ICPM practices (training provided to direct beneficiaries and other farmers as well);

- A total of 36 WUAs would have been established and registered with the local government authorities;
- Positive environmental impact in the target area is also expected with significant benefits for many farmers;
- In addition, demonstration effects of this activity is significant.

C. Household Low cost drip irrigation

This sub-component aims to improve household food security and nutrition by increasing vegetable production at home garden all year round through the introduction of low-cost – low-tech drip irrigation (LCDI) at home-gardens.

Rationale

Home gardens are the most important source of income and nutrition in rural Tajikistan. Vegetables are also the main source of nutrition diversification and a very important source of micronutrients for households. Some households also sell their surplus vegetables, which has proved as a major source of income for the majority of vulnerable and food insecure households. Almost every household has some land as part of their homesteads to cultivate several vegetables and fruit trees.

Inadequate and erratic water supply as well as inappropriate irrigation practices are the main causes of far below average vegetable production. Most households are only able to grow one or at the most two crops with significantly low yields. There is, however the potential to increase crop intensity to about 4 per year and make vegetables available throughout the year for both consumption and marketing.

The programme under this sub-components intends to assist some of the most vulnerable and food insecure households to establish low-cost and non-mechanised drip irrigation. This will also serve as a water harvesting mechanism, which will provide adequate and smooth irrigation water to horticulture crops at the home-gardens. Improved irrigation, adequate water availability, efficient water use and improved cropping practices will allow farmers to 4 short-medium cycle horticulture crops in their homesteads. If successful this will have significant impact on the household food security, nutrition and income. Nutrition diversification will also be addressed as vegetables will be available to households almost throughout the year.

In addition to drip irrigation, the households will be given training in improved horticultural practices and off-season vegetable production, including the use of manure and other fertilisers. Beneficiary households will also receive training in drip irrigation techniques, O&M and ICPM. The assistance also has a positive discrimination effect by targeting women directly as almost all the horticulture activities are carried out by women in the rural areas.

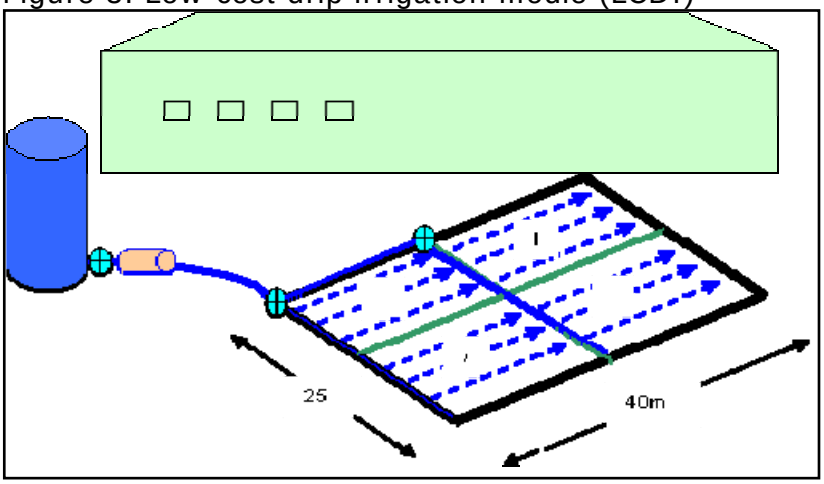
Target beneficiaries

Target beneficiaries will include the following:

- Food insecure and vulnerable households with the priority given to women-headed households;
- Households with at least 0.12 hectares of garden and willing to engage in horticulture production;
- Areas with adequate water supply;
- Households should be willing to repay the initial cost of the LCDI to VDCs over a two year period, which can then be given to other eligible households in the same village.

Figure 3 below presents a low-cost drip irrigation model (LCDI)

Figure 3. Low-cost drip irrigation modle (LCDI)



Activities

The following activities have been envisaged to achieve the objectives of this sub-component and to effectively target relevant beneficiaries.

- Identification of target area and beneficiary hoseholds;
- In collaboration with VDCs, local Hukumat, State Water Management Unit, local irrigation and land management specialists support to improving water supply to selected area;
- Planning meeting with all relevant stakeholders and VDC representatives for making agreement on effective and careful use of distributed LCDI equipment;
- Hire a qualified local supervisor-engineer – one per district for a period of 3 months each;
- Periodically supervising and data collection on LCDI use results.
- Enter into contract with the beneficiary, VDC, programme personnel and the relevant government authority to recover the investment costs and given to other eligible households for the same purpose;
- Prepare a transparent system to collect the instalments, which is further distributed to other eligible households.

Detailed Work Plan for this sub-component is presented in Attachment 5.

Inputs

Table 18 below presents investment costs for establishing low-cost and mechanical drip irrigation for horticulture production within the household gardens covering some 0.1 hectares of land. In addition, each household will also receive training in improved horticulture production, ICPM, the use of drip irrigation technology and O&M.

Table 18. Average cost per unit of drip irrigation.

			In USD	
Item	**Unit**	**Qty**	**Unit cost**	**Total cost**
PVC tank volume 200l m^3	piece	1	36.00	36
PVC hose dia 32 mm, t=0,6mm	m	80	0.45	36
PVC hose dia 12mm, t=0,4mm	m	324	0.25	81
Filter	piece	1	25.00	25
PVC valve dia 32mm	piece	3	4.00	12
Total				**190**

Implementation Arrangements

Component V presents details of programme implementation support, which also includes the overall implementation and management of this component. In addition to the overall management issues, the following activities shall be considered to achieve the objectives of this sub-component.

The Programme Implementation Support Unit (PISU) through its irrigation specialist will ensure the following:

- Identify and select appropriate implementing partners (IP) for the installation of the LCDI;
- Organise meetings with target beneficiaries, VDCs, Hukumat (Local government), Districts State Water Management Units, and the IPs to select target areas and ensure that conflicts on water rights are not overlooked;
- Enter into agreements with target beneficiary groups, VDCs and the Hukumat on rights and obligations for the planned irrigation structure;
- In each District there shall be a maximum of 15-20 beneficiaries;
- Award a contract for the envisaged works to selected IPs;
- Identify and employ a local field engineer to monitor and implement the envisaged works – two engineer to serve one district,
- Organise a detailed plan for the various trainings in close collaboration with other members of the PISU, VDCs and the target beneficiaries;
- Frequent monitoring and supervision of the works in all project areas.

The field engineer will be responsible for:

- Closely coordinate all activities with FAO irrigation specialist.
- Report to PISU on the implementation progress and process;
- Assist the VDCs, Hukumat and other stakeholders in the selection of eligible beneficiaries;
- Conduct and prepare on-farm irrigation trainings and O&M;
- Prepare detailed contracts for IPs on specific works;
- Continuously monitor and supervise the works implemented by IPs;

Expected outcomes

- Some 240 units of LCDI will be installed to as many households;
- A total of 23 hectares of land belonging to 240 most vulnerable rural households will produce round the year vegetables;
- This will have significant demonstration effects on other households with the potential to significantly increase vegetable production and availability throughout the year;
- Significant effect on the food security and nutritional status of the target beneficiaries and indirectly on other households;

D. Mahalla small water harvesting reservoir

This sub-component aims to increase water availability for household consumption purposes (washing and other), animals and limited irrigation by harvesting rainwater and excess surface water when available for use during dry season. This will increase water availability during the dry season when water is very scarce in some parts of the country.

Rationale

Tajikistan, even prior to climate change and its devastating effects had constructed numerous reservoirs in relatively dry areas of the country. These reservoirs would collect surface water in spring, which was then used in summer for livestock and limited irrigation of high value crops (mainly vegetables). Many years of neglect and disrepair has caused significant damages to these structures and the majority of villages do not have the financial capability to restore these very important sources of water.

With climate change and frequent droughts and erratic precipitation, the need for such water harvesting structures more urgent than ever before. The programme under this sub-component envisages the construction of 23 Mahalla (sub-village) water harvesting reservoirs. The reservoir will capture rainwater and other surface water when available, which can then be used when surface water dries up. Most households during dry periods go to extreme lengths to

access water for domestic uses, their livestock and some areas for high value vegetable crops. This will have significant impact on human and animal health as well as increase the production of nutritious and diversified food.

Target beneficiaries/area

The proposed water harvesting structures will only be constructed in areas with limited access to surface water for at least 4-5 months each year. The structure should at least benefit some 10-20 households. The direct beneficiaries should agree to jointly manage the structure and contribute to its subsequent O&M and protection. The structure areas should be jointly selected by the VDC, local Hukumat, Programme staff (PISU) and the State Water Management Unit.

Activities

The following activities have been envisaged to achieve the objectives of this activity and to effectively target relevant beneficiaries.

- In collaboration with VDC, local Hukumat, State Water Management Unit, local irrigation and land management specialists – select an appropriate area for the water harvesting structure;
- Select beneficiaries and agree on the rights and obligations with regard to the structure and agree on modalities for O&M and water use from the structure;
- Prepare a tender for sub-contracting the envisaged works;
- Hire a local field-engineer to monitor and supervise the works;
- Provide training to beneficiary households on water use-efficiency, the use of the reservoir and maintenance.
- Establish an appropriate mechanism for the management and maintenance of the structure- The VDC and the local Hukumat should be part of this agreement;

Detailed work plan is presented in Attachment 5.

Inputs

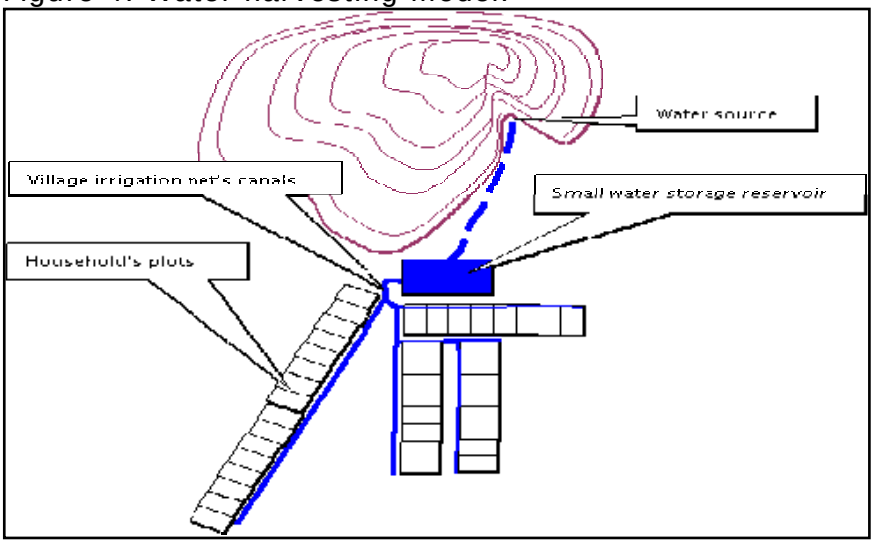
Table 19 presents average costs of constructing a unit of water harvesting structure. Detailed aggregate costs for this sub-component is presented in Annex2, Table 4.b. Labour costs are included in all of the items presented in Table 19 below. Items 2 and 4 are all manual labour, while item 9 is 30 percent labour. If implemented, this sub-component will significantly contribute to short term employment creating and hence disposable income for many households.

Table 19. Average costs of constructing a unit of water harvesting structure

					In USD
#	Item	Unit	Qty	Unit cost	Total cost
1	Earth works, excavator	m3	1,800	1	1,260
2	Earth works, manual	m3	300	3	750
3	Prewatering of bottom ground of water storage	ls			500
4	Manual excavation of tranch for puttuing water intake pipe	m3	48	3	120
5	Maunting of water intake pipe dia 150mm	m	12	37	447
6	Valve dia 150mm	piece	1	120	120
7	Tamping of bottom ground of water storage by equipment	m2	1,260	0	504
8	Covering bottom with plastic film 2 layer, thikness 0,2 mm	m2	1,140	1	1,423
9	Laying of rainfoceed concrete thikness 7cm	m3	88	250	22,050
	Total				**27,174**

Figure 4 below shows a model for the construction of a water harvesting structure. If feasible this structure will be linked to the low-cost drip irrigation sub-component explained under C above.

Figure 4. Water harvesting model.



Implementation Arrangements

Component V presents details of programme implementation support, which also includes the overall implementation and management of this component. The envisaged works will be sub-contracted to qualified implementing partners under the constant supervision of the programme field engineer, the VDC and the direct beneficiaries. The VDC will be a signatory in the contract, therefore, allowing the VDC to ensure that all the work is delivered according to the plan

and contract. Training in ICPM and water use efficiency will be delivered in close collaboration with other components of the programme.

Expected outcomes

The following are some of the direct impact of this sub-component:

- Improving of irrigation and domestic (excluding drinking) water supply to at least some 345 households;
- Supplementary irrigation to about 155 hectares enabling the production of high value food/cash crops, which would otherwise not be planted at all;
- At least 400 households would understand ICPM practices and improved water use efficiency;
- Livestock in the target villages will have access to water at all times.

Component IV. Support to Horticulture Rehabilitation

The overall objective of this component is to improve the livelihoods of rural households by rehabilitating the horticulture sector through the establishment of (i) home-based nursery development and (ii) rehabilitation of the horticulture genetic collection farms.

The following two activities have been envisaged to achieve the overall objective of the component.

A. Home-based Nursery Development

Rationale

The main purpose of this activity is to increase the availability of fruit and other environmentally beneficial saplings and provide a source of income for some of the most vulnerable households in rural Tajikistan by establishing home-based nurseries. Some reports indicate that the horticultural sector, once a significant source of income for a large number of households and a good source of foreign exchange earning, has declined by almost 40 percent. In addition, alternative sources of livelihoods are lacking and this activity is seen to provide some income to target beneficiaries.

The programme also envisages the supply of appropriate species through the village development committees (VDCs) for environmental protection purposes. The main environmental issues are rampant soil erosion, high winds and desertification. Some of the saplings will be used by the VDCs to address these environmental issues at the village level. The demand for fruit saplings are very high and the increased availability of saplings may encourage the rehabilitation of some high yielding orchards.

Target Beneficiaries

The programme intends to assist some 480 vulnerable and food insecure rural households with adequate training and inputs to establish nurseries in their home-gardens. The target beneficiaries will be selected on the basis of the following criteria in selected districts:

- Households must posses adequate area to establish a nursery for at least 4 000 saplings;
- Vulnerable and food insecure households with limited access to alternative sources of livelihoods;
- Households must be interested in nursery development and marketing and agree to supply 20 percent of the saplings to the VDC at one-year of age;
- Priority will be given to vulnerable women-headed households.

Activities

The following activities have been envisaged to achieve the stated objectives and to effectively target relevant beneficiaries.

14. identification and contract with partner NGOs, in consultation with relevant stakeholders;
15. preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this programme component;
16. Selection of target districts, VDCs and beneficiaries;
17. The partner NGO is to prepare a detailed plan of action based on the proposed activities;
18. Provision of the envisaged inputs (2 000 polyester bags, cash for seeds and transplanting material) and training in nursery development as specified under this component;
19. 20 percent of the selected species will be provided to the relevant VDC for planting for the protection of the environment;
20. Provide technical supervision to ensure successful implementation.

Inputs

Table 20 below shows quantities and value of inputs that will be provided to individual beneficiaries. Attachment 8 to this component presents technical specification and suitability of selected tree species in various agro-ecological zones. Most of the species will be selected from Attachment 8 but other species not listed will also be considered given the choice of the target beneficiaries.

Table 20. Home-based Nursery deveiopment Inputs

US$ 1=3.4 Somoni Species	Unit	Quantity	Unit Cost	Somoni Total
Plastic bag/1	Pcs	2,000	0.15	300
Seeds/2				
Seed bearing (apple, pear, bhee..)	Kg	0.5	50	25
Nut bearing (apricot, pear, cherry ...)	Kg	20	15	300
Nuts (walnut, almond, pistachio ....)	Kg	15	15	225
Transplant - material/2				
Pomegranade	Pcs	100	0.25	25
Grapes	Pcs	100	0.25	25
Fig + other	Pcs	400	0.25	100
One day Training course/person/3	LS			
Total Costs				**1,000**

Notes:

1 If available in sufficient quantity, recycled water bottles will be used for this.

2 A lump sum will be give to households to procure seeds and shoots of species.

3 Estimates of training course costs are provided in Annex 2, Table 7.

Implementation Arrangements

The programme shall seek the services of a well-established and qualified NGO to facilitate the implementation of this activity in selected areas. The NGO shall coordinate all implementation arrangements with relevant district and Joma'at government institutions. Beneficiary selection will be done in close coordination and participation of the relevant VDC. The focal point for the implementation of the programme shall be the VDC. The partner VDC shall also receive 20 percent of the saplings after one-year, which it will plant in areas with positive environmental impact.

The Horticulture Specialist in Programme Implementation Support Unit (PISU) shall monitor the programme activities under this component in each of the selected VDCs.

Expected Outcomes

Within the first programme year some 480 food insecure and vulnerable women would have received training in nursery technology and management and just as many home-based nurseries would have been established in some 120 villages (VDCs) in 24 districts. A total of about 1.2 million saplings will be available for planting in the following year, taking into account more than 22% death rate. VDCs will have planted some 240 000 saplings for environmental protection. In addition some 480 households would earn supplementatry income, which they may continue after the project life comes to an end.

B. Rehabilitation of Horticulture Genetic Collection Farm

Rationale

The brief but devastating civil war and the subsequent neglect have severely damaged the horticulture collection farms that served as the country's horticultural genetic resource bank. Table 21 below shows the type of species and the scale of damage in 4 important horticulture collection farms. In addition, it is feared that some of the local species may perish if appropriate measures are not taken in the near future. The programme under this sub-component aims to rehabilitate four horticulture collection farms in strategically important areas through the establishment of nurseries and rehabilitation of existing farms.

The rehabilitation of these collection farms would protect some of the species from becoming extinct and provide seed material for the development of horticulture orchards in the country. This sub-component will also help the department of horticulture to re-establish its cooperation and contacts with important regional collection farms.

Table 21. The state of collection farms - genetic resources.

Species	No. of Varieties	Area Ha	% decrease Compared with 1995
Faiz Abad Collection Farm			
Apple - local variety	67	2	15
Pear - Local Varioety	10	0.15	20
Peach - local and improved	60	1	0
Mulberry - local	24	0.25	10
Walnut - local and improved	90	3	0
Gooseberry - improved	24	0.2	10
Shahr-e-Now Collection Farm			
Pear- improved and local	36	2.5	11
Apple - Improved	55	3	100
Quince - Local & Improved	23	1	100
Apricot - local & Improved	30	1.5	100
Cherry - Improved	36	1.2	100
Cherry small type- Improved	12	0.5	100
Plum - Improved	56	1.3	100
Grapes- Improved	240	5	100
Dushanbe Collection Farm			
Grape - local and improved	60	0.3	0
Peach- local and improved	65	2.5	0
Rumi Collection Farm			
Pomegranade - local and imporoved	25	0.2	58
Fig - local and improved	15	0.21	45
Almonod - improved	11	0.3	40
Persimum Local and Improved.	9	0.3	46
Onabi - Improved	10	1	35
Lemon - improved	5	0.3	30

Source: Mission observations and Institute of Horticulture Govt. of Tajikistan.

Activities

The programme under this sub-component envisages the following activities:

1. Provision of inputs (see Annex 2, Table 5-a.) to establish 4 nurseries in as many collection farms with each nursery covering some 0.1 hectares;
2. Provision of inputs (see Annex 2, Table 5-b.) to rehabilitate some 40 hectares of prime collection farms for genetic resource protection in 4 farms;
3. Organising three study tours in Russia (Krasnador), Uzbekistan (Tashkent) and within the country to restock the genetic resources and re-establish contact with important regional genetic banks;

Table 22 below presents costs of establishing a nursery farm of 0.1 hectares under the management of the Horticulture Institute of Tajikistan.

Table 22. Nursery Development for Collection Farms, 0.1 Ha farm.

Species	Unit	Quantity	Unit Cost	Somoni Total
Plastic bag	Pcs	15,000	0.15	2,250
Seed bearing (apple, pear, bhee..)	Kg	3	50.00	150
Nut bearing (apricot, pear, cherry ...)	Kg	50	15.00	750
Nuts (walnut, almond, pistachio ....)	Kg	50	15.00	750
Pomegranade - Transplant	Pcs	8,000	0.25	2,000
Grapes - vine transplant	Pcs	7,000	0.25	1,750
Fig - transplant	Pcs	6,000	0.30	1,800
Total Costs				**9,450**

Implementation Arrangements

The Horticulture Institute of the Republic of Tajikistan (HIRT) is the main institution managing the horticulture collection farms. Tehrefore, HIRT will be the main implementing partner under close supervision from the PISU. All expenditures and procurement will follow FAO rules and regulations.

Expected Outcomes

Through the rehabilitation of the collection farms some of the most important genetic resources will be preserved and available for planting in the country. In addition, improved fruit tree varieties will be available for the development of orchards in the years to come. The collection farms would serve as a seed bank for the horticulture sector of the country.

Component V. Programme Implementation Support Unit (PISU)

The proposed programme will be implemented by a Programme Implementation Support Unit (PISU) under the direct supervision of the FAO Emergency Coordinator in Tajikistan and the technical supervision from relevant Technical Divisions in FAO Head Quarters. The proposed programme will be implemented in close collaboration and coordination with relevant government authorities at national and sub-national levels. In addition, the proposed programme heavily relies on collaboration and synergies with other national and international organisations who are working in relevant sectors and whose activities are complimentary to the objectives of the proposed programme.

The programme intends to establish a project implementation support unit (PISU) who will be responsible for the implementation, supervision and coordination of the proposed programme at national and sub-national levels. The programme intends to employ the services of qualified local and international NGOs as well as the private sector to facilitate the implementation of specific activities under the programme. All programme activities will be closely coordinated with relevant sub-national government authorities, national and international partners to fully utilise synergies with planned and on-going

projects and programmes. Once operational, the PISU shall establish mechanisms to effectively coordination and liaise programme activities at all levels. The PISU shall also establish an effective mechanism for reporting and provision of information to all relevant stakeholders.

Figure 5 below shows the organisational structure for PISU, which shows implementation and coordination arrangements. It is worth noting that the programme heavily relies on national expertise with only one international programme manager and technically backstopped by various FAO technical staff from head quarters and the regional/sub-regional offices. Detailed costs of the PISU is presented in Annex 2, Table 6.a.

The project shall enter into specific contractual arrangements with qualified NGOs to implement certain activities in the target project area. Based on the project document, which shall be further detailed in the each contract, the NGOs shall prepare a detailed work plan subject to technical and operational review by the FAO Project team (PISU) and the relevant district authorities. The partner NGO shall implement the agreed work plan under close supervision by the PISU. Any necessary changes in the implementation plan should be agreed with FAO project staff (PISU) and discussed with other relevant stakeholders.

The Village Development Committees (VDCs) have a prominent role in programme planning, implementation, monitoring and continuation of some activities after the programme life comes to an end. See section below on VDCs.

Sub-Component V.1. The Formation of Village Development Committees (VDC)

Rationale

As part of the reform process, the Government of the Republic of Tajikistan (GRT) in 1994 enacted a law recognising community self-governance organisations at Joma'at and District levels (No. 23-24/94 from 1 December 1994 No. 1095). This law, however, does not cover community-based organisations beyond Joma'at level. However, a separate law enacted since 1998 recognises the community and group associations at all levels (No. 10/98 from 23 May 1998 No.646). Many national and international organisations have been highly instrumental in the formation of Village Development Committees (VDCs) using the latter law. The main purpose of forming the VDCs have been to encourage decentralised decision making, improved participatory natural resource management and reduce poverty. Some of the main organisations involve in this endeavour are: UNDP, FAO, CARITAS, German Agro-Action, Aga Khan Foundation, AIAC, Maneeja, Fida Kar and others. Some of the main players in rural development such as the Wrold Bank (WB), IFAD, Asian Development Bank (ADB), UNDP and others have began channelling their support through VDCs. The impact of various initiatives through VDCs has been highly encouraging and it may become the main vehicle to address rural poverty and channel services to rural areas.

The AKF has recently completed a study on community organisational structure for effective participation and sustainable rural development. The study found that higher level community organisations such as Joma'at level (a cluster of a few villages) were not effective in soliciting community participation in planning and decision making. The Joma'at level community organisation was found to be too large to allow for participation by the communities and the decisions were often influenced by resourceful individuals or the Joma'at level government officials.

The programme envisages the formation of VDCs, where they don't exist and implement the envisaged activities through VDCs if they have already been formed. The project will implement almost all its activities through the VDCs. The formation of the VDCs will not only facilitate the implementation of the proposed programme but will also serve future rural development programme.

Activities

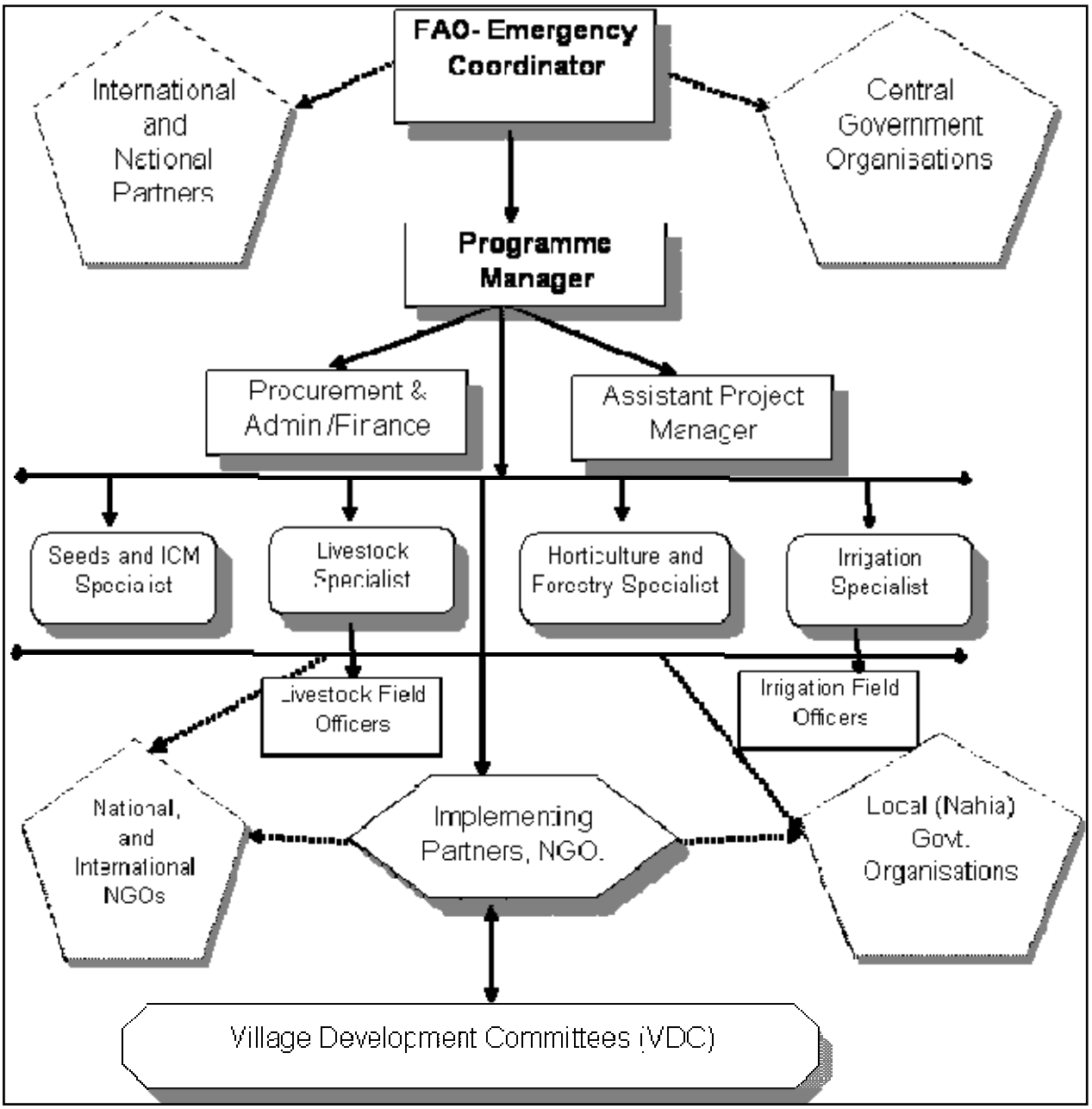
The FAO project team (PISU) in Tajikistan shall enter into contracting arrangements with experienced NGOs to form VDCs. The following activities and procedures have been envisaged to form VDCs. These are based on experience from a number of organisations, including FAO.

1. In target villages, where VDCs do not exist, FAO-PISU shall solicit the assistance of an experienced NGO through a contract to help form VDCs.
2. Organise a meeting in the target village to explain the merits and functions of VDCs.
3. Following agreements from the village to establish a VDC, elect members of the Committee, minimum of 3 and maximum of 10, depending on the size of the village.
4. The NGO shall help draft detailed terms of references for each elected member of the VDC.
5. Select a location in the village to hold regular committee meetings.
6. Register the VDC in the district and provincial government.
7. Open a bank account for the VDC.
8. Training in group dynamics, management, decision making process, proposed activities under the programme and other relevant issues.
9. Exposure visits to successful VDCs.
10. Prior to initiating any of the proposed activities the FAO-PISU shall visit the VDC and ascertain its functionality.

The proposed strategy envisages the use (if they already exist) and development of VDCs for the immediate as well as medium-term proposed activities. The proposed strategy is in line with the strategies of other organisations such as WB, ADB, UNDP, IFAD, AKF, German Agro-Action and others as well as the government strategy, which has been supporting the

creation of VDCs and Joma'at level Development Committees. The proposed programme envisages the creation of some 40 VDCs and strengthening the capacity of VDCs that already exist. The proposed programme will be implemented with active participation of the VDCs in planning programme activities, beneficiary selection, monitoring and continuation of some activities after the second programme year. Detailed costs of developing VDCs is presented in Annex 2, Table 6.b.

Figure 5. Programme Implementation Support Unit (PISU)



_____ Implementation

..... Coordination

Attachment 1. Table 1. Seed Varieties of Main crops, adaptation areas and source

Crop	Variety	Type	Area of adaptation	Source of seed	Unite price, USD/kg
WHEAT					
	Safedaki mahali	Winter	Rainfed	Seed production farms	1.2
	Naveuz	Winter	Irrigation and rainfed	Seed production farms	1.2
	Erythrospermum 401	Winter	Rainfed	Seed production farms	1.2
	Steklovidnaya 24	Winter	Irrigation and rainfed	Seed production farms	1.2
	Zafar	Spring	Irrigation and rainfed	Seed production farms	1.2
	Aleks	Facultative	Irrigation and rainfed	Seed production farms	1.2
	Norman	Facultative	Irrigation and rainfed	Seed production farms	1.2
	Vatan	Facultative	Irrigation and rainfed	Seed production farms	1.2
	Sham	Facultative	Irrigation and rainfed	Seed production farms	1.2
	President	Facultative	Irrigation and rainfed	Seed production farms	1.2
	Jagger	Facultative	Irrigation	Seed production farms	1.2
	Atai 85	Facultative	Irrigation	Seed production farms	1.2
	Umanka	Facultative	Irrigation	Seed production farms	1.2
	Kupava	Facultative	Irrigation	Seed production farms	1.2
	Knajnya	Facultative	Irrigation	Seed production farms	1.2
	Krasota	Facultative	Irrigation	Seed production farms	1.2
	Kroshka	Facultative	Irrigation	Seed production farms	1.2
	Ekho	Facultative	Irrigation	Seed production farms	1.2
	Krasnodar 99	Facultative	Irrigation	Seed production farms	1.2
	Zimorodok	Facultative	Irrigation	Seed production farms	1.2
Barley					
	Javi bapust	Winter	Irrigation and rainfed	Seed production farms	0.8
	Javi kabutak	Spring	Irrigation and rainfed	Seed production farms	0.8
	Chenad 345	Facultative	Irrigation and rainfed	Seed production farms	0.8
	Vakhsh 34	Facultative	Irrigation and rainfed	Seed production farms	0.8
	Syclon	Facultative	Irrigation and rainfed	Seed production farms	0.8
	Rosava	Facultative	Irrigation and rainfed	Seed production farms	0.8
	Iftikhor 86	Facultative	Irrigation	Seed production farms	0.8
Oat					
	Tojiki 50	Spring	Irrigation and rainfed	Seed production farms	0.8
	Vakhsh 110	Spring	Irrigation and rainfed	Seed production farms	0.8
	Tezpazak	Spring	Irrigation and rainfed	Seed production farms	0.8

Attachment 1, Table 1 Cont.

Crop	Variety	Type	Area of adaptation	Source of seed	Unite price, USD/kg
Rye					
	Vakhsh 116	Facultative	Irrigation and rainfed	Outside country	1.5
	Vakhsh 127	Facultative	Irrigation and rainfed	Outside country	1.5
Rice					
	UZROS-7-13	Spring	Irrigation	Seed production farms	1.5
	VROS 3716	Spring	Irrigation	Seed production farms	1.5
	Qaroqalpoqiston	Spring	Irrigation	Seed production farms	1.5
	Lazurniy	Spring	Irrigation	Seed production farms	1.5
	Barakat	Facultative	Irrigation and reinfed	Seed production farms	1.5
Triticale					
	Nemiga 2	Facultative	Irrigation and rainfed	Ukraine	1.5
	Akbar	Winter	Irrigation	Ukraine	1.5
Maize					
	Krasnodar 613 ATV	Spring	Irrigation	Russia	1.5
	Shuhrat	Spring	Irrigation	Seed production farms	0.8
	Dilshod	Spring	Irrigation	Seed production farms	0.8
Sorghum					
	Mahalii Konibodom	Spring	Irrigation	Seed production farms	0.8
	Hissor 45	Spring	Irrigation	Seed production farms	0.8
	Vakhsh 100	Spring	Irrigation	Seed production farms	0.8
	Bisyordaravi 129-V	Spring	Irrigation	Seed production farms	0.8
	Sudan grass			Seed production farms	0.8
	Sharq	Spring	Irrigation	Seed production farms	0.8
	Khujand	Spring	Irrigation	Seed production farms	0.8
Cabbage					
	Bagirskaya	Summer	Irrigation	Seed production farms	35.19
	Gribovskiy-147	Spring	Irrigation	Seed production farms	35.19
	Dushanbe	Spring	Irrigation	Seed production farms	35.19
	Slava-135	Spring	Irrigation	Seed production farms	35.19
	Tashkent 10	Summer	Irrigation	Seed production farms	35.19
	Ijunskaya	Winter	Irrigation	Seed production farms	35.19
	Apsheronskaya	Autumn	Irrigation	Seed production farms	35.19
	Ashqobod	Spring	Irrigation	Seed production farms	35.19
Cauliflower	Otechestvennaya	Autumn, Summer	Irrigation	Seed production farms	51.75

Attachment 1, Table 1 Cont.

Crop	Variety	Type	Area of adaptation	Source of seed	Unite price USD/kg
RedCabbage	Gako	Autumn	Irrigation	Seed production farms	51.75
Tomato					
	Podaroc			Seed production farms	41.4
	Novinca			Seed production farms	41.4
	Prednestrovya			Seed production farms	41.4
	Utro			Seed production farms	41.4
	Fakel			Seed production farms	41.4
	Raketa			Seed production farms	41.4
	Vostok-36			Seed production farms	41.4
	Titan			Seed production farms	41.4
	Novichok			Seed production farms	41.4
	Gulqand			Seed production farms	41.4
	Hybrid-1 Strij			Seed production farms	41.4
	Hydrid-1 Rusich			Seed production farms	41.4
	Habiba			Seed production farms	41.4
	TMK-22			Seed production farms	41.4
Sweet paper					
	Novogogoshari			Seed production farms	51.75
	Podaroc Moldova			Seed production farms	51.75
Eggplant					
	Avrora			Seed production farms	41.4
	Erevanskiy-3			Seed production farms	41.4
Onion					
	Ispani-313	Spring, autumn		Seed production farms	69
	Kulchai Leninobod	Spring, autumn		Seed production farms	69
	Surchi Samarqand	Spring, autumn		Seed production farms	69
	Dusti	Spring, autumn		Seed production farms	69
	Peshpazak	Spring, autumn		Seed production farms	69
Potato					
	Lorkh			Rusia, Jirgatol farm	0.6 to 0.7
	Polyot			Russia	0.6 to 0.8
	Narimka			Russia	0.6 to 0.9
	Cardinal			Tajikistan	0.6 to 0.10
	Zarina			Tajikistan	0.6 to 0.11
	Condor			Tajikistan and Europe	0.6 to 0.12
	Cosmos			Europe	0.6 to 0.13
	Lisseta			Europe	0.6 to 0.14
	Latona			Europe	0.6 to 0.15
	Jukovskiy			Tajikistan	0.6 to 0.16
	Razara			Russia & Europe	0.6 to 0.17

Attachment-1, Table-2. Area planted, Crop calendar and Seed rate for major crops

Crop	Total area, ha	Sowing time	Harvesting	Seed rate, kg/ha
Cotton	253000	March April	Oct-Nov	70-80
Wheat	200000	Sep-Oct/ Feb-April	May-Jun/ Aug-Sept	200-240
Maize and Sunflower fo sillage	18490	June-July	October	70--80
Rice	7407	May-Jun.	Sept-Octob	45-60
Barley	24182	Jan to March	May-Jun	90-130
Maize (Grain)	6333	April -May	July-Aug	35-40
Rye	0	Oct-to March	May-Jun	120-130
Oat	2797	Feb-March	May-June	120-140
Pulses	5831	March-Apr/May-June	June to Octob	
Potato	10357	Nov-Dec/March-April-June	May-June/July- Sept-Oct	from 2 to 3.5Mt
Onion	5372	Sept-Oct/March-April	April-Jun/Sept-Oct	12-18
Tomato	4192	Jan-Feb-nursery & field April-May	July-October	4-6
Cbbage	547	Nursery Aug-Sept & field Oct-Nov/ Nurs-January/ field- Feb-March and April	April-May-Jun/July-Sept-Novem	8-12
Red Beet	31	March- April	Aug-Sep-Oct	6-10
Carrot	1497	March-Apr/Jun-July	May-Jun-Jul/Octob-Nov	4-6
Watermelons	6933	April -May	July-Sept	6-8
Fodder crops	73853	Sept-Oct/March-April	May to Nov	18-80

Attachemnt 2, Table 1.

Component I. Support to Agricultural Production

A. Wheat Seed and Mineral Fertiliser Provision

Activity	2008					2009						
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Preliminary meeting between FAO and relevant NGOs currently active in the wheat seed field												
Consultation with donor and Gorenment counterparts, selection of the most suitable NGOs												
Preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this project component for the emergensy supply of seeds to selected beneficiaries												
Selection of priority villages through consultation with gorenmental bodies at Jamoat level, NGOs and Community Based Organization (CBO) such as Villag Development Committee (VDC)												
Implementation of field level survey for the selction of beneficiaries												
Based on field level surveys, prepare list of beneficiaries in consultation with VDCs												
Planning of inut distribution to beneficiaries in collaboration with VDC (distribution points and field warehouses will be located in the areas assisted by the project)												
Purchase of inputs by FAO according to FAO procurument rules regulations and specification												
Distribution of the inputs (quality seeds with a matching quantiy of fertilizers) by the NGO staff under the supervision of FAO project staff.												
Draw up programmes for specific traning of relevant personnel and arrange the conduct of the training sessions at selected locations in collaboration with all project partners												
Technology transfer on Good Agricultural Field Practices (GAFP) for crop and seed production in the district surrounding the project focal points through training of trainers and farmer seed growers												
Participatory Farmer Training (Farmer Field School model) provided to selected farm households on improved crop management, Integrated Crop and Pest Management (ICPM) and on-farm quality seed production of cpecific crops												
Agronomist from each concerned Jamoats and at least one member from each VDC responsible for seed collection trained for different aspects of seed production												
100 in country training workshop (1 day each) for farmers groups (50 farmers in each group) on-farm seed production practices												
Reporting												

Attachemnt 2, Table 2

Component I. Support to Agricultural Production

B. On farm Potato seed production Work Plan

Activity	2009											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Preliminary meeting between FAO and relevant NGOs currently active in the potato seed field												
Consultation with donor and Gorenment counterparts, selection of the most suitable NGOs												
Preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this project component for the emergensy supply of seeds to selected beneficiaries												
Selection of priority villages through consultation with gorenmental bodies at Jamoat level, NGOs and Community Based Organization (CBO) such as Villag Development Committee (VDC)												
Implementation of field level survey for the selction of beneficiaries												
Based on field level surveys, prepare list of beneficiaries in consultation with VDCs												
Planning of inut distribution to beneficiaries in collaboration with VDC (distribution points and field warehouses will be located in the areas assisted by the project)												
Purchase of inputs by FAO according to FAO procurument rules regulations and specification												
Distribution of the inputs (quality seeds with a matching quantiy of fertilizers) by the NGO staff under the supervision of FAO project staff.												
Draqw up programmes for specific training of relevant personnel and arrange the conduct of the training sessions at selected locations in collaboration with all project partners												
Technology transfer on Good Agricultural Field Practices (GAFP) for crop and seed production in the district surrounding the project focal points through training of trainers and farmer seed growers												
Participatory Farmer Training (Farmer Field School model) provided to selected farm households on improved crop management, Integrated Crop and Pest Management (ICPM) and on-farm quality seed production of cpecific crops												
Agronomist from each concerned Jamoats and at least one member from each VDC responsible for seed collection trained for different aspects of seed production												
40 in country training workshop (1 day each) for farmers groups (50 farmers in each group) on-farm seed production practices												
Design adapted strategy to initiate a community based programm for the sutainable production and distribution of quality seed potato in future in the selected areas												
Reporting												

Attachment 2, Table 3.

Work Plan *Vegetable Seed Provision for Kitchen Gardens*

Emergency vegetable seed and fertilizer assistance to small household farmers

Activity	Months											
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Ap	May	Jun	Jul	Aug
Organisation of preliminary meetings between FAO and relevant NGOs currently active in the Potato seed field												
Preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this project component for the emergency supply of seeds to selected beneficiaries												
In consultation with donor and Government counterparts, selection of the most suitable NGOs;												
Identification of suitable varieties for the target area												
Identification of potential suppliers preferable in the region												
Preparation of technical specification and issuance of tenders for purchase seed and fertilizer												
Identification and slection of beneficiary												
Identification of storage and distribution points												
Reception and transfer of the selected beneficiaries												
Coordination with VDC												
Distribution of inputs to the selected beneficiaries												
Training of women groups												
Reporting												

Attachemnt 2, Table 4

Formation of Wheat and Potato Seed Producer Associations

Activity	2009												2010											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Organisation of preliminary meetings between FAO and relevant NGOs hving capacity to carry out the certified seed production capacity under formal seed production cystem																								
In consultation with donor and Gorenment counterparts, selection of the most suitable NGOs																								
Preparation and signing of LoAs between FAO and the selected NGOs to carry out field activities under this project component for the emergensy supply of seeds to selected beneficiaries																								
Organisation of a project inception workshop with the participation of main stakeholders from Ministry of Agriculture (MoA), Tajik Academy of Agricultural Scientest (TAAS), FAO, NGOs. Seed Association of Tajikistan (SAT) and the private sector																								
Based on workshop recommendations and proceedings																								
A project Steering Committee (PSC) is formed to supervise the overall implementation of this project. The PSC will be composed of designated representatives of the Ministry of Agriculture (MoA), FAO and its Implementing Partners, and the Donor																								
Seed production and certificaion procedures in line with the "National Seed Policy" and "Seed Act" are established.																								
Formulation of a standard seed grower contract approved by the project steering committee (PSC) for the 350 beneficiaries involved in the production of certified seeds of wheat and potato.																								
The rehabilitation of a basic technical and operational capacity at the level of Crop and plant physiology institutions and seed lab to produce higher generation seed and to ensure quality control according to standarad certification procedures.																								
Purchase of equipment and inputs by FAO according to FAO procurement rules and requlation and specifications;																								

Attachemnt 2, Table 4 -Cont.

Formation of Wheat and Potato Seed Producer Associations

Activity	2009												2010											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Installation of the equipments in the Institutes																								
Formation of 10 wheat seed producer association with 25 members each and 5 potato seed producer association with 20 members each and strenthening the capacity of seed producers association (SPAs) to produce certified seed.																								
Purchase of seed processing and cleaning equipment and other inputs by FAO accordinf to FAO procurement rules and requlasion and specification																								
Istall seed production, conditioning, handling and storage equipments and facilities at strategic locations.																								
Arranges supply of the pre-basic or basic seed to seed procducers to produce targeted quantity of certified seed.																								
Draw up programmes for specific training of relevant personnel and arrange the conduct of the training session at selected locations in collaboration with all project partners																								
Technology transfer on Good Agriciultural Field Practoces (GAFP) for crop and seed production in the district surraunding the project focal points through training of trainers and farmer seed growers																								
National professional staff and manager prepare a Train-the -Trainer programme for seed producers, agronomist, NGO staff and leading farmers to emaphasise the principles of the Farmers' Field School approach to technology transfer.																								
Participatory Farmer Training (Farmer Field School model) provided to selected participants on improved crop management, Integrated Crop and Pest Management (ICPM) and certified seed production of wheat and potato crops.																								
Maintain a of the technical follow-up programme to ensure the successful receipt of the technical transfer massages.																								
Direct particular attention to those seed producers enrolled themselves as member of seed producer association (SPA) to produce certified seed under contract.																								
Ensure that contract seed producers are fully trained in all aspects of the production of quality non-cereal seeds.																								
Identity suitable candidates from the staff of implementing parthers and leading seed producers for regional study tour and make arrangements for study tours.																								
Implement follow-up actitvitie with study tour partiipants to ensure that the lessons learned were implemented in the national seed activities.																								

Attachment 3. TECHNICAL SPECIFICATIONS FOR NON-EXPENDABLE EQUIPMENT

Item # 1

Glassware Washers and Accessories (1 sets)

for washing laboratory glassware

With a spray system with upper and lower rotating arms and a final rinse with de-ionized water. Programmable panel for choice of light, normal, or heavy wash cycles, two drying cycles (heat or no heat), and a rinse/hold cycle. With stainless steel interiors including the inner door, spray arms, and filter system. Sidewalls and doors triple insulated, reducing both energy consumption and heat loss, insulation also allows for quiet operation.

Technical Specifications: Size: Chamber dimensions 21.5"Wx24"Hx19"D; Exterior dimensions 24"Wx32"Hx34.5"D. Glassware clearance: Upper rack 8", Lower rack 11.5". Washing temperature: High temperature 150^{o}F (65^{o}C), Low temperature 131^{o}F (55^{o}C). Water consumption: Light wash 4 gallon tap, 1 gallon DI; Medium wash 5 gallons tap, 1 gallon DI; Heavy wash 6 gallons tap, 1 gallon DI. Hot water supply 18-120psi, 3GPM min. Minimum 3/8" OD copper tubing. Inlet 3/8" NPT(F). DI/Distilled Water Supply 1-10 psi 3 GPM min. 5/8" OD hose barb. Drain line 3/8" ID. Power (VAC, Hz, A) 220, 50,15. Shipping weight 200lb (91kg).

Similar to Thomas Scientific Glassware washer EA 9769C44. Unit price USD 5595.72. Need 2

Specifications for accessories:

Stainless Steel Baskets with top – 8"Lx8"Wx4"H. Holds miscellaneous items; inserts on either top or bottom rack. Half Size

Rack Inserts: Holds 20 bottles (500Ml). Inserts on either top or bottom rack. Full size. Needs 2. Similar to Thomas Scientific Glassware Accessories

Item # 2

Micro centrifuges (2) and rotors (2):

For micro centrifugation purposes with refrigerator.

Micro centrifuge Features: quiet running, maintenance-free, brushes motor; unit senses rotor, prevents over speed, and calculates RCF; simple keypad setting of time (up to 99minutes and HOLD) and speed selectable; soft start/stop for gentle acceleration and braking; RS232 interface for computer control; fixed angle rotor availability; Maximum speed:14,00 rpm (20 800xg); Time to stop/start: fast 15sec, soft 60 sec. Comes without rotor.

For Refrigerated: Temperature control from –9 to ±40^{o}C with CFR R-134 refrigerant. "Fast cool" function brings rotor temperature down to 4^{o}C in less than 20 minutes. 220 VAC. Size 23cm H x 33cm W x 56cm L. Weight 34kg. Similar to Eppendorf 5417R..

Rotors: Two rotors required. Fixed angle with lid for Eppendorf micro centrifuge for model 5417. 30-lace for 1.5-2ml tubes. Similar to Eppendorf rotor.

Item # 3
Refrigerators (3):
For refrigeration of reagents, media and samples in the laboratories.
Features: External metal structure, white, powder coated. Size 54cm x 57cm x 156cm. Interior – Impact-resistance white plastic with moulded-in shelve guide
Insulation – High grade pressure-foamed and pro-environmental material Re-circulated air-cooling – a cross flow blower keeps the temperature constant and reduces the natural temperature stratification. The cross flow blower cuts out automatically when the door is opened for min. loss of cold air. Automatic defrosting. Two doors. Supplied with 5 adjustable shelves.
Similar to DAEWOD Model NFR-171. Needs 3. To be purchased locally.

Item # 4
Top Loading Electronic Balance:
For all functions of a lab top loader, parts counting, percent weighing, check weighing, and sample weighing.
Features: Portable, multiple weighing units, push button calibrations with external weight. User-selectable filters, built-in RS-232 interface for GLP-/ISO-complaint printing; auto shut off, user-selectable stability levels and stability indicator, menu and calibration lock out switch, integral security bracket. Operatable on either eight AA batteries or 115/230 VAC, 50/60 Hz (adapter included).
Technical specifications: Capacity 32g. Readability 0.002g, Repeatability ±0.002g Linearity ±0.002g, Pan size 3" diameter, Weighing units g, mg, kg custom, Output Built-in, bi-directional RS-232 interface, Housing size 7.25"W x 2.25"H x 10.50"D, Shipping weight 8lb (3.7kg). Similar to Cole-palmer Ohaus Navigator Balance U-11013-41.

Item # 5
Top loading portable Balance:
For weighing samples and reagents of larger quantities.
Special features: Corrosive resistant stainless steel pan; Keypad calibration with external weight, parts counting and percent weighing, overload protection, and battery-saving SLEEP mode, with one 9V NiCd rechargeable battery and 115 or 230 VAC power adapter with 6-ft cord and plug.
Technical specifications: Capacity 3000g, Readability 0.1g, Repeatability ±0.1g, Linearity ±0.1g, Pan size 7.125"W x 5.625"D, Weighing units g, Calib mass 3000g, Housing size 5.5"W x 1.75" H x 7.75"D. Shipping weight 5lb (2.3kg), Battery power One NiCd rechargeable battery (included). Similar to Cole-Palmer Ainsworth Portable Balance U-11417-61.

Item # 6
Laboratory Incubators (1):
For incubating samples, reagents etc.
Features: Stainless steel body and see-through acrylic door. Maintains temperatures with ±0.5^{o}C accuracy.
Technical specifications: Construction; cold-rolled steel exterior with baked-on enamel finish; aluminum interior; fiberglass insulation. Controls; illuminated

On/Off push-button (red); illuminated pilot light (amber). Thermostat; bi-metal. Maximum temperature149^{o}F or 65^{o}C; Uniformity ±0.5^{o}C; Door Acrylic. Capacity 2 cubic feet; Dimensions: Chamber 18"Wx16"Hx12"D; Overall 19"Wx21"Hx13"D; Power: 220V, 60Hz, 200 Watts, Shipping weight 46lb (20.9kg. Needs 2. Similar to Cole-Palmer Quincy Labs Low-cost Incubators
With Transformer for 220VAC operation. Shipping weight 5lb (2.3kg). Needs 2.

Item # 7
Microscopes (2):
For quality inspection of small parts of samples and for meristem excision.
Features: Independent eyepiece adjustment for focused stereo images, zoom control to provide a continuous magnification range, encased optics for protection from dust, dirt and tampering; rugged cast aluminum design to permit heavy use. Comes with a 10x or 15x eyepiece.
Specifications: Magnification 10.5x to 45x, Power 230VAC, Eyepiece 15x. Unit Price USD 2 150 plus US 315 for a pair of 20x eyepieces. Similar to Cole-Palmer Leica Zoom 2000 Stereozoom Microscope U-49400-15, and 20x eyepiece.

Item # 8
Micropipettes and Tips:
For exact measurement and dispensing of micro-volumes of reagents and samples.
Features: A set of micropipettors containing four pipettors of different capacities and a rack. Each pipettor has digital volume display easy to read even while holding pipettor, light comfortable handle design with a wide gripping area, user calibratable with a calibration tool supplied, autoclavable tip cone and ejector. Tips are sold separately.
Specifications: A set of pipettors and holding rack; one each of 0.5-10Ul, 5.0-50.0Ul, 20-200Ul, 100-1000Ul and 1000-5000Ul Volumes. Similar to Cole-Palmer's Finn Techpette Pipettors (U-25012-50 and U-25012-40) or Sigma Techpette Set P8944.
Tips: autoclavable polypropylene tips. Different tips packs according to Pipettor volumes, Bulk packs of 1000 for each of 0-10Ul, 0-200Ul, 200-1000Ul, 1000-5000Ul.

Item # 9
Power Generators (2):
To effect constant supply of electricity in the Greenhouses.
Features: Three phase AC Diesel generating; output voltage 500/230v, hand push type, output power 18.8KVA, 15-20KW, current 27.1A, pole #4, synchronous speed 1500r/min, compact construction, easy transport, reliable performance, simple maintenance and wide application. Similar to GF or STC Series Three-Phase AC Generators. To be purchased locally.

Item # 10
Air Conditioners:
For control of temperature and air circulation in the Growth Rooms. To be purchased locally.

Item # 11

Thermal Cycler

For PCR-based nucleic acid amplification

Features: Compact with Peltier heating and cooling giving accurate, responsive temperature control. Heated lid. Simple programming via keypad and 8-line digital display with adjustable time and temperature increments, incubation mode, touch down, link, pause and delay functions. Up to 100 programs storage (individual users storing up to ten on a personal card). Auto-restart in event of power failure.

Technical Specifications: Universal Block type, accepts 0.2ml, 0.5ml tubes or a microtitre plate, without having to change block; accepts adapter for in-situ PCR; sample capacity 96x0.2ml tubes or 77x0.5ml tubes or 1 of 8x12 microtiter plate; 230V AC, 50-60Hz; Max No. of cycles 99; No. of programmes 100 (plus unlimited cards). Similar to Sigma Eppendorf Mastercycler Z60,619-7.

Item # 12

Medium Scale Seed Cleaner (Crop Research Institute)

No. of Units = One

General

Two-screen, stationary type electrically operated machine coupled to an Indented cylinder. Upper screen for scalping should be provided with adjustable Tappers. Bottom screen for grading should have brush type self cleaning mechanism. Independent head and tail air screening should be fan assisted.. The inlet-hopper capacity should be of approximately of 0.5 M^3 and located at top of the machine. Feeding the top screen should be by gravity with facility to control flow rate. Quick action bag off attachments for discards should be located on one side of the machine. Direct bagging-off good quality seeds should be at the end of the machine. The bag-off height should be approximately 700 mm from floor level. All moving parts should be guarded and conform to international safety standards. Operating noise should be less than 80 db, and low vibration. Provision must be made for dust to be accumulated outside the machine with a cleaning facility.

Feeding device

Low level intake hopper and a pneumatic elevation duct

Indented Cylinder

Dual size indents 70% of 5.5 mm diameter and 30% of 7.0 mm diameter 1250 mm to 1500 mm length and diameter 400 mm to 600 mm and made of steel alloy with abrasion resistance to high silica rice.

Crops to be processed
Rough rice, Mungbean, Cowpea, Soybeans and Maize at approximately 14% moisture.

Capacity
Average clean seed output should be 800 – 1000 kg/hr. Clean seed should not contain more than 1% of inert material.

Drive motors
Drive motors should have adequate horsepower and should be capable of operating under dusty conditions.
Starters should have protective devices such as thermal overload, phase failure, over voltage under voltage etc.
This should be mounted on the machine body.

Power supply
Operating electrical supply should be 3 phase 400 V± 5%, 50 Hz,

Screens
All screens should be made of abrasion and corrosion resistant steel alloy that can handle all type of seeds including high silica rice seed (please specify the material).

Dimensions
Approximately 730 mm x 100 mm

Top Grading Screens
(Round-mm) 3.5, 4.5, 5.0, 6.0, 6.5, 7.0, 8.0, 10.5 and 11.0

Bottom Grading Screens
(Round-mm) 3.5, 4.0, 6.4 and 8.0
(Slotted-mm) 1.65, 1.75, 1.85, 2.1, 2.2, 2.8, 3.2 and 4.0

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Manuals: Installation instructions in detail
Operator's manual
Spare Parts Catalogue

Performance chart:
A detailed performance chart on cleaning different seed varieties must be submitted.

Warranty: Minimum three years comprehensive

Item # 13

Mobile (Portable) Seed Cleaner (For Wheat Seed Producers Associations)

No. of Units = 10 Mobile (portable) seed cleaner

Type = Air – Screen Cleaner

Screen = 2-3 Screen type

Fitted with roll feed hopper preferably spiked shaft above to feed trashy seed on to the scalper. Screen or roll feed with auger agitator above for uniform feeding. Fitted with brush driver or other suitable mechanize to keep screen perforation open and variable screen shake.

Capacity = (a) course grain 0.5 MT (Approx)
(b) wheat 0.25 MT (Approx)

Electric Motor= ¾ HP-1 HP Single phase

Screen Size =
Top screen
Round perforation (millimeters) = 2.4, 2.5, 5.0, 5.5, 6.0, 6.5, 7.0, 9.0, 10.5 and 11
Slotted (oblong) perforation = 2.8 and 3.25
Bottom Screen (millimeters) round perforation 1.6, 1.9, 2.5, 3.5, 5.0, 6.0, 6.4, 7.0, 8.0 and 9.0.

Slotted
0.8, 1.4, 1.8, 1.85, 2.19, 2.20, 2.3, 2.8, 3.2 and 3.5

Generator = Diesel 5-7 KVA Generating 220 V

Item # 14

Seed Treater

No of Units (11)

Matching capacity seed treater suitable for applying seed treatment chemicals, including liquid chemicals, wettable powders and slurries and with all standard features including;

1. Premix tank constructed out of stainless steel,
2. Metering device for seed and chemical to allow different seed treatment doses,

3. Pump unit with circulator and agitator, dust/fume evacuator of suitable design.

Drive controls and motor with starter suitable for operation on 230 volts, single phase, 50 HZ AC current .

Item # 15

Seed Moisture Meter:

No of Units (11)

Light weight, portable seed moisture meter of quick and accurate determination of
moisture percentage in seed and celebrated to measure moisture contents of wide range of cereal and other crops seed including Wheat, Barely, Rice, Maize, Alfalfa,
Sesame, Chickpea, Black gram, Cotton, etc. Range – 8% to35 % directly without any chart Accuracy (+ -) 0.5%
Suitable to work on battery as well as on 220 volts, single phase, 50 Hz AC current.

Item # 16

No of Units (16)

Portable Bag Stitching Machine:(Bag Closer)

Single/double thread, chain stitch light weight hand held portable heavy duty bag stitching machine suitable for Jute/Jute canvas/ polycoated Jute/Cloth bags. Stitching speed not less than 5 meters per minute and with all other standard features, with automatic thread cutting mechanism. Suitable for operation on 230 volts, single phase,50Hz AC supply
Accessories- wrist trap and the suspension unit to balance the weight of the machine.

Item # 17

No of Units (One)

Tractor with Planter

RIGID CHASSIS, MECHANICAL TWO WHEEL DRIVE

Weight, approx. 1400 kg

DIESEL ENGINE, 3 CYLINDERS, WATER COOLED.

Naturally aspirated
Engine power: Approx. 35-50 hp
Air Cleaner: Oil Bath
Fuel Filter: Dual high capacity
Vertical, side exhaust
Steering and Transmission
Manual steering
Mechanical sliding spur transmission.
Minimum 6 forward / 1 reverse gears
Differential lock on the rear axle
Power Take Off and Hydraulics
Independent power take off 540 rpm
Cat II three point linkage.
Mechanical linkage control: draft, position and response
Two double acting external hydraulic valves and quick release connectors to ISO standard.
Hydraulic pump, Approx. 200 bars
Brakes and Lights
Standard electrical fittings, including road lights, front and rear working lights.
Trailer pick up hitch
Heavy duty swinging draw bar
Rigid sun canopy
Lockable tool box containing set of standard tools.
Top link
First aid kit
Fire extinguisher
Operators hand book in English one for each unit **Manuals**
Parts catalogue, either hard copy or cd rom,.
Workshop manual, either hard copy or cd rom,
The cost of all manuals must be included in the DDU price
A list of manufacturer's recommended, fast-moving spare parts sufficient for 2 000 hrs. of operation must be submitted for each tractor up to 5 % of its ex-works price. The list must be individually itemised, costed and submitted with bid.
A clear statement is required with bid of the terms and conditions of the product warranty that will be available with the goods offered.
Supply name, address and Tel./Fax number of service agents in Tajikistan or neighbouring countries

Seed-cum- Fertilizer Drill
Fitted with:
Seed metering device
Fertilizer metering device
Power transmission unit
Depth-control side wheels
Hitch points

Iron/wooden platform or stand
Frame
The frame of the drill is of the size of
185 × 60 cm. It should made of two mild steel angle
irons (6.5 × 6.5 × 0.5 cm) welded together to
provide the desired strength and rigidity. The
length of frame is about 220 cm. Holes 1.2 cm
in diameter and 2.5 cm apart from each other

Item # 18

No of Units (One)

Combine Harvester
Any suitable model from popular brand such as John Deere or Massey Ferguson or any other reliable manufacturer.

Item # 19

No of Units (One)

Plot Thresher
Multi crop thresher suitable for maize, sunflower, cereals, legumes and forages
Threshing mechanism: Overshot square spiked tooth cylinder with variable drum speed adjustment
Concave: Spiked tooth with easy method of adjustment
Fitted with feeding hopper accessible from ground level
Fitted with winnowing blower fan
Fitted with a shaker assembly and tail rake
All exposed moving parts to be fully guarded
Unit mounted on single axle trailer frame with 2 pneumatic tyred wheels
Fitted with a diesel engine
No. 10mm Graepel sieve for cereals in lieu of tail rake
No. 18mm Graepel sieve for beans and peas in lieu of tail rake
Operators hand book in English one for each unit **Manuals**
Parts catalogue, either hard copy or cd rom,.
Workshop manual, either hard copy or cd rom,
The cost of all manuals must be included in the DDU price
A list of manufacturer's recommended, fast-moving spare parts sufficient for 2 000 hrs. of operation must be submitted up to 5 % of its ex-works price. The list must be individually itemised, costed and submitted with bid.
A clear statement is required with bid of the terms and conditions of the product warranty that will be available with the goods offered.
Supply name, address and Tel./Fax number of service agents in Tajikistan or neighbouring countries

Attachment 4 Table 1. Work Plan - Poultry

Activities	Responsibility	Year 1 - trimester				Year 2 - Trimester			
		1 -3	4- 6	7- 9	10 - 12	1 -3	4- 6	7- 9	10 - 12
Sub-Component Home Based Poultry Production									
Preparatory Steps									
Select target districts & villages	MOA /FAO	■							
Identify & contract Facilitating Partner	FAO	■							
Stakeholder Planning Workshop	FP	■							
Define roles&responsibilities of implementing partners (VDC,NGO, Gov.,etc)	FP /FAO	■							
Sourcing of inputs (birds, feed,veterinary, ..)	FP	■							
Agree on Av.Influenza preventative measures	FAO /MOA /FP	■							
Prepare Training Programme	FP /FAO	■							
Prepare/ update training Material	FP	■							
Recruit Trainers /1	FP	■							
Restocking / Rehabilitation									
Define sets of criteria for selection of villages and household beneficiaries	VDC, FP	■							
Procure Poultry Starter Kit		■							
-contract breeding farm for improved birds /2	FP	■	■	■					
-procure feed and selected equipments /3	FP	■	■	■					
Receive inputs+transfer to distribution points	FP	■							
Train the Trainers /4	FP / FAO	■							
Train beneficiaries on brooder management /5	FP		■			■			
Distribute poultry package to first beneficiaries	FP / VDC		■						
Train VDC staff /6	FP			■	■	■	■	■	■
Regular follow up visits of women beneficiaries /7	Trainers;			■	■	■	■	■	■
Regular vaccination/treatmts for poultry	PPG (VFU /SVD)			■	■	■	■	■	■
Return chicks to VDC for redistribution to next batch beneficiaries /8	VDC, FP					■	■		
Regroup women into Poultry Producer Grps.	FP, VDC					■			
Monitoring & Reporting	VDC, FP	■	■	■	■	■	■	■	■

Notes:

1 Female trainers, who will also act as extension workers in villages
2 Per household - 2-month old 19 chicks +1 rooster; vaccinations etc are done at breeding farm.
3 Feed from local supplier, small equipment for chicken coop
4 Intensive training (15 days) on poultry production and basic animal health, treatment,market information (networks).
5 One-day training, handing over poultry package at end of training; follow up visits/ group trainings at household level
6 Training to include management of revolving fund; monitoring; reporting; etc
7 After the project comes to an end the trainers may provide services to poultry owners for a price.
8 20 chicks of 2 mths old to be returned to VDC about 9 months after distributon of first batch of animals.

Attachment 4, Table 2. Work Plan - Sheep and Goats

Activities	Responsibility	Year 1 - trimester				Year 2 - Trimester			
		1 -3	4- 6	7- 9	10 - 12	1 -3	4- 6	7- 9	10-12
Sub-Component Sheep & Goat Bank									
Preparatory Steps									
Select target districts & villages	MOA	■							
Define roles&responsibilities of implementing partners (VDC,NGO, Gov.,etc)	FP /FAO	■							
Find sources for sheep and goat procurement	FP	■							
Prepare Training Programme	FP /FAO	■							
Prepare/ update training Material	FP	■							
Recruit Trainers /1	FP/ (VDC)	■							
Restocking / Rehabilitation									
Define sets of criteria for selection of villages and household beneficiaries	VDC, FP	■							
Procure Sheep & Goats									
-purchase animals /2	FP	■	■	■					
-arrange for 3 day quarantine /3	FP	■	■	■					
Train the Trainers /4	FP / FAO	■							
Train beneficiaries on improved animal production & health management /5	FP		■						
Distribute sheep/goats to primary beneficiaries	FP / VDC		■						
Train VDC staff 6/	FP			■	■	■	■	■	■
Regular follow up visits of women beneficiaries /7	FP, VDC , Trainers;			■	■	■	■	■	■
Primary beneficiary to return 2 healthy lambs to VDC for redistribution to next eligible household (Revolving Fund) /8	VDC, FP					■	■		
Monitoring & Reporting	VDC, FP	■	■	■	■	■	■	■	■

Notes:

1 Female trainers, who will also act as extension workers in villages
2 breeding females of about 1 year;
3 includes deworming and vaccination
4 Intensive training on sheep/ goat production and basic animal health, treatment,market information (networks).
5 One-day training, handing over poultry package at end of training; follow up visits/ group trainings at household level
6 Training to include management of revolving fund; monitoring; reporting; etc
7 After the project comes to an end the trainers may provide services to poultry owners for a price.
8 Lambs (1 male, 1 female), after weaning; returning of lambs about 10 months after distributon of first batch of animals.
(1 months conception; 5 mths gestation, 3-4mths weaning)

Attachment 5. Irrigation Component, Implementation Plan.

Rehabilitation of Small-scale irrigation	Year 1												Year 2									Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	objects
Rehabilitation of on-farm gravity canals																						
Selection of implementation area																						
Designing, tendering,preparing project materials to FFW																						
Rehabilitation of on-farm gravity canals				1	2	3	3	3	2	1					1	1	3	3				23
Filed Engineer (from the same District)																						
Construction of gravity on-farm canals																						
Selection of implementation area																						
Designing, tendering,preparing project materials to FFW																						
Construction of gravity on-farm canals					1	1	1	2	2	2	1					1	2	1				14
Filed Engineer (from the same District)																						
Construction of Small-Scale Irrigation PVC pipeline																						
Selection of implementation area																						
Designing, tendering,preparing project materials to FFW																						
Construction of Small-Scale Irrigation PVC pipeline						1	1	2	2	1	1				1	2	2	1				14
Filed Engineer (from the same District)																						
Low-Cost Drip Irrigation sets for households																						
Selection of implementation area (villages households)																						
Trainings on maunting and use of Drip irrigations equipments			2	2	2	2	2	2	2	2	1	1	1	2	2							23
Distribution of Drip irrigation equipments				20	20	20	20	20	20	20	10			20	20	20	20					230
Filed Engineer (from the same District)																						
Rehabilitation of irrigation tube well																						
Selection of implementation area																						
Designing, tendering,preparing project materials to FFW																						
Rehabilitation of irrigation tube well						2	3	3	4	3	3	2	2	2	3	4	3	2				36
Filed Engineer (from the same District)																						
Institutional improvement																						
Support to establishing of WUGroups			2	3					4	3	2	2	2	2	3							23
3 Day Training																						
Surface irrigation improvments		2	4						4	4	4			2	3							23

Notes:

1. Selection of implementation area will be made by assesment of priorities of village with support and participation of VDS
2. Designing, tendering,preparing project materials to FFW will implement by village and raion spesialists and when necessary will involved specialists from design institutes. Tenders will conducted for special works, which can be implemented by specialised construction organizations only. FFW mesurements will be coordinated with WFP UN.
3. Trainings on maunting and use of Drip irrigations equipments. Figure is number of trainings
4. Construction of object, including number of activity
5. Each field engineer to be employed for six months in each activity.

Attachment 6. Districts and area coverend by each activity

#	District	Irrigated area of modules, ha					
		Rehabilitation of on-farm gravity canals	Construction of gravity on-farm canals	Construction of Small-Scale Irrigation PVC pipeline	Low-Cost Drip Irrigation sets for households	Rehabilitation of irrigation tube well	Mahalla small water storage reservoir
1	Jirgatol	50	50	30	1		6.75
2	Tojikobod	50	50	30	1		6.75
3	Rasht	50	50	30	1		6.75
4	Faizabad	50	50	30	1	90	6.75
5	Nurobod	50	50	30	1		6.75
6	Rogun	50	50	30	1		6.75
7	Vahdat	50	50	30	1	90	6.75
8	Rudaki	50	50	30	1	90	6.75
9	Hissor	50	50	30	1	90	6.75
10	Shahrinav	50	50	30	1	90	6.75
11	Tursunzoda	50			1	90	6.75
12	Khojamaston	50			1	90	6.75
13	Bohktar	50			1	90	6.75
14	Vahksh	50			1	90	6.75
15	Dangara	50	50	30	1	45	6.75
16	Temurmalik	50	50	30	1	90	6.75
17	Vose	50			1	135	6.75
18	Gonchi	50			1		6.75
19	Sahriston	50	50	30	1	45	6.75
20	Mascho	50			1	135	6.75
21	Isfara	50	50	30	1	135	6.75
22	Nov	50			1	135	6.75
23	Konibodom	50			1	45	6.75
	Sub Total	**1150**	**700**	**420**	**23**	**1575**	**155**
	Total new irrigated area						**1120**
	Total improved irrigation area						**2903**
	Total irrigated command area						**4023**

Notes

1 Blank boxes mean low probability of the activity's applicability in this district

2 Project activities will areas implemented in areas, where at least 50% of lands is privatize

Attachment 7. Target Districts and No. of Activities per District

#	District	Rehabilitation of on-farm gravity canals	Construction of gravity on-farm canals	Construction of Small-Scale Irrigation PVC pipeline	Low-Cost Drip Irrigation sets for households	Rehabilitation of irrigation tube well	Mahalla small water storage reservoir	Support to establishing of WUAs	Surface irrigation improvments trainings	Drip irrigation technology trainings
1	Jirgatol	1	1	1	10		1	1	1	1
2	Tojikobod	1	1	1	10		1	1	1	1
3	Rasht	1	1	1	10		1	1	1	1
4	Faizabad	1	1	1	10	2	1	1	1	1
5	Nurobod	1	1	1	10		1	1	1	1
6	Rogun	1	1	1	10		1	1	1	1
7	Vahdat	1	1	1	10	2	1	1	1	1
8	Rudaki	1	1	1	10	2	1	1	1	1
9	Hissor	1	1	1	10	2	1	1	1	1
10	Shahrinav	1	1	1	10	2	1	1	1	1
11	Tursunzoda	1			10	2	1	1	1	1
12	Khojamaston	1			10	3	1	1	1	1
13	Bohktar	1			10	2	1	1	1	1
14	Vahksh	1			10	2	1	1	1	1
15	Dangara	1	1	1	10	1	1	1	1	1
16	Temurmalik	1	1	1	10	2	1	1	1	1
17	Vose	1			10	3	1	1	1	1
18	Gonchi	1			10		1	1	1	1
19	Sahriston	1	1	1	10	1	1	1	1	1
20	Mascho	1			10	3	1	1	1	1
21	Isfara	1	1	1	10	3	1	1	1	1
22	Nov	1			10	3	1	1	1	1
23	Konibodom	1			10	1	1	1	1	1
	Total	**23**	**14**	**14**	**230**	**36**	**23**	**23**	**23**	**23**

Note: Blank boxes mean low probability of activity's applicability in this district

Attachment 8. Tree Species and their Technical Specifications - adapted to conditions in Tajikistan.

Name of S	Latin Name	Benefits	Common Uses	Water Use Needs	Agro-Ecological Zone Adaptability
Apple	Milus Mill	Deep roots, better in mountains and near mountains with high yeilds.	Mainly for fruits and fuel also controlling soil erosion.	Needs good amount of water depending on area and temperatures, 6000 - 8000 m3/ ha.	North, North-west and West. Elevation of 700 - 2000 M, ideal.
Pear	Pyrus L	" " "	" " "	water needs: 7000 - 9000 m3/ha	" " "
Apricot	Armenica Mill	" " "	" " "	Water needs: 5000 - 7000 m3/ha.	West, South-West, South-East, North-West. Elevation 700 - 2000 m.
Cherry Sour	Cerasus Juss	In the Valleys and lots of peripheral roots. Normally free from diseases.	" " "	Water needs: 5000 - 6000 m3/ha.	Throughout the country. Up to 2200 m elevation with good yields.
Walnut - Greek	Juglans L	Very deep roots and good for preventing soil erosion and best in mountainous areas.	Nuts and log for construction - high value timber.	Water Needs - 6000 - 8000 m3/ha.	Good in elevation of 700 - 2200 m.
Almonds	Amygdalus L	In valleys and flat areas.	Fruits and fuelwood	Water needs: 2000-4000 m3/ha.	West, South-West, South-East, Elevation 400 - 1200 m.
Mulberry	Morrus L	Deep roots, better in mountains, near mountains and valleys -with high yeilds.	Leaves for silk and fodder and fruits + fuelwood. Conotrols soil erosion - less risk of disease and pests.	Water Needs - 4000 - 6000 m3/ha.	Good in all areas: Elevation: 700 - 2200 m.
Pomegranade	Punica L	Valleys, near mountains - not ideal for soil erosion as it has few roots.	mainly for fruits and winde breaking - medicine.	water needs: 4000 - 6000 m3/ha.	Good in all areas: Elevation: 400 - 1200 m.
Grapes	Vitus L	Does not have deep roots.	mainly for fruits and fuelwood.	water needs: 2000 -4000 m3/ha.	Good in all areas: Elevation: 400 - 1200 m.
	Elaeagnus L	Valleys, near mountains and mountains .	Nitrogen fixing, controls soil erosion, bee keeping, fuelwood, wind breaker and does not suffer from diseases.	Water needs: 4000 - 5000 m3/ha.	Good in all areas: Elevation: 400 - 2000 m.
Wild Rose	Rosa Canina	Valleys, near mountains and mountains .	Fruits and fuelwood, controls soil erosion and wind breaker, medicine.	Water needs: 2000 - 4000 m3/ha.	Good in all areas: Elevation: 400 - 2000 m.
Poplar	Populus Alba	Suitable in all areas, very popular.	Timber, fuelwood, wind breaker, soil erosion control.	water needs: 4000 - 6000 m3/ha.	Good in all areas: Elevation 400 - 2500 m.

Annex 2

Annex 2. Table 1. Summary Costs by Activity, Price Surge and Agriculture Rehabilitation Programme

		Value, in 000s USD								
		Year 1 - trimester				Year 2 - trimester				
	Main Activities	**1 -3**	**4- 6**	**7- 9**	**10 - 12**	**1 -3**	**4- 6**	**7- 9**	**10 - 12**	**Total**
I. Food Production and Agric. Rehabilitation Component										
	Emergency Wheat Seed and Mineral Fertiliser Provision	879	25	4	-					**908**
	Emergency Potato Seed and Mineral Fertiliser Provision	-	379	14	1					**394**
	Vegetable Seed and Mineral Fertiliser Provision	770	7	7	-					**784**
	National Seed Policy and Legislation	35		35						**70**
	Wheat Seed Producer Group Formation	168	43	134	21	21	8	13	46	**454**
	Potato Seed Producer Group Formation	-	375	33	8	3	20	1	23	**463**
	Assistance to Crop Research Institute - Wheat Seed.	156	-	1	-	-	-	-	-	**157**
	Assistance to Crop Research Institute - Potato Seed.	72	-	-	-	-	-	-	-	**72**
	Assistance to Production of pre-basic Seeds/4	21	-	1	-	-	-	-	-	**21**
	Administrative Costs @ 10%	210	83	23	3	2	3	1	7	332
	Sub-total Food Crops	**2 311**	**913**	**250**	**33**	**26**	**31**	**15**	**77**	**3 656**
II. Small-Scale Home-based livestock Production										
	Sheep and Goat banking			29	11				11	

		272	31			29	31	29		**443**
	Village Poultry Development	445	73	73	23	73	73	73	23	**853**
	Administrative Costs @ 10%	72	10	10	3	10	10	10	3	130
	Sub-total Livestock	**789**	**114**	**112**	**37**	**112**	**114**	**112**	**37**	**1 426**
III. Small-Scale Irrigation Rehabilitation										**-**
	Rehabilitation of on-farm gravity canals	284	374							**658**
	Construction of Small-Scale Irrigation PVC pipeline	299	398	-		-				**697**
	Low-Cost Drip Irrigation sets for households/5 Nos.	36	50	-		-				**85**
	Rehabilitation of irrigation tube well	251	251	-						**503**
	Mahalla small water harvesting reservoir	297	387	-						**684**
	Physical contingency @ 5%	58	73	-	-	-	-	-	-	**131**
	Administrative Costs @ 10%	123	153	-	-	-	-	-	-	276
	Sub-Total Irrigation	**1 348**	**1 687**	**-**	**-**	**-**	**-**	**-**	**-**	**3 034**
IV. Horticulture Rehabilitation										
	Home-based Nursery Development	164	13	-	-	13		-	-	**190**
	Collection Farm Nursery Rehabilitation	34	8	8	8	8		-	-	**66**
	Collection farm Rehabilitation	43	12	2	18	20	2	28		**125**
	Administrative Costs @ 10%	24	3	1	3	4	0	3	-	38

	Sub-Total Horticultrue	**265**	**36**	**11**	**29**	**45**	**2**	**31**	**-**	**418**
V. Implementation and Institutional Support										**-**
	Programme Implementation Support Unit (PISU)	206	79	79	79	79	79	79	79	**760**
	Village Developmetn Committee Formation (VDC)	35	70	35						**140**
	Administrative Costs @ 10%	24	15	11	8	8	8	8	8	90
	Sub-Total PISU, VDC	**265**	**164**	**125**	**87**	**87**	**87**	**87**	**87**	**989**
Total Programme Costs		**4 978**	**2 913**	**498**	**186**	**270**	**234**	**245**	**201**	**9 524**

Table. 2.a. Detailed Costs, COMPONENT I. Agriculture Rehabilitation- Wheat, Potato and Vegetable Seeds

			Quantities				Value, in 000s USD				
		Unit	Year 1 - trimester				Year 1 - trimester				
Items	Units	Price	1 -3	4- 6	7- 9	10 - 12	1 -3	4- 6	7- 9	10 - 12	Total
No. of Beneficiaries/1.			**5 000**								
No. of VDCs			**200**								
Wheat Seed and Mineral Fertiliser Provision											-
Wheat Seed	Kg	1.2	250 000				300	-	-		**300**
Fertilisers (DAP)	Kg	0.6	250 000				150	-	-		**150**
Training/2	LS	66	5 000				330	-	-		**330**
Technical Pamplets	Pc	0.8	5 000				4	-	-		**4**
Transport Cost	Mt	50	500				25	-	-		**25**
Warehouse cost	Mt	10	500				5	-	-		**5**
Training of Trainers/3	No.	66	100				7	-	-		**7**
Tehcnical Assistance/4	MD	4 705		4			-	19	-		**19**
Travel - Int. consultant	LS							3			**3**
M&E - National Experts/5	MD	35	100	100	100		4	4	4		**11**
Facilitating NGO Contract/6	LS						55	-	-		**55**
Sub-Total							**879**	**25**	**4**	**-**	**908**
Potato Seed and Mineral Fertiliser											-

Provision											
No. of Beneficiaries/1.			**2 000**								**-**
No. of VDCs			**80**								**-**
Potato Seed	Kg	0.7	200 000			-	140	-	-	**140**
Fertilisers (DAP)	Kg	0.6	100 000			-	60	-	-	**60**
Training/2	LS	66	2 000			-	132	-	-	**132**
Technical Pamplets	Pc	0.8	2 000			-	2	-	-	**2**
Transport Cost	Mt	50	300			-	15	-	-	**15**
Warehouse cost	Mt	10	300			-	3	-	-	**3**
Training of Trainers/3	No.	66	40			-	3	-	-	**3**
Tehcnical Assistance/4	MD	4 705		2		-	-	9	-	**9**
Travel - Int. consultant	LS							3		**3**
M&E - National Experts/5	MD	35	40	40	40	-	1.4	1.4	1.4	**4**
Facilitating NGO Contract/6	LS					-	23	-	-	**23**
Sub-Total						**-**	**379**	**14**	**1**	**394**
Vegetable Seed and Mineral Fertiliser Provision										**-**
No. of Beneficiaries/1.			**10 000**							**-**
No. of VDCs			**400**							**-**
Vegetable Seeds/7	Kg	17	3 040			52	-	-		**52**
Potato Seeds	Kg	0.7	100 000			70	-	-		**70**
Fertilisers (DAP)	Kg	0.6	500 000				-	-		

								300			**300**
	Training/8	LS	25	10 000				250	-	-	**250**
	Technical Pamplets	Pc	0.8	10 000				8	-	-	**8**
	Transport Cost	Mt	50	603				30	-	-	**30**
	Warehouse cost	Mt	10	603				6	-	-	**6**
	M&E - National Experts/5	MD	35	200	200	200		7	7	7	**21**
	Facilitating NGO Contract/6	LS						48	-	-	**48**
	Sub-Total							**770**	**7**	**7**	**-** **784**
Sub Total								**1 650**	**411**	**24**	**1** **2 087**
Administrative Costs @ 10%								165	41	2	0 209
Total Costs								**1 815**	**453**	**27**	**2** **2 295**

Notes:

1. Packages to be provided by Sept. Training can be done IN Nov./Dec.
2. See training package - Annex 2,. Table 7. 3-day Course.
3. 3-day training only to 2% selected qualified seed farmers -
4. Includes $712/day secondment (5 day week) + $160 DSA (7-day week)
5. Includes M&E costs for DSA for expert+ Driver. Monitoring 4 VDCs/day/person.
6. 7% of the value of seeds, Fertiliser and training.
7. Different veg. seed varieties (see Annex 1, Component I. Attachment 8.
8. One-day training average cost, see Annex 2, Table 7 for details.

Annex 2, Table. 2.b. Detailed Costs, COMPONENT I. Agriculture Rehabilitation, Wheat Seed Producer Associations

				Quantities								Value, in 000s USD								
			Unit	Year 1 - trimester				Year 2 - Trimester				Year 1 - trimester				Year 2 - trimester				
	Items	Units	Price	1 -3	4- 6	7- 9	10 - 12	1 -3	4- 6	7- 9	10 - 12	1 -3	4- 6	7- 9	10 - 12	1 -3	4- 6	7- 9	10 - 12	Total
I.2.A. National Seed Policy and Legislation																				
	International Consultatnts/7/1	Week	9 270	3		3						28	-	28	-		-	-	-	**56**
	Travel	LS										7		7						**14**
	Sub-Total											**35**		**35**						**70**
Wheat Seed Producer Group Formation																				
	No. of Beneficiaries/2.			**250**																
	No. of Associations			**10**																
	Basic Wheat Seed	Kg	1.5	50000								75	-		-	-		-		-	-	**75**
	Fertilisers (DAP)	Kg	0.6	25000								15	-		-	-		-		-	-	**15**
	Fertilisers (Urea)	Kg	0.3	25000								8	-		-	-		-		-	-	**8**
	Inception Workshop/3	LS-Per	20	150								3	-		-	-		-		-	-	**3**
	Technical Pamplets	Pc	0.8	250								0	-		-	-		-		-	-	**0**
	Transport Cost	Mt	50	100								5	-		-	-		-		-	-	**5**
	Warehouse cost	Mt	10	100								1	-		-	-		-		-	-	**1**
	Training of Trainers/4	No.	108		75		75	75	75				-	8		8		8	8	8	-	-	**41**
	Farmer Field School Training/5	No.	25	250	500		500	500		500	250	6		13		13		13	13		-	13	6	**75**
	Regional Study Tour/6	No.	3 350								12		-	-		-		-		-	40	**40**

Sub-Total								**113**	**21**	**21**	**21**	**21**	**8**	**13**	**46**	**262**
Non-Expendible Equipment for the Association								-	-	-	-	-	-	-	-	**-**
Power Generator	Set	2 000		10				-	-	20	-	-	-	-	-	**20**
Portable Seed Processing Machine 9500kg/hr)	Set	5 000		10				-	-	50	-	-	-	-	-	**50**
Moisture Meter	Set	500		10				-	-	5	-	-	-	-	-	**5**
Portable Bag Sticker	Set	300		10				-	-	3	-	-	-	-	-	**3**
Workshop Equipment	Set	1 000		10				-	-	10	-	-	-	-	-	**10**
Sub-Total								**-**	**-**	**88**	**-**	**-**	**-**	**-**	**-**	**88**
Expendbile Equipment for the Association																
Bags-Polypropline	No.	0.3		15 000				-	-	5	-	-	-	-	-	**5**
Label-tags	No.	0.05		15 000				-	-	1	-	-	-	-	-	**1**
Seed Treating Material (Thirum)	Kg	8		2 250				-	-	18	-	-	-	-	-	**18**
Instruction Material	Pc	0.1		15 000				-	-	2	-	-	-	-	-	**2**
Certification Charge	Farmer	20	250					5	-	-	-	-	-	-	-	**5**
Tehcnical Assistance/7	Week	4 705		4				-	19	-	-	-	-	-	-	**19**
Travel - Int. consultant	LS							-	4	-	-	-	-	-	-	**4**
M&E - National Experts/8	MD	35		7	7	7	7	7	7	7	-	0	0	0	0	0	-	**1**
Facilitating NGO Contract/9	LS							50	-	-	-	-	-	-	-	**50**
Sub-Total								**55**	**23**	**25**	**0**		**0**	**0**	**-**	**103**
Sub Total								**203**	**43**	**168**	**21**	**21**	**8**	**13**	**46**	**523**
Administrative Costs @ 10%								20	4	17	2	2	1	1	5	52
Total Costs								**223**	**47**	**185**	**23**	**23**	**9**	**14**	**51**	**576**

Notes:
A seed specialist and a legal expert to review, consult and revise national seed policy and legislation.
Packages to be provided by Sept. Training can be done IN Nov./Dec.
Oe-day inception workshop for wheat and potato seed production involving all stakeholders, 150 people, lunch, refreshments, venue, publicity material and other.
5-day training only to seed quality control and seed production govt. staff + lead seed producers, 15 courses for 25 people over two years.
One-day training average cost, see Annex 2, Table 7. Includes beneficiaries and other seed farmers.
One member from each association + 2 from project and govt. in neighbouring countries for 7 days.
Includes $712/day secondment (5 day week) + $160 DSA (7-day week)
Includes M&E costs for DSA for expert+ Driver. Monitoring 3 VDCs/day/person.
Based on one-year costs - 3 professional staff, transport and other costs.