Government of the People's Republic of China

United Nations Development Programme (UNDP)

**Final Project Document**

**18 April 2006**

# Promoting Innovative and Sustainable Science and Technology Support to Poverty Reduction in Rural China


In line with the Government's long-term development goal in building an all-round XiaoKang (well-off) Society by applying scientific development approaches, the project is aimed at reducing poverty, especially in rural areas, by empowering farmers with appropriate technologies and skills to promote agricultural efficiency and increase farmers' income through an innovative Technical Task Force (TTF) initiative. The project will further promote the reform of China's rural economy and rural technological application system, and setting up a new approach for technical personnel to participate more effectively in helping farmers out of poverty and serve the sustainable development of the *San Nong* issues related to rural areas, agriculture development and farmers, and contribute to building China's socialist new countryside as called in the National 11th Five-Year Plan (2006-2010).

The project will support China's TTF initiative to become critical part of a diverse rural technical extension system with market-oriented structure to meet differing or disparate needs of farmers, farm systems and rural communities. The project will strategically respond to the priority needs of the underlying Government TTF initiative in three dimensions: 1) Policy recommendations to improve rural technological extension service deliveries for better rural livelihoods and poverty reduction and enhancement of TTF Initiatives at different levels; 2) Pilots of different poverty alleviation initiatives through TTF support and training programs to both the TTF practitioners and farmers integrating both global and local knowledge 3) Dissemination of and scaling up the TTF initiative based on policy recommendations, experiences and lessons learnt from the piloted TTF interactions and organisational arrangements for the development of rural areas and market activities.

**UNDAF Outcome:**

Social and economic policies are developed and improved to be more scientifically based and human centered for sustainable and equitable growth.

**Country Programme Outcome/Indicators:**

National efforts to lead and manage Xiaokang/MDG implementation supported through a variety of instruments and capacity building initiatives.

**Country Programme Output/Indicators:**

Policy oriented research on emerging poverty challenges developed and disseminated to key stakeholders.

**Government Coordinating Agency:** China International Center for Economic and Technical Exchanges (CICETE)

**Implementing Partner:** China International Center for Economic and Technical Exchanges (CICETE)

**Government Cooperating Agency**: Ministry of Science and Technology (MOST)

**Programme Period:** 2006-2010
**Programme Component:** Achieving the MDGs and reducing human poverty
**Project title:** Promoting Innovative and Sustainable Science and Technology Support to Poverty Reduction in Rural China
**Duration:** 2006-2009
**Management Arrangements:** National Execution

| | |
|---|---|
| Budget (US$) | 4,000,000 |
| Allocated Resources | |
| • Government | 3,000,000 |
| • UNDP TRAC | 1,000,000 |
| Government in kind | 2,000,000 |

| **Agreed by:** | | | | |
|---|---|---|---|---|
| | Signature | | **Date** | **Name and Title** |
| **Government Coordinating Agency and Implementing Partner(CICETE):** | | | 20/4. 2006 | |
| **Government Cooperating Agencies(MOST):** | 刘燕华 | | 20/4/06 | |
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## List of abbreviations

| | |
|---|---|
| AWP | Annual Work Plan |
| CPAP | Country Programme Action Plan |
| CATEC | County Agro-Technical Extension Centre |
| CICETE | China International Centre for Economic & Technical Exchanges |
| CCCPC | Central Committee of Communist Party of China |
| CO | UNDP Country Office |
| FAO | Food and Agriculture Organization |
| IBRD | International Bank for Reconstruction and Development |
| IFAD | International Fund for Agricultural Development |
| HDR | UNDP Human Development Report |
| MDGs | Millennium Development Goals |
| MO | Ministry of Organisation from CCPC |
| MOA | Ministry of Agriculture |
| MOST | Ministry of Science and Technology |
| NGOs | Non-Government Organisations |
| NPC | National People's Congress |
| ODA | Official Development Assistance |
| PAC | Project Advisory Committee |
| PMO | Project Management Office |
| PRC | People's Republic of China |
| RMB | Renminbi (Chinese Currency) |
| SOE | State owned enterprises |
| SME | Small and medium sized enterprise |
| SRF | Strategic Results Framework |
| TATES | Township Agro-Technical Extension Stations |
| TTF | Technical Task Force |
| UNDAF | United Nations Development Assistance Framework |
| UNDP | United Nations Development Programme |
| WTO | World Trade Organization |

# PART 1: SITUATION ANALYSIS

China has been the world's fastest growing economy over the past two decades, with real GDP growth at an average rate of 9.4% annually and per capita incomes rising threefold. In the Human Development Index (HDI) ranking, China has climbed 20 places to 85$^{th}$ among 177 countries since 1990. The country has demonstrated a development trend viewed through the HDI from 0.558 in 1980 to 0.755 in 2003 (UNDP HDR 2005). China has made massive achievements in poverty relief in the past 25 years. According to China's national poverty line, the number of absolute rural poor dropped from 250 million in 1978 to 29 million in 2003. If poverty line of PPP$ 1/day is applied, China's rural poverty population dropped from 280 million in 1990 to 85.176 million in 2003 (UNDP China HDR 2005).

## 1.1 Poverty and Imbalance of Development

Although China's progress in development has been remarkable there are worrying indications that social progress is lagging behind economic growth performance, with the rewards from this progress not equally making it to the poor, presenting significant scale of geographical and social inequality within China. Disparities are increasing – between urban and rural, between skills groups and between eastern and western regions. The UNDP China HDR 2005 shows that national income inequality as measured by the Gini coefficient rose from 0.382 in 1988 to 0.46 in 2002. The urban to rural income ratio widened from an already high level of 2.2:1 in 1990 to 3.23:1 in 2003.

While poverty has been measurably reduced in China, different provinces have benefited unevenly from the economic reforms that began in 1978 and many people still live in poverty. Since the mid-1980s, regional disparities in China have been widening. The richer coastal provinces - benefiting from increased trade and foreign investment - have been growing faster than the poorer central and western provinces, with many of the poor in the rural interior of the country being left behind. By global standards China as a whole is in the middle range of human development with some individual regions such as Shanghai and Beijing well above this and ranking as high as 25th and 27th in the world. However poor regions, such as Tibet and Qinghai, are in the lower range of human development, ranking 147th and 135th, respectively. Income disparities have widened across regions, specifically between incomes in the western and eastern regions.

The disparity between urban and rural areas is widening, with existing infrastructure and the nature and pace of development favouring urban areas. The country's growth has been accompanied by significant structural reforms including increased levels of productivity and resource use efficiency, and reallocation of labour from agriculture to industry. Farmers' incomes rose steadily in the 1980s and this growth often was faster than income growth in the cities. However, farmers' income growth slowed in the 1990s and the farm income growth has continued to decline. As a consequence, social problems are increasing because of the wealth gap between rich and poor and between urban and rural dwellers.

The trend of widening gap between urban-rural disparities in the level of human development (i.e. urban area HDI 0.81 against 0.67 of rural areas) since 1997 has been, to a very large extent, caused by the widening income inequality between urban and rural areas. According to the UNDP Global HDR 2005, of the 131 countries for which data is available, China ranks 90$^{th}$ in terms of the Gini coefficient for income distribution. According a sample household survey in 2002, the average income of the highest-income group was 11 times that of the lowest-income group. Income inequality between urban and rural areas, which existed under the traditional system, has been exacerbated by recent development. Since the beginning of reform and opening up, there has been a rapid growth in the incomes of both urban and rural residents but accompanied by an income inequality that has increased by a ratio of 3.3:1 in 2005. The growth rate of income of rural households since the 1990s has been lower than that of urban residents, with a difference in absolute amount rising by more than six fold.

The root causes of poverty and increasing inequalities in China are three major factors, which determine large differences between the standard of living of the populations in different geographical areas:

- The agro-climatic conditions and resource, particularly the distance to the main urban centers and the main transport routes, the endowments of natural resources including water, and the terrain;
- Insufficient investment, low productivity, low employment and low income, largely caused by imbalanced development that reflect a host of economic, political, or demographic considerations all too often have a regional bias that augments rather than mitigates the differences. A policy preference for the East and urban, typically reduced government transfer payments during the reform period;
- Lower development in terms of human capital (education, skills and the health care) with poor access to existing and new technologies for increased knowledge, human capacity and productive livelihoods.

Given the uneven development between rural and urban areas, a consensus is reached in the country that the development of agriculture and rural areas is of great significance. Only when the "San-Nong" problems relating to agriculture, rural areas and the farmers have been solved properly, can China develop in the right track. With the limitation of natural resources like arable land and water, and the trend of skilled migrants to earn off-farm income in cities, policy options and instruments to increase investment in rural areas by means of science and technology combined with other policy alternatives to build human capability and increase farmers' incomes, are critical to facilitate the transition of traditional agriculture to more modernized agriculture and overall development process of rural China.

### 1.2 Rural Development and Technology Transfer

The underlying challenges in China's rural development and agricultural transformation are i.e. natural resources pressure that China has increased its resource use from 0.8 to 2 times its annual bio capacity to meet its resource demand, rapid growth of agricultural production with low farm income growth, changing patterns of food demand and consumption and new market challenges and opportunities in terms of expansion of domestic and international markets, but also the impose of liberal trade practices and quality standards as well as food safety. These suggest that rural scientific and technical innovation through agricultural R&D programs combined with well designed extension services can be an important policy instrument to a sustained agricultural sector and thus to reducing poverty in rural China. By targeting rural scientific and technical innovation on commodities that are common in the farming systems of the poor, and targeting the extension services in areas where the poor concentrate, these measures can bring about and increase in output and/or reduction in production costs of the poor thereby raising their incomes and reducing the incidence and depth of poverty. The technology divide does not have to follow the income divide. Scientific and technical innovation with the support of distributive innovative policies can become a source of inclusion, a powerful tool for human progress.

China no longer requires international food aid, as a direct result of its technical progress in agriculture and food policies. While, there is yet a significant gap between China and the developed world in scientific and technical innovation and adoption. China ranks 45th by the Technology Achievement Index (UNDP Global Human Development Report 2001) which comprising four dimensions of technical capacity: creation of technology, diffusion of recent innovation, diffusion of old innovation and human skills. The agricultural technology transfer rate and contribution of

science and technology to agricultural growth account to only 30% and 45% respectively compared with 70-85% in the developed world.

Low and slow transfer and adoption rate of modern science, technology and knowledge is a critical development bottleneck of rural China mainly due to: technologies not timely and affectively response to the practical needs of farmers and market signals; China's current agricultural production system comprising large number of small farm households in adverse geographical locations presenting difficulties for the traditional extension system to organize and establish chains and technology adoption mechanism in rural communities – "last mile" bottleneck of technology transfer; insufficient government and public financing for new technology development and transfer. Lastly, imbalance of information between R&D institutions, technology providers (government, extension service officers and companies) and farmers provokes high potential risks to the farmers. Information and communications technologies (ICTs) are a powerful tool to narrow the information gap and improve livelihoods. The number of Internet users in China reached 110 million in 2005, while peasants and farmers account for 19. 31 million (rural prevalence rate 2.6%) only 17.55% among the total users. From a survey on 1,235 households from the UNDP project villages of rural telecentres in China, the main findings confirmed a positive impact of the telecentres on local households' work and life, that nineteen percent of poor farmers claimed annual financial benefits above Rmb 1000 (US$121) and one percent had gains above Rmb 10,000 (US$1,121), versus the remaining eighty-one percent whose benefits averaged Rmb 258 (US$31).

### 1.3 Challenges of Traditional Rural Technical Extension System

The traditional rural agricultural technical extension system, supported by the government, has had some difficulties to ensure the effective acquisition of new agricultural technologies by farmers and bring the real benefits to the needy. It is increasingly difficult for farmers to increase their incomes without appropriate knowledge and application of science and technology under the current market-oriented economy.

Issues such as how to reform the traditional rural agricultural technical extension system, how to implement a rural technical extension system to suit the operation of a market economy system, how to meet farmers' increasing demands for agricultural technology, and how to promote rural technological application advancement are becoming the focal points for rural reform in the new era. Governments and governmental institutions at different levels are increasingly searching for more effective approaches to facilitate rural development, agricultural development and poverty alleviation, with a focus on how to make the existing rural extension system more suited to the operation of market economy by innovative institutional reform.

The reform of the Chinese traditional rural technical extension system has been conducted along with the process of Chinese rural reform as a whole. While some active efforts have been made in terms of commercialization and marketing of agricultural technology, the system developed under the culture of the planned economy cannot meet the requirements for the development of a market economy and knowledge-based economy. The government-dominated extension system, which is based on scientific disciplines, has had difficulty in satisfying farmers' increasing market-oriented needs for technological application. The simplified technology supply of government-dominated rural extension system can not meet farmers' diversified and integrated demands for new technologies.

There has been a lack of effective incentive mechanisms for technical personnel to build close partnerships with farmers based on common interest.
In most Chinese rural areas, farmers have been increasingly receptive to so-called 'hardware' technology, which is material-based; however, they need more so-called 'software' technology, which is knowledge-based.

### *Limitations of the traditional extension system*

Since 1949, the agro-technical extension departments have been reorganised in China (*See Annex One: The traditional agricultural extension system in China*). While the traditional agricultural extension system has popularized a large number of advanced and practical techniques from national level to county level, the service has been depleted in recent years as government has reduced funding. The service has been increasingly characterised as unresponsive to modern agriculture management techniques and the requirements of the new market economy. County Agro-Technical Extension Centres and Township Agro-Technical Extension Stations are often under-resourced, unresponsive to the new demands and staffed by personnel who lack the capacity or incentive to meet the new demands. The institutions under the system have dual functions, namely technical extension and administrative law enforcement.

Extension Station staffs often are unable to provide the level of technological advice required for modern technology implementation. The system is now funded by a combination government support at the particular level of operation and support from self-raised funds. The traditional agro-technical system provides farmers with both free limited services and some paid services. Today, the traditional service more relies on contract servicing and fee for service operation it is unable to assist poorer farmers to overcome poverty.

### *Priority needs*

In the new development stage of agriculture and the rural economy, especially because of the development of the market economy and the need to respond to the demands of large urban markets, the traditional extension system under the planned economy system is failing to adequately meet the new challenges. There is a need for:

Restructuring, and change in the responsibilities of traditional extension delivery, to match changing demand and local government institutional change by closely integrating education, R&D, technology extension, planning and management. Overcoming rural poverty and improving productivity will require corresponding administrative change to match village development more closely to the market economy.

Strengthening the coordination mechanisms for implementing poverty reduction initiatives at community level with the focus on establish models of R&D institutions/technical personnel, investors and farmer partnerships. This will include strengthening the linkages of technical innovation and businesses.

Increased farmer participation at village level and consolidation of decision-making in farmers' operations to deliver programs and actions based on community participation. In the new established market economy framework, farmers are able to make their own production decisions, which have changed the environment for agro-technical extension from government promotion to meeting farmers' needs. The extension of technology has changed from government driven to government guided. Developing mechanisms and skills in extension practitioner staff to encourage grass-roots and bottom-up village development based on community participation.

Meeting the diversity of farmers' demands for science and technology. The major feature of Chinese rural economic development has been the shift from the need in the planned economy for maximum quantity to individual economic return and the evolution of agriculture operation to integrated business operation, including processing and marketing. Farmers' demands for science and technology have become diversified and reflect consumers' demands for agricultural products. Farmers' demands will include new varieties, more sophisticated and integrated technology, improvement in product quality, production techniques which are environment-friendly and safe, integrated technical assistance, market information and systems for access to large urban markets.

Reinvigorating the ways by which the agro-technical extension system may meet the requirements of a developing agriculture and rural economy within the WTO framework. This means the development of China's agricultural sector increasingly relies on science, technology

and education, on transforming from command determined crops to needs-based production of a variety of markets and the new market economy. There is an increased need to assist and empower farmers in more disadvantaged situations to overcome those challenges brought by China's entrance to WTO, instead of being further marginalized and remain in poverty.

In summary, changes in agriculture and the rural economy have given rise to higher requirements and greater scope for the agriculture technical extension system. To meet these new demands, together with the need for reducing rural poverty, there is a need for new and innovative approaches in science and technology delivery systems and in systems for reaching and helping the rural poor.

## PART 2: NATIONAL DEVELOPMENT STRATEGIES

### 2.1 Scientific Development Concept, Xiaokang and Socialist New Countryside

The 16th National Congress of the Communist Party of China (CPC) in 2002 redefined the concept to encompass a broader approach to national development. The vision of 'all-round' Xiaokang society by 2020 was approved with goals: the quadrupling of per capita incomes; balanced, human-centred development; care of the environment; support of individual empowerment; and commitment to the improvement of governance and accountability. It reflects the strong political commitment of the Chinese government to shift the focus of development beyond that of economic and material well-being, to broader concepts of development and the achievement of sustainable human development outcomes. The 3rd Plenary Session of the 16th Party CPC of 2003 gave further clarity to the vision through advocating for the 'Scientific Development Concept' focussing on achieving 'five balances' between: urban and rural; across regions; economic and social; between man and nature; and domestic development vs. opening up.

The 'all-round' *Xiaokang* vision closely mirrors commitments made by China in the UN's Millennium Declaration that was adopted by Heads of State and Governments from 189 member countries in 2000. The Millennium Development Goals (MDGs) outline clear goals, targets and indicators for ending human poverty and accelerating human development. The MDGs support and underpin China's *Xiaokang* vision and offer an historic opportunity for enrichment through integration. Enhancing China's national reform process contributes directly to the global reduction of poverty and improved human development outcomes worldwide.

Building on the Xiaokang vision, the task of the nation to build **a new socialist countryside** which was put forward at the Fifth Plenum of the 16th CPC Central Committee in October 2005. Balanced human development with emphasis on San-nong is a top government priority. The recently proposed 11th Five-year Program (2006-2010) on National Economy and Social Development included building a socialist new countryside, reflecting production growth, human well-being, civilized ethics, the clean village and democratic management. These goals complement the goal of building a well-off and harmonious society in China's rural areas. The principle of giving more and taking less from the rural areas is expected to be fully implemented to promote the development of the rural areas in an all-around manner.

More recently in February 2006, China announced a sweeping 15-year plan to invest in technologies ranging from genetics to energy efficiency to spur economic growth and improve environmental protection. The plan calls for the country to raise spending on R&D programs to 2% of the national GDP by 2010 and 2.5 percent by 2020, while progress in science and technology will contribute at least 60 percent of the national economic development. Agriculture and information and communication technologies are among the 11 major sectors. China expects to complete its transition from a predominantly agricultural society to a suburban, knowledge-based economy by the middle of the 21st century. In this process, knowledge-based innovation in rural science and technology application will be key to help achieve growth with equity and balance between urban and rural, across regions, between economic and social development and, more broadly, reduce poverty especially in rural areas, by empowering farmers with appropriate technologies and skills to promote agricultural efficiency and increase farmers' income and integrate farmers in disadvantaged areas into the market economy.

### 2.2 International Support to China's Development Agenda

The UN is working together with the government of China to operationalize its development agenda and to merge them with the MDG approach. Xiaokang calls for a new holistic approach to development. This is particularly true when it comes to sustainable agriculture and rural

development. The international community is helping in this by sharing best practices from other countries and support in developing models that are feasible for China.

With respect to the problem of proving employment and sustained growth, The UN China Country Team recognises there is a particular challenge of providing adequate incomes to farmers and adequate employment and incomes to agricultural workers in the rural areas in order to reduce poverty levels and mounting migration pressures. The UN put forward a number of policies and strategies through The UN China Country Team - 2005 Report to redress this problem.

Create and sustain small and medium sized businesses. This requires giving this area as great an attention as received by high tech and large industries.
Bring micro-enterprises into the formal economy, reducing barriers to growth of many small and medium enterprises and ensuring that firms are not protected from competitive pressures with incentives to innovate and be more productive. It will be important to extend supporting credit and financial policies and regulatory environment to assist business start-ups.
The rural labour force needs to enhance its knowledge and skills in agricultural production. This implies greater allocation of resources to education and targeted training and development. There is a need for SME training, which should target rural areas.
Public-private partnerships in economic development will be a key policy environment for SME development in local areas.

International organizations participating in Chinese rural development and poverty alleviation programs have stressed the importance of participatory rural development models, which are farmers' needs-centred and market-oriented, while searching for effective approaches to provide financial services and technical services to the farmers to reduce poverty in rural areas.

The United Nations Development Programme (UNDP) launched an important publication in 2001 - Human Development Report on "Making New Technologies work for Human Development", calling for a new partnership between technology and development, given that the 20$^{th}$ century's unprecedented gains in advancing human development and eradicating poverty came largely from technological breakthroughs. The report provided strong evidence of the potential for harnessing cutting-edge science and technology to tackle centuries-old problems of human poverty, with suggestions to governments and donors on development policy options and technical assistance matching the pace of technological innovations.

In recent years, UNDP introduced and piloted a number initiatives/projects in partnership with MOST, including poverty alleviation through microfinance and applied agricultural technologies, establishment of village telecentres for poverty reduction through ICTs, promoting contractual dairy farming system to enhance dairy farmers' capacity of accessing information /funds /technology/market and negotiating milk pricing. These initiatives have promoted knowledge-based innovations in rural science and technology application and place it as one of the critical preconditions for successful poverty project implementation.

### 2.3 National Technical Task Force (TTF) Initiative

The national TTF Initiative is under piloting by the Ministry of Science and Technology since 2002, based on a local innovation in Nanping Municipality of Fujian province since 1998 for the purpose of poverty reduction in rural areas. The initiative brings a direct linkage to the national task of building a new socialist countryside, the latest announced 15-year national plan of science and technology development and contributes to the development process of China's knowledge-based economy. The technology supported advances, managerial knowledge and experiences introduced by the TTF in health, nutrition, bio-system, crop yields, employment and venture creations are usually not just a one-time gain. They will typically have a multiplier effect of creating a virtuous cycle, increasing rural people's knowledge, health and productivity and raising incomes and build capacity for future innovation, all feeding back into human development.

**Experience of the current TTF mechanism**

The Technical Task Force initiative (TTF) involves the reform of the traditional system for the transmission of technical knowledge in village and rural systems, introducing market-oriented mechanisms by linking rural people more directly to improved technology and product markets. The TTF initiative combines poverty reduction efforts with market-oriented approaches that encourage the development of 'common interest economic entities', which help develop entrepreneurship among the rural population and seek to integrate farmers, particularly in disadvantaged areas, into the market economy.

In the TTF initiative practitioners – often-skilled technical personnel and/or professionals with entrepreneurial skills – are selected to participate in developing more efficient enterprises at the farm and village level, thereby helping farmers out of poverty. Typically, the TTF initiative involves the secondment of a selected TTF practitioner from a government agency, a university, a national research institute, and a county agriculture experiment station or an agricultural school. Newly graduated agriculturalists have also been selected by competitive examination. Importantly, the selection of practitioners is based on identifying people with the relevant skills and motivation to be matched with the identified technology or enterprise opportunity, rather than being sourced from a particular government agency such as the agricultural extension services. The TTF mechanism requires that the practitioners have good command of both technical and entrepreneurial skills. However many TTF practitioners have either technical or entrepreneurial skill. Training programme will be designed accordingly for TTF practitioners to have the two skills in order to ensure the success of the TTF practices.

Typically the selection of a TTF practitioner is made at the county level and is bi-lateral – the practitioner is selected on the basis of relevant skills, experience and capacity by the local authorities; and the practitioner offers his or her services for a project for which they see merit and which matches their skills or entrepreneurial aspirations. TTF practitioners are typically seconded from their employing organisation for one year with the organisation continuing to provide the TTF practitioner's substantive salary. The county or the province, through the TTF initiative, meets the additional travel costs, relocation and other expenses including venture set-up expenses. The TTF practitioner may extend the arrangement to continue in the role for two or three years. Some TTF practitioners have become joint ventures with village farmers in 'common interest economic entities'; others receive commissions from the provision of new crop variety seeds or fertilisers which they have introduced to local farmers, or from the provision of specialist crop husbandry techniques. Additional income may also be obtained in situations where the TTF practitioner introduces new livestock varieties for contract rearing by village farmers; the TTF practitioner may subsequently organise the marketing of the contract reared stock or produce on a larger scale than is possible for a village farmer. Such ventures also have led to the development of producer and marketing cooperatives or the development of benefit sharing communities (an early stage of an SME) at the farm and village level.

A characteristic of the TTF initiative is the diversity of its operation. There is a wide variation in the types of project undertaken and the nature of the enterprises that have been supported. The interaction between TTF practitioners, particularly those with managerial and entrepreneurial skills, and farmers is expressed in different ways both within and between Provinces. This diversity is characteristic of the approach to have information flow both ways from provincial offices down and from village levels upwards. This diversity of approaches is one of the strengths of the TTF initiative – particularly in responding to different local problems and solutions to poverty alleviation and in responding to market opportunities. MOST, while introducing a framework and implementing a structure for the pilot TTF initiative, has avoided setting up extensive bureaucratic structures and regulations for its operations to ensure flexibility of the implementation.

Currently, the TTF initiative is piloted in 24 provinces and 267 counties in China. The administrative system for the TTF operates of four administrative levels – the national, provincial, prefecture (or city), and county. Core funding for TTF operations and programs comes from the corresponding level of government administration. In addition, the salaries of TTF practitioners are met by the organisation from which the practitioner is drawn. The TTF initiative is organized and promoted by the Ministry of Science and Technology (MOST) with the assistance of other line ministries. The MOST Department of Policy and Regulation and the China Rural Technology Development Centre under MOST are designated as policy coordinating and implementing agencies of the ministry respectively. The TTF initiative has been characteristically diverse in its operation with a wide variety of projects undertaken and enterprises supported. A discussion of some examples of implementation of the pilot TTF system is presented in Annex Two: Examples of the current pilot TTF system.

**Lessons learned and priority needs to improve TTF initiative**

The piloted TTF initiative by MOST needs to build up its foundation for future success. These include some combination of communication support systems with risk assessment and management, sustained support from R&D programs from both the private and public sectors, education and training policies and investment that can help nurture a sufficiently strong skills base and technological network to meet local needs and sufficient regulatory capacity to sustain and manage all activities of TTF initiative. Based on previous TTF practice and experiences, some key areas have been identified that deserve special attention:

**Policy environment and institution building**: There is a need for improved organizational structure, management and administration systems of the TTF to streamline and establish useful common procedures and to organise the sharing of knowledge and experience in the operation of the TTF initiative. How to select TTF practitioners and TTF projects also needs to be codified into common procedures in order to match the TTF practices with the farmers' needs. Certification of personnel on the basis of competency should be established to enhance the creditworthy in seeking bank loans of TTF practices. Supportive policy environment related to TTF initiative should be created to include policy guidelines on TTF personnel, fiscal and financing on R&D programs and rural extension services, taxation of ventures formed by TTFs, companies and farmers etc.

**Participatory mechanisms**: Farmer associations are generally viewed as a participatory mechanism that can help improve feedback to policy development and management in the TTF initiative, thereby, improving and sustaining the TTF programs. In many cases, specialized farmers associations that started at the village or township level have now merged with other farmers associations at the county level or beyond, essentially developing commodity specific supply chains to service major urban markets. In the medium term the farmer associations and the potential establishment of a TTF Association will be important for sharing the operational cost of the TTF initiative, thus ensuring its longer-term sustainability.

**Managing risk:** Technological advances can bring both benefits and risks. The imbalance of information, technical expertise and finance between the farmers and TTF practitioners can potentially place farmers in a very vulnerable situation by applying promoted new technologies, departing from the mandate of poverty alleviation. A system should be established for assessing potential costs and benefits. Modern Information and Communication Technologies provide powerful new ways of rural households to demand accountability of their governments, service providers and in the use of public resources and information for their livelihoods.

**Education and training:** There is a need for education and training for TTF practitioners, for TTF program managers and staff, and for farmers; particularly for capacity building of TTF personnel and of administrative personnel for good understanding of community development at village level and their technological and entrepreneurial skills as well as understanding of the commercial linkages to production technology in a market oriented system.

## PART 3: PROJECT STRATEGY

### 3.1 Overall Project Objective –promoting science and technology support to reduce poverty

The root causes of rural poverty are poor access to natural resources (land, climate etc.), economic resources (financial services, technologies, market and information, and quality human capital etc.) and social opportunities for better livelihoods largely determined by given policy support and regulations. The TTF is a relevant initiative addressing economic/technical resources and economic/social opportunities for poor farmers to boost rural productivity, help achieve growth with equity and balance by empowering farmers with appropriate technologies/skills and market information for higher agricultural efficiency and farmers' income, and integrate farmers in disadvantaged areas into the market economy where the competition for resources, markets, technologies and talented personnel is turning scorching.

The recent historic decision of the Chinese central government rallies all possible resources to change the backward situation in the vast rural areas. The TTF initiative is a relevant organic element in the process of building the **new socialist countryside** through promoting knowledge-based innovation in rural science and technology application. This initiative is an important policy options to solve the problem of low and slow transfer and adoption rate of modern science, technology and knowledge which is a critical development bottleneck in rural China. An improved technological extension system is in urgent needs to address challenges such as technologies not timely and affectively response to the practical needs of farmers and market signals; China's current agricultural production system comprising large number of small farm households in adverse geographical locations presenting difficulties for the traditional extension system to organize and establish chains and technology adoption mechanism in rural communities – "last mile" bottleneck of technology transfer.

TTF presents a unique opportunity of partnership between the government and UNDP for joint intervention to lead the underlying pilot TTF programme throughout rural China to be more pro-poor driven, by reducing the technology divide and thus the income divide. Scientific and technical innovation with the support of distributive innovative policies can become a source of inclusion, a powerful tool for poverty reduction and human progress.

The project is aimed at exploring a sound operational mechanism of Technical Task Force initiative by means of policy recommendations, testing and demonstration as well as pilot evaluation so as to set up a sustainable market-oriented structure of the rural technical extension system in China. It will make strategic use of the WTO Green Box measure to promote adjustment and maximize WTO benefits, promote the reform of China's rural economy and rural technological application system and set up a new approach for technical personnel to participate more effectively in helping farmers out of poverty and serve the sustainable development of the *San Nong* issues related to rural areas, agriculture development and farmers. Services provided by TTF mechanism will be designed, tested and evaluated to appraise their impact on poverty alleviation and to share with other regions.

The project will support the TTF initiative to become critical part of a diverse Chinese rural extension system to meet differing or disparate needs of farmers, farm systems and rural communities. The project will strategically respond to the priority needs of the underlying TTF initiative in three dimensions:

- Policy recommendations to improve rural technological extension service deliveries for better rural livelihoods and poverty reduction and enhancement of TTF Initiatives at different levels;

- Pilots of different poverty alleviation initiatives through TTF support and training programs to both the TTF practitioners and farmers integrating both global and local knowledge

- Dissemination of and scaling up the TTF initiative based on policy recommendations, experiences and lessons learnt from the piloted TTF interactions and organisational arrangements for the development of rural areas and market activities.

The TTF institutional settings and interactions between various stakeholders in the delivery of extension services and sharing of benefits and risks will be the foundation of the project. ICT for development in terms of technological information transmission to improve rural productivity, market information for livelihoods and income generating activities and gender sensitivity will be mainstreamed into all activities of the project. The introduction of new technologies may potential raise concerns about environmental and ecological, health and economic, even social and cultural conflicts. Thus, environment protection and sustainable development in the process of technology promotion should be the guiding principle of the TTF project.

## 3.2 Implementation Strategy for Key Components

### 3.2.1 Policy Recommendations on Rural Science and Technology Extension Services and Relevant Policies for TTF Initiative

**Policies related to technology extension service**

The success of rural technology extension service not only needs a sound science and technology policy but also relies on relevant fiscal, personnel and poverty alleviation policies. Only with an enabling policy environment can technology extension services, such as TTF initiatives have positive and sustainable impact on poverty alleviation and rural development.

Many line ministries are involved in providing science and technology support to reduce poverty in rural area through different manners and policies. In order to enhance the efficiency and effectiveness of poverty reduction through science and technology support there is a high need to coordinate the efforts from different line ministries and synergize relevant policies. With synergized policies and efforts from different line ministries TTF initiative will have a healthy development and contribute to poverty alleviation in rural area in China.

A Policy Advisory Committee (PAC) will be set up at the central level to provide coordination and synergized policy support to TTF initiative.

Research and analysis of personnel management policy, human development policy and fiscal policy related to science and technical support to poverty reduction will be conducted. Policy recommendations on rural technology extension service and TTF initiative will be proposed to the central government through PAC.

**Guidelines for TTF Initiative and Poverty Alleviation**

China has vast diversities in term of demographic and geographical characters. Flexibility of TTF initiative is a great advantage to advance development according to specific local situation. However in order to achieve poverty alleviation target and to ensure the success of TTF scaling up guidelines on personnel management, human resource development, finance, organization structure administration system, procedures for TTF project selection will be developed based upon the best practices generated from pilot experience and researches conducted by international/local consultants.

### 3.2.2 General Principle: Piloted Poverty Reduction Initiatives through TTF Support

**Pilot Strategy**

The TTF initiative under the project will be implemented in 15 provinces to further develop models for linking farmers to markets and ensuring equitable growth and social development at township and village level. The provinces selected for implementation of the initiative are Fujian, Zhejiang, Shandong, Tianjin, Heilongjiang, Guangxi (Autonomous Region), Hubei, Jiangxi, Ningxia (Autonomous Region), Tibet (Autonomous Region), Xinjiang (Autonomous Region), Inner Mongolia (Autonomous Region), Hainan, Chongqing and Yunnan.

The pilots aim at exploring innovative approaches to promote poverty alleviation through support of TTF. The type of support of the TTF could be:

- Helping poor rural areas to develop more efficient agricultural industry structures with links to markets beyond the village level and by increasing employment in rural areas.
- Introducing new technologies (planting, animal husbandry and veterinary, aquatic production, agro-machinery, rural energy, forestry, water conservancy and irrigation and agro-processing etc) to improve productivity and increase the income of farmers and village families.
- Introducing scientific ideas/available techniques to village farmers to protect and improve the environment.
- Services in the planning, design and implementation of community and household agricultural demonstration bases/sites, as well as participatory village development plan.
- Capacity building and building commercial partnerships between village level farm families and commercial enterprises. Support the development of township and village agricultural ventures, local farmer associations and cooperatives.
- Providing training programs to improving human development and the quality of human resources at village level and changing consciousness of farmers and awareness of opportunities.
- Supporting and facilitating community social, health, cultural gathering, and entertainment activities for the establishment better social circumstance and culture for rural communities.
- Advising on local policy and decision making process, providing a bridge and communication between government, farmers, research institutions, and commercial companies.

The project will adopt a phased approach in the overall implementation. The focus at the stage of first two years will be on four selected provinces/autonomous regions. The selection of the pilot areas is based on their geographical locations and comparative human development level. Two low development provinces will be selected from western China, one medium development province from central China, and one relatively high development province from eastern China. The project has a pyramid-shaped support structure of national, provincial, prefecture/county, township and village levels.

Therefore, in the second stage of the project the methodology and experiences gained in these four provinces will be introduced to the other 11 provinces and autonomous regions to scale up the TTF initiative. Sharing of experiences and study tours will be conducted between the 11 second phase provinces and the first pilot phase provinces at different levels, particularly, farmers visit tours will be organised to give farmers more chances to observe and compare choices and benefits of using technologies.

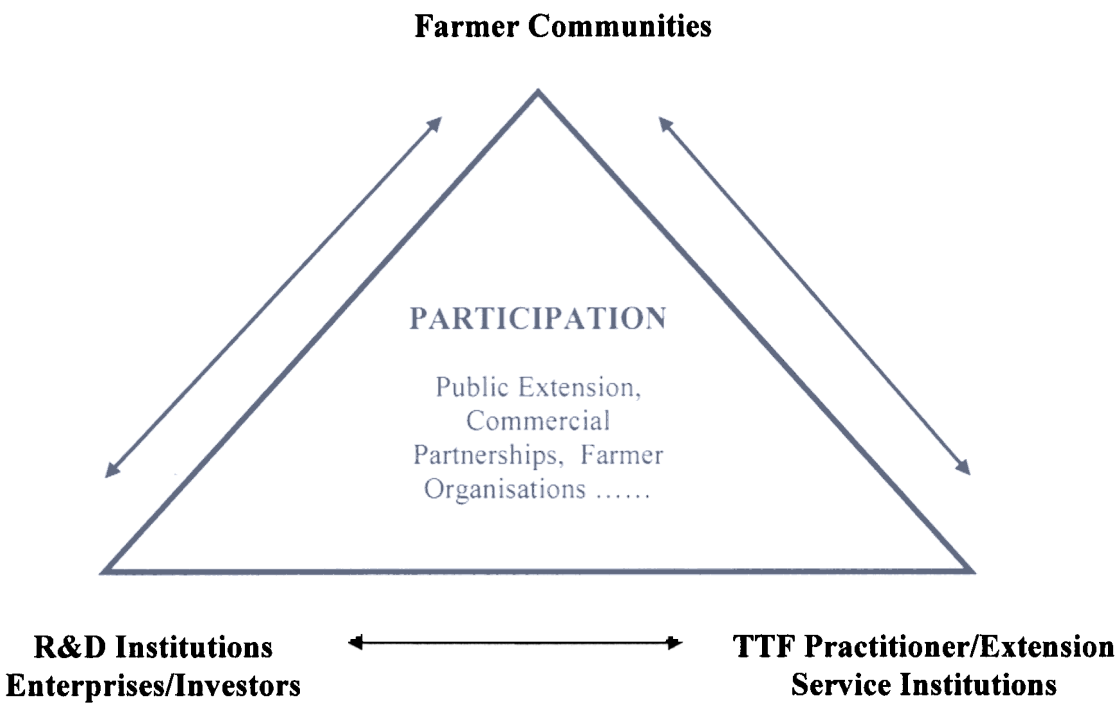
The purpose of the project is to draw on the experience and lessons learnt in the pilot TTF to improve the effectiveness of TTF more widely and to be a catalyst for TTF development in the longer term. Global knowledge and experiences will also be drawn from study tour, training, peer-experience sharing with the countries, to gain more insights on how to improve science and technology support to farmers and poverty reduction. Resource mobilization for the pilots will be strengthened in order to enhance the TTF sustainability. More funds in addition to the existing

resources of the project could be mobilized and invested in the pilot TTF during the project duration.

**Target Group Selection**

The project aims at using TTF as innovative approach to supplement existing rural technical extension system by addressing the root causes of rural poverty and challenges to reduce rural poverty. The critical foundation for the technological service delivery system to be success is targeting farmers' exact needs. When designing the system to overcome rural poverty or rural disadvantage it will be of great importance to have a clear understanding of the level of development of particular groups of farmers or rural villages and their actual needs. The likely differing needs of different target groups of farmers will require appropriate delivery and support funding arrangements of the technological extension.

- **Large farmers** normally with great interest in high technology, requiring technological sources from commodity boards, private extension, or public extension with condition of cost recovery;
- **Middle-size farmers** are usually eager to learn high technology, system management, processing management, marketing management. These needs can be delivered by private extension, public extension with eventual cost recovery;
- **Small farmers** are much of risk aversion type. Needs assessment is of importance for them to be convinced prior to the use of new seeds, fertilisers and pesticides. Their needs are normally adapted technology, capacity building, village social development, management skills and linkage to markets. These needs will be met through public extension services, cooperatives and farmer associations
- **Subsistence farmers** are the typical group of risk aversion. Needs assessment becomes more important for this group, their range of needs are often low technology organisational skills, village social development. All these are expected to be met by public extension services.




**Participatory Mechanism of TTF Technological Extension Services**

The project will have the aid of TTF practitioners to target all farmers in the pilot rural communities and villages of project counties and provinces. While, it is envisaged that especially small and subsistence farmers, women and young farmers will benefit from the project. The Chinese agriculture is typically feminized today and is scattered with small farming plots and households, employing over 70% women labours as the major consequence of farm men migration to work in cities. Meanwhile, young farmers will be the dominant labour force of the Chinese agriculture, determining the future progress of the agricultural sector. They should be key recipients of applied knowledge and technology. For instance, well designed green certification program as implemented elsewhere in the world will provide them basic agricultural technology and skill trainings. Development programs in common request for targeting of poverty groups to receive service and loans for livelihood activities. However, one of the "problems" is often that there has been more than sufficient demand by the middle and upper income households in rural areas to take up the services, emerging opportunities and funds available. As a consequence, the services and opportunities are most possibly delivered mainly to middle and upper level recipients. For certain commercial nature of the organisational arrangements of the TTF initiative, this project will pay greater attention to incorporate sensitivity approaches and test reliable targeting mechanism with well defined monitoring indicators mechanism.

The project will explore different approaches of TTF practices in supporting the poverty alleviation efforts. During formulation, some initial proposals have been put forward:

First, the project could take a strategy to pilot arrangements for direct connectivity between farmers and TTF practitioners. The TTF will be functioning as a direct provider of public extension. This can be built on the existing resources and rural extension network to target mainly small and subsistence farmers. This will not involve much investment on new infrastructures and facilities for the service delivery;

Second, a contractual arrangement could be tested between companies and TTF practitioners or public R&D institutes the TTF practitioners associated with to develop and demonstrate new technologies and applications at county, township and communities. The establishment of demonstration zones and bases or using demonstration farmers (often selected large and medium size farmers) will be critical to attract local farmers including the small ones;

Third, the project could test tripartite arrangement between farmers, investors and TTF practitioners or public R&D institutes the TTF practitioners associated with. Farmers are essential part of the commercial partnership. This demonstrates a process of the formation of "common interest economic entities" that both large and small farmers can join. This arrangement has proved viable for long-term sustainability, for the financial benefits normally directly go to small households from sales, while the farmers will also possibly share the risks.

Lastly, as presented early, farmer associations are generally viewed as a participatory mechanism, a new way of organising farmers in the market economy. The project could facilitate the development of farmer organisations and encourage partnership buildings in all these institutional arrangements.

Participatory process will be the foundation for the outreach of farmers needed technologies and knowledge. The project could aim at establishing an equal platform for interactions between farmers, R&D institutions, enterprises and investors, the TTF practitioners and extension service institutions supported by the government at central and local levels (as shown in the triangle above)

**New delivery systems: Technological and market information**

To be cost effective, one of the key strategies of the project is to build these new interventions on existing rural extension services and local communication networks so that the technological

extension services to be delivered and reach most, if not all, households including the poorest and most disadvantaged families in the demonstration provinces and grassroots communities. The project thus will strive to strengthen cross-sectoral coordination between sectors such as agriculture, education and planning agencies at different levels. The project shall coordinate through the County Bureau of Science and Technology with the County Bureau of Agriculture for the TTF practitioners to best use and work with the MOA existing network of *county agro-technical extension centres* and *township agro-technical extension stations* throughout project counties. The TTF together with the county agro-technical extension centres and township agro-technical extension stations will be three essential organic elements of a diverse rural technical extension system.

Experience world-wide demonstrates that progress in Information and Communication Technologies (ICTs) offers viable solutions to effectively address limitations in the out-reach of communication networks. The continuing rapid development of telecommunications and computer-based information technology will be a big factor for change in extension, one which will facilitate and reinforce other changes. There are many possibilities for applications of the technology in agricultural extension to bring new information services to rural areas over which farmers, as users, will have much greater control than with current information channels.

While, existing facilities in rural areas are not put to the use of local communities to cater to the broader information needs of households, especially applied technological information transmission to improve rural productivity, market information for livelihoods and income generating activities. The idea of village communication centres will help strengthen communication practices with local communities and seek expert advice on means through which more effective flow of needed information to farmers and communities can be achieved. General village out-reach with communication network at the community level, timely information relating to e.g. market prices and market channels for agricultural goods, advanced and appropriate technologies, education and medical information is to be provided to rural households. Such information facilities/venues also proved to be a powerful tool in HIV/AIDS knowledge awareness and education in rural communities. The project therefore provides opportunities to extend the successful UNDP/MOST models of rural poverty reduction by using information technology.

**TTF personnel selection**

Extension organizations in many developing countries face the major problems of professional incompetence and lack of motivation among their employees. Further, many agricultural extension departments do not have well-defined systems of human resource management. Wise selection of committed extension practitioners, and management of extension practitioners to encourage innovation, is essential to increase the capabilities, motivation, and overall effectiveness of extension delivery at village level.

The TTF practitioners can be either *an individual person* or *a legal person* such as R&D institutes, technological extension services, universities, academies and enterprises. Today, enterprises can play an increasing role in technology transfer. Most enterprises designate technical specialists to promote their products and technologies. Meanwhile, they are an important force for interactive extension services.

These TTF personnel should come from various fields and have diversified technical skills to meet needs of community planning, system management, linkage to markets, rural/village social development and capacity building, and a broad range of specialised knowledge and technologies in planting, animal husbandry and veterinary, aquatic production, agro-machinery, rural energy, agro-environmental protection, forestry, water conservancy and irrigation and agro-processing etc.

The project will help establish standard procedures and criteria in the selection of the TTF practitioners, with special emphasis on their technical expertise, initiative and willingness to serve

farmers and township and village communities, understanding of community development at village level, and entrepreneurial skills and understanding of the commercial linkages to production technology in a market oriented system. The project will also introduce and test performance incentives and evaluation system for the TTF personnel.

**Risk management and sustainability**

There are risks in applying innovative technologies or technologies or enterprises which may not be fully adapted to local conditions. The introduction of new technologies may potential raise concerns about environmental/ecological, health and economic, even social and cultural conflicts. Other risks are associated with TTF practitioners who develop as entrepreneurs new to business and may lack of experience. There are normal venture risks associated with markets for agricultural products, and imbalance of information, technical expertise and finance between the farmers, TTF practitioners and enterprises. The TTF should set its guiding principles and monitoring mechanism to mitigate these risks.

Typically, in contractual business such as agro-processing and animal breeding where technologies could be introduced to simple operational process of farmers, the investor normally bear the technological and market risks; while, crop yields are affected by weather and natural disaster, the investor usually would not like to bear such risk. There is an innovation between investor, extension service and farmer association to create a risk fund to balance potential losses of farmers.

The project will assist the TTF initiative in developing an adequate review process and mechanisms for feedback from farmers and TTF practitioners. The extension of rural telecentres will be a useful alternative in mitigating the risk from information imbalance and gap.

Concerning the sustainability of the TTF, the central government support for the initiative is very strong and exemplified at all levels of its administration. Funding sources therefore become more critical. The project will work on and test proposals on funding mechanism. Funds to sustain the Project could come from different channels:

1) Rural extension services for long will still be a public good especially to small, young and poor as well as women farmers. Fiscal and public financing will thus continually be a key source;
2) Economic returns through contractual arrangement common interest economic entities between TTF practitioners, investors and farmers such as common interest ventures, enterprise cooperatives as well as technological demonstration bases and farmers Associations are also a potential form of future cost-sharing for the TTF initiative. It is reasonably possible that, in the long run, these economic entities would be physically and economically self-sustaining with good performances in their respective lines of business, even if external assistance were phased out in the future;
3) The third source could be risk fund created by government, investor, extension service and farmer association to support the TTF practitioners and balance potential losses of farmers;
4) International and national development banks' loans and private sector's donation to support agricultural technology transfer.

### 3.2.3 Dissemination, institutional building for the TTF initiative and scaling up

TTF initiative is still at an early stage in its development. Dissemination and advocacy of best practices and experience from TTF pilots is very important to enhance the impact of the project both within and out of pilots.

Communication and advocacy mechanism such as PAC annual meeting and National TTF Forum will be set up to evaluate project results, to propose TTF policy support and to disseminate best

practice and experience from TTF pilots. TTF journal/news letters and website will be developed to enhance the communication.

Different TTF organizational mechanisms and management networks will be designed, tested and evaluated. TTF guidelines will be developed for knowledge sharing and scaling up of TTF initiatives. Best practices and lessons of the TTF should also be shared through website and knowledge network.

## 3.3 Partnership Strategy

The project will strive to strengthen cross-sector coordination at central policy level and between sectors such as agriculture, poverty alleviation and education at different levels. The mechanism of the project partnership strategy comprises of three key elements: central policy coordination; project implementation partners; resources and potential funding agencies.

*a. Central policy coordination:* The success of TTF initiative and the technical extension services not only needs a sound science and technology policy but also relies on relevant fiscal/financial, personnel and poverty alleviation policies. Therefore, it is important to bring together those key government institutions through a dialogue mechanism of national level policy advisory committee (PAC) with membership of the following government bodies:

The Ministry of Sciences and Technologies (MOST) has initiated, organised and promoted The TTF initiative. **Department of Organization (CCCPC)** and **The Ministry of Personnel (MOP)** are key party and government partners on personnel policies related to the deployment of TTF practitioners. **Ministry of Finance (MOF)** is key government partner to direct fiscal resources enhancing agriculture science and technology support and poverty reduction. The ministry is also the key institutions for tax policies on potential ventures established between TTF practitioners with enterprises. **National Development and Reform Commission (NDRC),** as the State Council department responsible for the macro-regulation of the national economy, undertakes an important function of studying and formulating policies related to rural development and poverty alleviation. NDRC is the key government partner on overall policies for TTF initiatives. **Ministry of Agriculture (MOA):** MOA oversees and guides the development of the agricultural sector. The ministry supervises and administers the existing rural extension system. **The State Council's Leading Group Office for Poverty Reduction (LGOPR)** has responsibility for the overall success of China's poverty reduction programme and for coordination of the poverty reduction activities of other government ministries and agencies. **People's Bank of China** has responsibility to supervise and regulate related policy issues of fund raising of non-financial institutions, loans, SMEs and venture capital mechanisms associated with the TTF initiative. Finally, **China International Center for Economic and Technical Exchange (CICETE) of the Ministry of Commerce** is UNDP's national counterpart for overall Project execution.

*b. Project implementation partners:* again, MOA will be a key partner in the ground implementation since the ministry has already established a network of County Agro-Technical Extension Centres and Township Agro-Technical Extension Stations throughout the Country. Since 1990, the Ministry has been providing a Green Certificate Program in the country to enhance young farmers' qualification in the agricultural sector. The TTF practioners should best use these existing resources and establish the linkage. The LGOPR and its executive agency the Poverty Alleviation and Development Office (PADO) which extends down to county and township levels, could be a major partner throughout project implementation particularly where programme interventions take place at local level. **Ministry of Education (MOE)** oversees the educational sector. Its education system, especially its IT education system across the country, in junior middle schools and primary schools will be valuable resources for the TTF practitioners and rural communities to access for poverty reduction and livelihood improvement. Meanwhile, MOST will need to coordinate with the Ministry on the issues related to TTF practitioners from the educational sector in particular those from universities. **All-China Women's Federation (ACWF)** is critical to mobilise women's

participation in the project. The ACWF functions as a government arm to promote the advancement of women through China. ACWF conducts extensive educational activities at all national, provincial, and local levels, and its main focus has been on such areas as assisting women to escape poverty, reemployment and venture creation, elimination of illiteracy, protection of the rights of women.

*c. Knowledge, resources and potential funding agencies:* National and international **academies/universities** or training institutes, colleges or research bodies; specialists are key source of the TTF practitioners; local partners with a national network, particularly local offices i.e agricultural extension services, R&D, NGO's and CSO's etc. **The Private Sector** is a valuable partner in supporting the development of community-based science and technology poverty reduction activities. Companies have farmers' desirable technologies and funding resources. They can connect farmers through commercial partnership directly to the market to raise farmers' income. Companies have technical specialists to promote their products and technologies. Meanwhile, they are an important force for interactive extension services.

Lastly, these multi-lateral and bi-lateral donors, including the World Bank, IFAD, EU and CIDA have similar projects in supporting China's agricultural technology transfer. They are good partners to share experiences and lesson learnt. A few bilateral agencies could also be the potential funding agencies for future support to the project and the TTF initiative.

## 3.4 Target Beneficiaries

The direct beneficiaries of the project will be poor households in the pilot villages of project counties and provinces that can increase their living standards by having sustainable access to demand oriented technologies and information services in their communities. The TTF practitioners and local governments at each level of the selected counties are also direct beneficiaries with their (individual and institutional) capacity enhanced to harvest the potential of technological extension services for poverty alleviation in rural areas. It is envisaged that especially young farmers, women and ethnic groups will benefit from the Project.

Indirect beneficiaries will be the farmers who are not directly involved in the project in the same areas, TTF personnel and institutions and the agricultural research institutes and agro-based business companies and rural enterprises.

## 3.5 Expected Outcomes, Outputs and Indicative Activities

***Outcome One**: Enabling environment and relevant policies for TTF development created with new and innovative approaches of the TTF Initiative at different levels suggested improving rural technological extension service deliveries for better rural livelihoods and poverty reduction.*

**Indicators:**

i. A consultation and coordination mechanism at national level functional to provide policy and regulatory support to rural technical extension, including the TTF initiative;
ii. A four year TTF strategy and action plan developed;
iii. Policy recommendations on rural technical extension, including TTF mechanism made to the government regularly and at the end of the project, pursuing the TTF initiative to be part of a diverse rural technical extension system.

**Output 1.1:** TTF operational management network established at national, provincial, prefecture/county, township and village level.

Indicative activities:

Set up NPMO with accommodation at China Rural Technology Development Centre/MOST.
Establish the criteria for selecting project demonstration areas (province, county and communities) and selecting the pilots by the NPMO

1.1.3 Set up PMOs in 15 project provinces and relevant counties

1.1.4 Delegate township and village representatives as community focal points

1.1.5 Develop Project Implement Plan using participatory approach at different level of project areas (community, county and province)

1.1.6 Equipment Procurement

1.1.7 UNDP/MOST/CICETE to hold national inception workshop in Beijing or a pilot province with participation of the PAC and project expert group members. Project provinces, other line ministries and interested stakeholders also should be invited. Work/action plan for the pilots formulated for implementation of the project.

1.1.8 Local inception workshops and publicity events in pilot provinces and communities to mobilise local social participation to the project.

**Output 1.2:** Policy Advisory Committee (PAC) is set up at the national level, with the aim of creating an enabling environment for sustainable development of the TTF initiative.

Indicative activities:

1.2.1 Conferring between MOST, Ministry of Organization from CCPC, MOA and LGOPR etc on establishment of Project Advisory Committee (PAC).

1.2.2 Annual meetings of the Policy Advisory Committee to review project results. On need basis, field visits will be organised for PAC members to understand the situation and problems of the TTF initiative.

1.2.3 Overseas study tour by MOST officials on government's role for creating an enabling environment for promotion of public investment, commercial partnership in technological extension services, supportive policies and regulations on agro-SMEs and agro-entrepreneurship, and report the study tour results to PAC.

**Output 1.3** Policy analysis and recommendations by international and domestic experts of feasible approaches and mechanisms in the existing pilot areas to improve and redesign the implementation mechanisms according to the requirements for sustainable delivery of the initiative.

Indicative activities:

Inception mission and workshop will be organized. An independent study will be conducted during the inception phase to summarise experiences and lessons of the existing TTF pilots in selected example provinces/counties and submit to PAC for suggestions on overall improvement or design the implementation mechanism;

Carry out more specific baseline survey including TTF modes, local situation, current TTF examples and potential social/economic impacts of the existing TTF programs in each project province and county by PMOs at different levels, with assistance of international and/or domestic specialists.

.3.3 A series of workshops/seminars being organized to discuss and assess current TTF approaches and mechanisms of 15 project provinces by PMOs at each level with assistance of international and/or domestic specialists.

.3.4 Participatory feasibility studies and proposals on TTF institutional and managerial arrangements, service scope of TTF practitioners, service delivery mechanism, targeting mechanism, risk management, funding mechanism for sustained TTF initiatives.

Conduct research on polices related to public investment on rural technology transfer and extension, taxation on ventures between investor, farmers and TTF practitioners/R&D institutions and on rural technological SMEs and entrepreneurships.

1.3.6 Establish regulation and working procedures, develop the Manual of TTF Management System of the TTF at national and local pilot level;

Conduct research on policies related to personnel management and human resource development of TTF mechanism

Policy recommendations on TTF mechanism will be put forward from the related research and pilot experience.

***Outcome Two**: Institutional and managerial capacity for the TTF Initiative built and strengthened through pilots of alternative TTF models, organisational settings and training programs to both the TTF practitioners and farmers.*

**Indicators:**

i. Sustained TTF development mechanisms tested and operational through pilots;
ii. Viable models for technological and market information delivery and farmer associations/cooperatives promoted to effectively protect individual farmers' interest and prevent technology/market risks;
iii. Advanced training methods and procedures developed for both TTF practitioners and farmers;
iv. A participatory mechanism for sufficient women farmer participants, the village poor farmers and village young farmers to join both local pilots and training programs;
v. Technologies promoted by TTF environmentally friendly.

The pilot arrangement will follow a pyramid-shaped support structure including national, provincial, prefecture/county, township and village levels. Each province will select two pilot counties, each county with two pilot townships and each township will cover all their villages as pilot communities.

**Output 2.1:** The new TTF initiatives with proposals from Output .2 and .3 are demonstrated and piloted in the selected provinces

Indicative activities:

2.1.1 Pre-selection of pilot provinces, counties, townships and villages
2.1.2 Participatory needs assessment and design mission carried out by international and/or national consultants
2.1.3 Pilot sustainable development mechanisms for the Technical Task Force Initiative combined with existing rural scientific and technical extension services in selected pilot areas according to results of the needs assessment
Promote the establishment of local farmer organisations and the Technical Task Force Associations
2. .5 Overseas study tours in Europe/Australia or Japan to learn from international best practices for the establishment and operation of rural extension services, agro-service associations and farmers' organisations such as cooperatives or associations.
2.1.6 Hold workshops or seminars to exchange experience on different TTF Modes (between provinces and/or pilot sites in province) by national and provincial PMOs
2. .7 Monitor and evaluate the effects of these new modes by every level PMOs using a participatory approach
Monitoring and evaluation missions by UNDP and CICETE officials on a regular basis.

**Output 2.2:** Identified training needs of TTF practitioners, farmers and staff of TTF management institutions.

Indicative activities:

2.2. Survey of training needs of TTF practitioners, farmers and staff of PMO carried by national consultants (at beginning of the project).
2.2.2 Training plan designed by international and national consultants.
2.2.3 Update training plan on a regular basis.

**Output 2.3:** Technical and managerial training organized according to demand of TTF practitioners, managerial personnel and farmers. Establish mechanisms to allow the development of both free and fee-based training programs.

Indicative activities:

Identify global knowledge, experiences and lessons on science and technology support for farmers and poverty reduction and compile them as training materials.
2.3.2 Farmers' agricultural technology training.
2.3.3 Farmers' community development training (marketing, society and community, gender and environment, etc.).
2.3.4 TTF practitioner training in professional knowledge and technology.
2.3.5 TTF practitioner and PMO staff training on working skills (knowledge and skills on community development, participatory approach, collect information, marketing and market development etc.).
Establish peer networks for TTFs domestic and other countries to share experience and knowledge, organize overseas training to countries have good practices on science and technology support for farmers
2.3.7 Internal study tours for farmers (between communities and counties).
2.3.8 Internal study tours for TTF practitioners (between counties and provinces).
2.3.9 Organise study tours for TTF practitioners, farmers and PMO staff from 11 non-pilot provinces to the pilot sites in four pilot provinces.

**Output 2.4:** Advanced training methods and teaching materials from international training institutions integrated into domestic and international trainings.

Indicative activities:

2.4.1 Select trainers and establish record file.
2.4.2 Provide training of trainers (TOT) on teaching method by international and domestic specialists.
Overseas training and study tours for the staff of national and local PMOs and TTF trainers to learn new ideas and best practices of market-oriented and demand-driven training mechanism for farmers and agro-technical extension systems, etc.

***Outcome Three:*** *Dissemination of and scaling up the TTF initiative based on policy recommendations, experiences and lessons learnt from the piloted TTF interactions and organisational arrangements for the development of rural areas and market activities*

**Indicators:**
i. China TTF annual forum organised annually to disseminate experiences and lessons learnt;
ii. Tools for advocating the TTF initiative such as workshops, newsletters and website to document and disseminate successes and lessons from demonstrations
iii. Fund raising strategy and management procedures of the TTF organisations developed.

**Output 3.1:** China TTF annual forum and workshops/seminars, to disseminate experiences and lessons learnt from the TTF initiative, and set up a knowledge –based platform for broad communication, exchanges and cooperation.

Indicative activities:

3.1.1 Workshops and seminars in every project province to prepare for the Forum;
3.1.2 National PMO responsible for planning, organising the Forum;
3.1.3 National TTF System Forum held by MOST, MOFCOM and UNDP.

**Output 3.2:** The journal/newsletter on *Technical Task Force for Agricultural Industrialization and Technical Extension* in Chinese and English versions compiled and published.

Indicative activities:

3.2. Compile project newsletter by prefectural and provincial PMOs and circulate these newsletters within project demonstration sites.
Compile and publish the journal by national PMO based on the newsletters and circulate the journal within project provinces and the member of PAC.
Publicize the Project and TTF Initiative through media, for example TV, newspaper, broadcast etc.

**Output 3.3:** A website - "China Technical Task Force for Agricultural Industrialization and Technical Extension" in Chinese and English versions developed by the NPMO under MOST. And the website linked to local websites established at provincial and county level, and those of MOST and MOA etc.

3.3.1 Set up TTF websites at National PMO and PMOs at provincial and county levels;
3.3.2 Establish linkage with other websites of MOST and MOA etc;

**Output 3.4:** Evaluation of the project conducted in order to assess social and economic impacts of TTF initiative. Best practices and lessons summarized for knowledge sharing and scaling up of TTF initiative.

Indicative activities:

3.4.1 Assess the social and economic impacts of TTF initiative demonstrated by the pilots;
3.4.2 Best practices and lessons summarized by international and national specialists

**Output 3.5:** Different organizational mechanisms and management networks (e.g. TTF Associations, NPMOs or local PMOs etc.) are designed and tested.

Indicative activities:

3.5. Exchange experience and knowledge between different county TTF organizations and management networks (workshop and/or study tours)
Design and profile the national TTF organizational mechanism and management network by international/national consultants. Conduct feasibility evaluation on different alternatives of TTF organizational mechanism and management network..
Based on progress and evaluation of the pilot, determine the final TTF organisational mechanism and management network

**Output 3.6:** The capacity of fund raising and fund management of the TTF organizations strengthened through the establishment of fund raising mechanism for long term sustainability of the TTF initiative

Indicative activities:

3.6.1 Review and develop guidelines for fund operations of the TTF.
3.6.2 Develop TTF Fund Operational and Management Manual
3.6.3 Establish and implement a fund raising mechanism of the TTF organizations at each level with the aim of mobilizing funds from government, international and domestic donors as well as enterprises to set up the revolving fund for TTF practitioners
3.6.4 Timely monitoring and audit the operation of the funds by PMOs.
3.6.5 Capacity assessment by international and/or national specialists at the end of the project if deemed necessary.

## PART 4: MANAGEMENT ARRANGEMENTS

The China International Center for Economic and Technical Exchanges (CICETE) is nominated by the Ministry of Commerce of China (MOFCOM) as the Government Coordinating Agency and Implementing Partner directly responsible for the Government's participation in each annual work plan (AWP) of this project. The AWPs describe the specific results to be achieved and will form the basic agreement between UNDP and the Implementing Partner on the use of resources. CICETE as the Implementing Partner is responsible and accountable for managing the project, achieving the project outputs, and for the effective use of UNDP resources. The reference to "Implementing Partner(s)" shall mean "Executing Agency (ies)" as used in the SBAA.

The Government Cooperating Agency of the project is the Ministry of Science and Technology (MOST). A National Project Management Office (NPMO) will be established in China Rural Technology Development Centre under MOST to oversee and co-ordinate all project activities and look after the day-to-day implementation of the project. MOST will appoint a senior official to act as the National Project Director (NPD) to oversee the management and implementation of the project. A National Project Manager (NPM) will be assigned full time to the project and will administer the NPO. The NPD takes the responsibility for effective management of the project and oversees the functions of leadership, staffing, planning, scheduling and organization, direction of implementation, monitoring/evaluation and reporting. In accordance with UNDP rules, the NPD also holds the authority to request funds from the project budget. The NPD is not a full-time appointment, but will provide close supervision to the to the NPM who will be responsible for the day-to-day management of the project.

Local Project Management Offices (PMOs) will be established at provincial and (city) county levels. See Annex Three: *Proposed institutional and administration structure.*

The national and local PMOs are anticipated to play the roles of future implementation and coordination for TTF operations throughout rural China when this project is completed. Therefore, institutional and managerial capacity building of these PMOs within the project cycle has a long term effect and result.

**The National PMO and its network**

The National PMO (NPMO) will be responsible for the general management for the UNDP TTF project, determining the overall working plan of the Project and the annual working plan, organizing the TTF National Forum, and for providing assistance to provincial and county PMOs. The NPMO will have responsibility for the appointment and coordination of international and domestic consultants. The NPMO will be responsible for project fund management. Through its network at provincial and county levels, pilot projects will be selected; training courses, workshops and seminars will be conducted for managerial staffs, TTF practitioners and farmers involved; feedback will be provided to NPMO regarding the TTF performance which will help perfect the TTF system as a whole.

**Policy Advisory Committee**

A Policy Advisory Committee (PAC) will be set up at the central level to give policy support to the TTF Initiative. The Policy Advisory Committee could comprise representatives from the Ministry of Science and Technology, the Ministry of Organization from CCCPC, the National Development and Reform Commission (NDRC), the Ministry of Personnel, the Leading Group of PA under the State Council, the Ministry of Agriculture and the People's Bank, the Ministry of Commerce (CICETE), other relevant line ministries and UNDP. The Committee will meet annually to review progress reports, assess and resolve problems that emerge during project implementation. The Policy Advisory Committee will advise on relevant policies at the central government level concerning the Technical Task Force initiative.

**The Expert Group**

An Expert Group is to be established to provide appropriate technical, managerial and marketing advice and support to the TTF pilot project. The Expert group will carry out regular studies, case studies and evaluation assessments; conduct training courses and seminars for PMO staff and TTF practitioners. The Expert Group will provide update information and an advice on international best practice to the Policy Advisory Committee and provide policy development advice and support. The Expert Group will provide advice concerning project evaluation and participate in monitoring and evaluation of the pilot project. The experts group will comprise domestic and international specialists. The domestic experts will come from national, provincial and prefecture/county levels respectively.

## PART 5: MONITORING AND EVALUATION

Monitoring and evaluation (M&E) of the project will be undertaken in line with the UNDAF results matrix and monitoring and evaluation plan.

Project monitoring and evaluation (M&E) will be conducted with focus on outcomes and outputs of interventions, institutional results and partnerships, policy advice and dialogue, advocacy and coordination. The M&E should aim at the following key objectives: 1) focus on results at two levels: at output level, the specific products and services from the Project; at outcome level, in which the Project has contributed to overall institutional setting of rural technological extension for poverty reduction specially targeting poor rural communities, small, young and poor as well as women farmers. 2) to enhance management efficiency of the project and ensure consultation/participation of all stakeholders and 3) to not only focus on assessment of progress of the project, but also on experiences and lessons learnt to support more informed decision-making and dissemination of project results.

Monitoring progress towards achievement of programme outcomes and outputs will be undertaken at both the level of the overall project, and at the individual pilot level. Project management will invite the direct involvement and support of provincial and local level government on an ongoing basis to enhance monitoring and evaluation activities. The extent to which the desired outcome of the project has been achieved will be monitored through a system of M & E activities, annual work plans and budgets, and peer group review and evaluation.

UNDP, CICETE and MOST will invite the National Policy Advisory Committee and the Project Expert Group to annual review meetings to evaluate project progress, results, experiences and lessons learned during project implementation and work plan for the following years. The annual review will be a tool to ensure periodic assessment on whether the approach and interventions will produce the expected outcomes. The NPMO will support convening of the review meetings and will assist MOST, the provincial governments with pilots to prepare annual Project reports.

Monitoring visits will be conducted by UNDP and CICETE to assess project progress and results through consultations with relevant stakeholders and beneficiaries. The Project Managers will prepare quarterly project updates to support day to day monitoring and implementation, as well as information sharing among concerned parties. Peer reviews will be conducted on views and experiences of project participants and beneficiaries regarding demonstration results and capacity building activities. Case studies on lessons learned should be collated and shared regularly during project duration and at the end of the project to scale up.

CICETE will provide periodic reports (annual review) on the progress, achievements and results of their projects, outlining the challenges faced in project implementation as well as resource utilization as articulated in the AWP.

## PART 6: LEGAL CONTEXT

This document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement (SBAA) between the Government of the People's Republic of China and the United Nations Development Programme, signed by the parties on 29 June 1979. The reference to "Implementing Partner(s)" shall mean "Executing Agency (ies)" as used in the SBAA.

## PART 7: BUDGET

The duration of the Project is 4 years, running from 2006 to 2009. The total budget for the Project is USD 4 million, including US$ 1 million from UNDP TRAC funding and US$ 3 million as government cost sharing. The Project will seek further sources of funding on an on-going basis to extend Project activities. Detailed budgeting for project activities is in Part 8 - Programme Results and Resources Framework.

## PART 8: RESULTS AND RESOURCES FRAMEWORK

### Output targets, timing of activities and budget costs

| |
|---|
| **UNDAF Outcome**<br>Social and economic policies are developed and improved to be more scientifically based and human centered for sustainable and equitable growth. |
| **Outcome Indicator as stated in the Country Programme Results and Resources Framework:**<br>National efforts to lead and manage Xiaokang/MDG implementation supported through a variety of instruments and capacity building initiatives. |
| **Country Programme Action Plan Output/Indicators:**<br>Policy oriented research on emerging poverty challenges developed and disseminated to key stakeholders. |
| **Applicable MYFF Service Line:**<br>1.2. Pro-poor policy reform to achieve MDG targets. |
| **Partnership Strategy:**<br><br>The mechanism of the project partnership strategy comprises of three key Elements: central policy coordination; project implementation partners; resources and potential funding agencies.<br><br>*Central policy coordination:* through a dialogue mechanism of national level policy advisory committee (PAC) with membership of Ministry of Sciences and technologies (MOST), Department of Organization (CCCPC), Ministry of Personnel (MOP), Ministry of Finance (MOF), National Development and Reform Commission (NDRC), Ministry of Agriculture (MOA), the State Council's Leading Group Office for Poverty Reduction (LGOPR), People's Bank of China, China International Center for Economic and Technical Exchange (CICETE) of the Ministry of Commerce and UNDP.<br><br>*Project implementation partners:* Ministry of Agriculture (MOA) with its network of County Agro-Technical Extension Centres and Township Agro-Technical Extension Stations throughout the Country, State Council's Leading Group Office for Poverty Reduction (LGOPR) and its local Poverty Alleviation and Development Offices, Ministry of Education (MOE) and its nationwide education system across the country, in junior middle schools and primary schools. All-China Women's Federation (ACWF) with its extensive network and educational activities at all national, provincial, and local levels.<br><br>*Knowledge, resources and potential funding agencies:* National and international **academies/universities** or training institutes, colleges or research bodies; specialists are key source of the TTF practitioners; **The Private Sector** is a valuable partner in supporting the development of community-based science and technology poverty reduction activities, with farmers' desirable technologies, funding resources and technical personnel. Lastly, the World Bank, EU, IFAD and CIDA have similar projects in supporting China's agricultural technology transfer. They are good partners to share experiences and lesson learnt. |

**Project Title and ID:** CPR/06/408, Promoting Innovative and Sustainable Science and Technology Support to Poverty Reduction in Rural China

**Outcome One:**

**Enabling environment and relevant policies for TTF development created with new and innovative approaches of the TTF Initiative at different levels suggested improving rural technological extension service deliveries for better rural livelihoods and poverty reduction.**

**Outcome Indicators: i.** A consultation and coordination mechanism at national level functional to provide policy and regulatory support to rural technical extension including the TTF initiative; ii. A four year TTF strategy and action plan developed; iii. Policy recommendations on rural technical extension, including TTF mechanism made to the government regularly and at the end of the project, pursuing the TTF initiative to be part of a diverse rural technical extension system.

| Intended outputs | Output Targets 2006 – 2009 | Indicative Activities | Inputs US$ |
|---|---|---|---|
| **Output 1.1**:<br>TTF operational management network established at national, provincial and prefecture/county, township and village levels. | **2006**<br>PMOs set up at different levels and commence work.<br><br>**2006-2008**<br>Participatory project implementation plan developed in each year. | 1.1.1 Set up NPMO with accommodation at China Rural Technology Development Centre/MOST.<br>1.1.2 Establish the criteria for selecting project demonstration areas (province, county and communities) and selecting the pilots by national PMO<br>1.1.3 Set up PMOs in 15 project provinces and relevant counties<br>1.1.4 Designate township and village representatives as community focal points<br>1.1.5 Develop Project Implement Plan using participatory approach at different level of project areas (community, county and province)<br>1.1.6 Equipment Procurement.<br>1.1.7 UNDP/MOST/CICETE to hold national inception workshop in Beijing or a pilot | 15,000<br>5,000<br>45,000<br>35,000<br>400,000<br>8,000 |

| Intended outputs | Output Targets 2006 – 2009 | Indicative Activities | Inputs US$ |
|---|---|---|---|
| | | province with participation of the PAC and project expert group members. Project provinces, other line ministries and interested stakeholders also should be invited. Work plan for the pilots formulated for implementation of the project. | |
| | | 1.1.8 Local inception workshops and publicity events in pilot provinces and communities to mobilise local social participation to the project | 25,000 |
| **Output 1.2:**<br>Policy Advisory Committee (PAC) is set up at the national level, with the aim of creating an enabling environment for sustainable development of the TTF initiative. | **2006**<br>PAC set up at the central level.<br><br>**2006-2009**<br>Coordination mechanism of PAC set up.<br><br>**First half of 2006**<br>Inception workshops held at national and local level | 1.2.1 Conferring between MOST, Ministry of Organization from CCPC, MOA and LGOPR etc. on establishment of Project Advisory Committee (PAC). | 5,000 |
| | | 1.2.2 Annual meetings of the Policy Advisory Committee to review project results. On need basis, field visits will be organised for PAC members to understand the situation and problems of the TTF initiative | 55,000 |
| | | 1.2.3 Overseas study tour by MOST officials on government's role for creating an enabling environment for promotion of public investment, commercial partnership in technological extension services, supportive policies and regulations on agro-SMEs and agro-entrepreneurship, and report the study tour results to PAC | 40,000 |

| Intended outputs | Output Targets 2006 – 2009 | Indicative Activities | Inputs US$ |
|---|---|---|---|
| **Output 1.3**<br><br>Policy analysis and recommendations by international and domestic experts of feasible approaches and mechanisms in the existing pilot areas to improve and redesign the implementation mechanisms according to the requirements for sustainable delivery of the initiative. | **Inception phase, 2006**<br>An independent study on best practices and lessons learnt of the existing TTF pilots conducted<br><br>**Second half, 2006**<br>Existing modes and mechanisms reviewed and feasible new modes proposed and designed. | 1.3.1 Inception missions and workshop will be organized. An independent study will be conducted to summarise best practices and lessons of the existing TTF pilots in selected example provinces/counties and submit to PAC for suggestions on overall improvement or design the implementation mechanism. | 20,000 |
| | | 1.3.2 Carry out baseline survey including TTF modes, local situation, current TTF examples and potential social/economic impacts of the existing TTF programs in each project province and county by PMOs at different levels, with assistance of international and/or domestic specialists. | 55,000 |
| | | 1.3.3 A series of workshops/seminars being organized to discuss and assess current TTF approaches and mechanisms of 15 project provinces by PMOs at each level with assistance of international and/or domestic specialists . | 40,000 |
| | | 1.3.4 Participatory feasibility studies and proposals on TTF institutional and managerial arrangements, service scope of TTF practitioners, service delivery mechanism, targeting mechanism, risk management, funding mechanism for sustained TTF initiatives. | 36,000 |
| | | 1.3.5 Conduct research on policies related to public investment on rural technology transfer and extension, farmers organisation, taxation on ventures between investor, farmers and TTF practitioners/R&D institutions and on rural | 22,000 |

| Intended outputs | Output Targets 2006 – 2009 | Indicative Activities | Inputs US$ |
|---|---|---|---|
| | | technological SMEs and entrepreneurships. | |
| | | 1.3.6 Establish regulation and working procedures, develop the Manual of TTF Management System of the TTF at national and local pilot level | 15,000 |
| | | 1.3.7 Conduct research on policies related to personnel management and human resource development of TTF mechanism | 15,000 |
| | | 1.3.8 Policy recommendations on TTF mechanism will be put forward from the related research and pilot experience. | 20,000 |

**Outcome Two:**

**Institutional and managerial capacity for the TTF Initiative built and strengthened through pilots of alternative TTF models, organisational settings and training programs to both the TTF practitioners and farmers.**

**Indicators: i.** Sustained TTF development mechanisms tested and operational through pilots; ii. Viable models for technological and market information delivery and farmer associations/cooperatives promoted to effectively protect individual farmers' interest and prevent technology/market risks; iii. Advanced training methods and procedures developed for both TTF practitioners and farmers; iv. A participatory mechanism for sufficient women farmer participants, the village poor farmers and village young farmers to join both local pilots and training programs; v. Technologies promoted by TTF environmentally friendly.

The pilot arrangement will follow a pyramid-shaped support structure of national, provincial, prefecture/county, township and village levels. Each province will select two pilot counties, each county with two pilot townships and each township will cover all their villages as pilots.

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| **Output 2.1:** | **2nd half 2006-1st half** | 2.1.1 Pre-selection of pilot provinces, counties, townships and villages | 15,000 |

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| The new TTF initiatives with proposals from Output 1.2 and 1.3 are demonstrated and piloted in the selected provinces and counties. | **2008**<br>New TTF mechanisms piloted and demonstrated in selected project provinces. | 2.1.2 | Participatory needs assessment and design mission carried out by international and/or national consultants | 45,000 |
| | | 2.1.3 | Pilot sustainable development mechanisms for the Technical Task Force Initiative combined with existing rural scientific and technical extension services in selected pilot areas according to results of the needs assessment | 845.000 |
| | | 2.1.4 | Promote the establishment of local farmer organisations and the Technical Task Force Associations | 24,000 |
| | | 2.1.5 | Overseas study tours in Europe/Australia or Japan to learn from international best practices for the establishment and operation of rural extension services, agro-service associations and farmers' organisations such as cooperatives or associations. | 35,000 |
| | | 2.1.6 | Hold workshops or seminars to exchange experience on different TTF Modes (between provinces and/or pilot sites in province) by national and provincial PMOs | 45,000 |
| | | 2.1.7 | Monitor and evaluate the effects of these new modes by every level PMOs using a participatory approach | 20,000 |
| | | 2.1.8 | Monitoring and evaluation missions by UNDP and CICETE officials on a regular basis | 40,000 |
| **Output 2.2**<br><br>Identified training needs of TTF practitioners, farmers and staff of TTF management institutions | **2006**<br>Training needs survey and training plan design.<br><br>**2006-2007**<br>Training needs survey and update training plan. | 2.2.1 | Survey of training needs of TTF practitioners, farmers and staff of PMO carried by national consultants (at beginning of the project). | 10,000 |
| | | 2.2.2 | Training plan designed by international and national consultants. | 30,000 |
| | | 2.2.3 | Update training plan on a regular basis. | 10,000 |

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| **Output 2.3:** Technical and managerial training organized according to demand of TTF practitioners, managerial personnel and farmers. Establish mechanisms to allow the development of both free and fee-based training programs. | **2006-2008**<br>Farmers' capacity building through trainings.<br><br>**2006-2007**<br>TTF practitioner capacity building through trainings.<br><br>PMO staff capacity building through trainings<br><br>**2006-2008**<br>Study tours. | 2.3.1 | Identify global knowledge, experiences and lessons on science and technology support for farmers and poverty reduction and compile them as training materials. | 20,000 |
| | | 2.3.2 | Farmers' agricultural technology training. | 210,000 |
| | | 2.3.3 | Farmers' community development training (marketing, society and community, gender and environment, etc.). | 170,000 |
| | | 2.3.4 | TTF practitioner training in professional knowledge and technology. | 160,000 |
| | | 2.3.5 | TTF practitioner and PMO staff training on working skills (knowledge and skills on community development, participatory approach, collect information, marketing and market development etc.). | 80,000 |
| | | 2.3.6 | Establish peer networks for TTFs domestic and other countries to share experience and knowledge, organize overseas training To countries have good practices on science and technology support for farmers | 35,000 |
| | | 2.3.7 | Internal study tours for farmers (between communities and counties). | 125,000 |
| | | 2.3.8 | Internal study tours for TTF practitioners (between counties and provinces). | 100,000 |
| | | 2.3.9 | Organise study tours for TTF practitioners, farmers and PMO staff from 11 non-pilot provinces to the pilot sites in four pilot provinces. | 85,000 |
| **Output 2.4:**<br>Advanced training methods and teaching materials from international training institutions integrated into domestic and international trainings | **2006-2007**<br>Advanced training methods and teaching materials introduced.<br><br>The training methods and skills of TTF practitioners improved in project areas.<br><br>Staff of PMO and | 2.4.1 | Select trainers and establish record files. | 5,000 |
| | | 2.4.2 | Provide training of trainers (TOT) on teaching method by international and domestic specialists. | 60,000 |
| | | 2.4.3 | Overseas training and study tours for the staff of PMOs and TTF trainers to learn new ideas and best practices of market-oriented and demand-driven training mechanism for farmers, and agro-technical extension systems etc. | 85,000 |

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|---|---|---|---|
| | domestic trainers to develop understanding of relevant international best practice in training. | | |
| **Outcome Three:**<br>**Dissemination of and scaling up the TTF initiative based on policy recommendations, experiences and lessons learnt from the piloted TTF interactions and organisational arrangements for the development of rural areas and market activities**<br><br>**Outcome Indicators: i.** China TTF annual forum organised annually to disseminate experiences and lessons learnt; ii. Tools for advocating the TTF initiative such as workshops, newsletters and website to document and disseminate successes and lessons from demonstrations; iii. Fund raising strategy and management procedures of the TTF organisations developed. | | | |
| **Output 3.1:**<br>China TTF annual forum and workshops/seminars, to disseminate experiences and lessons learnt from the TTF initiative, and set up a knowledge –based platform for broad communication, exchanges and cooperation. | **2006-2009**<br>China TTF System Forum held annually. | 3.1.1 Workshops and seminars in every project province to prepare for the Forum;<br>3.1.2 National PMO responsible for planning, organising the Forum;<br>3.1.3 National TTF System Forum held by MOST, MOFCOM and UNDP | 50,000<br>40,000<br>160,000 |
| **Output 3.2:**<br>The journal/newsletter on *Technical Task Force for Agricultural Industrialization and Technical Extension* in Chinese and English versions complied and published | **2006-2008**<br>Publish journal to publicize and exchange the project insights and experience regarding the TTF System. | 3.2.1 Compile project newsletter by prefectural and provincial PMOs and circulate these newsletters within project demonstration sites.<br>3.2.2 Compile and publish the journal by national PMO based on the newsletters and circulate the journal within project provinces and the member of PAC.<br>3.2.3 Publicize the Project and TTF Initiative in media, for example TV, newspaper, broadcast etc. | 30,000<br>25,000<br>20,000 |

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|---|---|---|---|
| **Output 3.3:**<br>A website - "China Technical Task Force for Agricultural Industrialization and Technical Extension" in Chinese and English versions developed by the NPMO under MOST.<br>And the website linked to local websites established at provincial and county level, and those of MOST and MOA etc. | **2006-2008**<br>TTF website at national, provincial and county level and linkage with other websites of MOST and line Ministries | 3.3.1 Set up TTF websites at National PMO and PMOs at provincial and county levels;<br>3.3.2 Establish linkage with other websites of MOST and MOA etc; | 95,000<br>50,000 |
| **Output 3.4:**<br>Evaluation of the project conducted in order to assess social and economic impacts of TTF initiative. Best practices and lessons summarized for knowledge sharing and scaling up of TTF initiative. | **2008-2009**<br>Evaluation conducted for the project. | 3.4.1 Assess the social and economic impacts of TTF initiative demonstrated by the pilots;<br>3.4.2 Best practices and lessons summarized by international and national specialists | 30,000<br>45,000 |
| **Output 3.5:**<br>Different organizational mechanisms and management networks (e.g. TTF Associations, NPMOs or local PMOs etc.) are designed and tested. | **2008-2009**<br>Design, evaluate, establish and improve the functions of selected TTF organizational mechanism and management network. | 3.5.1 Exchange experience and knowledge between different county TTF organizations and management networks (workshop and/or study tours)<br>3.5.2 Design and profile the national TTF organizational mechanism and management network by international/national consultants. Conduct feasibility evaluation on different alternatives of TTF organizational mechanism and management network<br>3.5.3 Based on progress and evaluation of the pilot, determine the final TTF mechanism and management network | 15,000<br>50,000<br>40,000 |

| | | | |
|---|---|---|---|
| **Output 3.6**<br>The capacity of fund raising and fund management of the TTF organizations strengthened through the establishment of fund raising mechanism for long term sustainability of the TTF initiative | **2007-2009**<br>**Feasibility plan for fund operations established.**<br><br>**2007-2009**<br>Establish a fund raising mechanism of the PMOs/TTF associations at each level with the aim of mobilizing funds to set up the revolving fund for TTF practitioners in project counties/provinces. | 3.6.1 Review and develop guidelines for fund operations of the TTF | 20,000 |
| | | 3.6.2 Develop TTF Fund Operational and Management Manual | 25,000 |
| | | 3.6.3 Establish and implement a fund raising mechanism of the TTF organizations at each level with the aim of mobilizing funds from government, international and domestic donors as well as enterprises to set up the revolving fund for TTF practitioners | 50,000 |
| | | 3.6.4 Timely monitoring and audit the operation of the funds by PMOs. | 15,000 |
| | | 3.6.5 Capacity assessment by international and/or national specialists at the end of the project if deemed necessary. | 10,000 |

## Annex One: The traditional agricultural extension system in China

Prior to 1979, there were many separate agricultural development agencies serving farmers at the county level. These individual agencies were weak, duplicated efforts, and were poorly linked to township extension stations. To develop a strong, grassroots extension system, these different county stations were integrated into a new County Agro-Technical Extension Centre (CATEC). The CATECs were expected to guide extension activities within the reorganized Township Agro-Technical Extension Stations (TATES) by providing training and technical support for the township extension staff. These TATES were responsible for organizing front-line extension activities by working through the farmer technicians and demonstration households in each village.

The current Agro-Technical Extension Centre (ATEC) system consists of five administrative levels (national, provincial, prefecture, county and township). At the end of 2001, the ATEC system was composed of approximately 371,350 professional, technical, and administrative staff, 500,000 farmer technicians who primarily operate at the village level, and 6.6 million demonstration households. Concurrently with these changes the P.R.C. has implemented major, government-wide policy reforms that have downsized the public sector and substantially reduced public funding for extension.

Since 1949, core funding for extension infrastructure, operations and programs has come from the corresponding level of government. For example, each county government is responsible for the capital improvements of its own CATEC facilities, and for recurrent financing of personnel emoluments, operations, and programs. A similar pattern is followed at the national, provincial, prefecture, and township levels. In addition, each ATEC unit is encouraged to seek funding from external sources, other than the local Department of Agriculture. These funding arrangements were expected to make each ATEC unit responsive to the needs of local farmers and accountable to the local government. However they limit the ability of the service to help poorer farmers.

In response to the changed funding regime, extension units have begun offering technical contract extension services at the village or farm level where TATES staff provide specific types of technical services for farmers in the village, such as information on new production technologies, disease and pest forecasting and protection, marketing information, and better access to high quality production inputs. These contract extension services are provided directly to individual farmers in the village or through a village committee. In return, each farmer is expected to pay the TATES for these services. In this case, extension has become essentially a fee-based service.
Technical contract extension services are mainly found in the areas of high value or specialized farming, such as vegetable, fruit and nursery stock production, animal raising, fish keeping, and Chinese herb production. However, contract extension for basic food crops has been very difficult to implement, due to low profit margins for these crops, which limits farmers' ability to pay for these services.

Many CATECs and TATES have established commercial input supply shops to provide an integrated source of diagnostic and advisory services in combination with recommended seeds, fertilizers, pesticides and other agricultural inputs. These input supply and service centers are not dissimilar to private or cooperative input supply centers elsewhere in the world. Farmers get one-on-one consultations and production advice from a trained technician and then the cost of this advisory service is financed from the sale of production inputs.

## Annex Two: The current pilot TTF initiative

### Expanding pilot areas

The Technical Task Force Initiative was first piloted in Nanping City, Fujian Province in 1999.

At the end of 2004, 267 counties had adopted the TTF Initiative in China. The perceived benefits of the TTF Initiative have resulted in increasing numbers of counties, villages and farmers joining the TTF initiative. For example, in western China where rural incomes are very low TTF work commenced in Yulin City, Guangxi Zhuang Autonomous Region, in May 2005. Fifty TTF practitioners have been selected for 50 villages and agro-enterprises. In Wuzhou City, Guangxi Zhuang Autonomous Region, the growth of the TTF is shown in Table 1.

*Table 1 The development of the TTF initiative in Wuzhou City, Guangxi*

| Year | Number of Townships | Number of villages |
|---|---|---|
| 2003 | 15 | 36 |
| 2004 | 51 | 107 |
| 2005 | 58 | 120 |

### TTF practitioners

Particularly in Zhejiang Province in eastern China professors, researchers and technicians, mostly from universities and research institutes, have been participating as practitioners in the TTF Initiative to improve village farmers' incomes through science and technology transfer. For example, ten professors from the Tea Research Institute of Chinese Academy of Agricultural Sciences (CAAS) have joined the TTF Initiative every year since 2003 (see Table 2).

*Table 2 The increase of TTF practitioners in Zhejiang Province: 2003 to 2005*

| Year | Number of TTF practitioners | | | Employing organisation providing practitioner |
|---|---|---|---|---|
| | Provincial MOST | City | County | |
| 2003 | 100 | | | National Research Institutes & Universities |
| 2004 | 100 | | | National Research Institutes & Universities |
| 2005 | 212 | | | National & Provincial Research Institutes (15)<br>Universities (10)<br>Other sectors (7) |
| 2005 | | 400 | | College and Agro-technical extension |
| 2005 | | | 667 | Agro-technical extension |

### The multidisciplinary focus.

Crop farming technology transfer was often the main focus at the early stage of TTF initiative development. As the initiative extended other professional knowledge, specific techniques and skills were seen as necessary. Animal husbandry and veterinary skills, fisheries and aquatic production technologies, machinery, forestry, marketing, and management skills are represented in TTF practitioners. Social knowledge and community development ability are also required. The TTF initiative has influenced other sectors of local government. For example, the Medical and Education Departments of Zhejiang Province are planning to utilise the TTF initiative as a model for systems to reform service and to improve the medical and education conditions in the countryside.

### Environment protection improvement

Ecological environment protection is important, especially in some mountain areas and water catchments. TTF practitioners have introduced environmental enhancing technologies and practices. For example Panan County, Zhejiang Province, covers an area of 1196 $Km^2$ with more than 60 per

cent being mountain area with an elevation greater than 1000 m. According to TTF Professor Quan Qiai from the Tea Research Institute of Chinese Academy of Agricultural Sciences (CAAS), land in mountain areas with slope of 10-15 degrees should have stable vegetation to protect ecological environment. Since 2003, Prof Quan has helped the farmers from three villages, where the land slope is 10-15 degrees, to change their corn fields to tea farming. This has protected the local ecological environment because tea bushes, unlike corn, provide more stable vegetation to bind the soil. The introduction of improved, high value tea varieties has increased farmers' incomes (see Table 3).

*Table 3 Income comparison from corn field to tea farm in 3 villages, Panan county, Zhejiang Province*

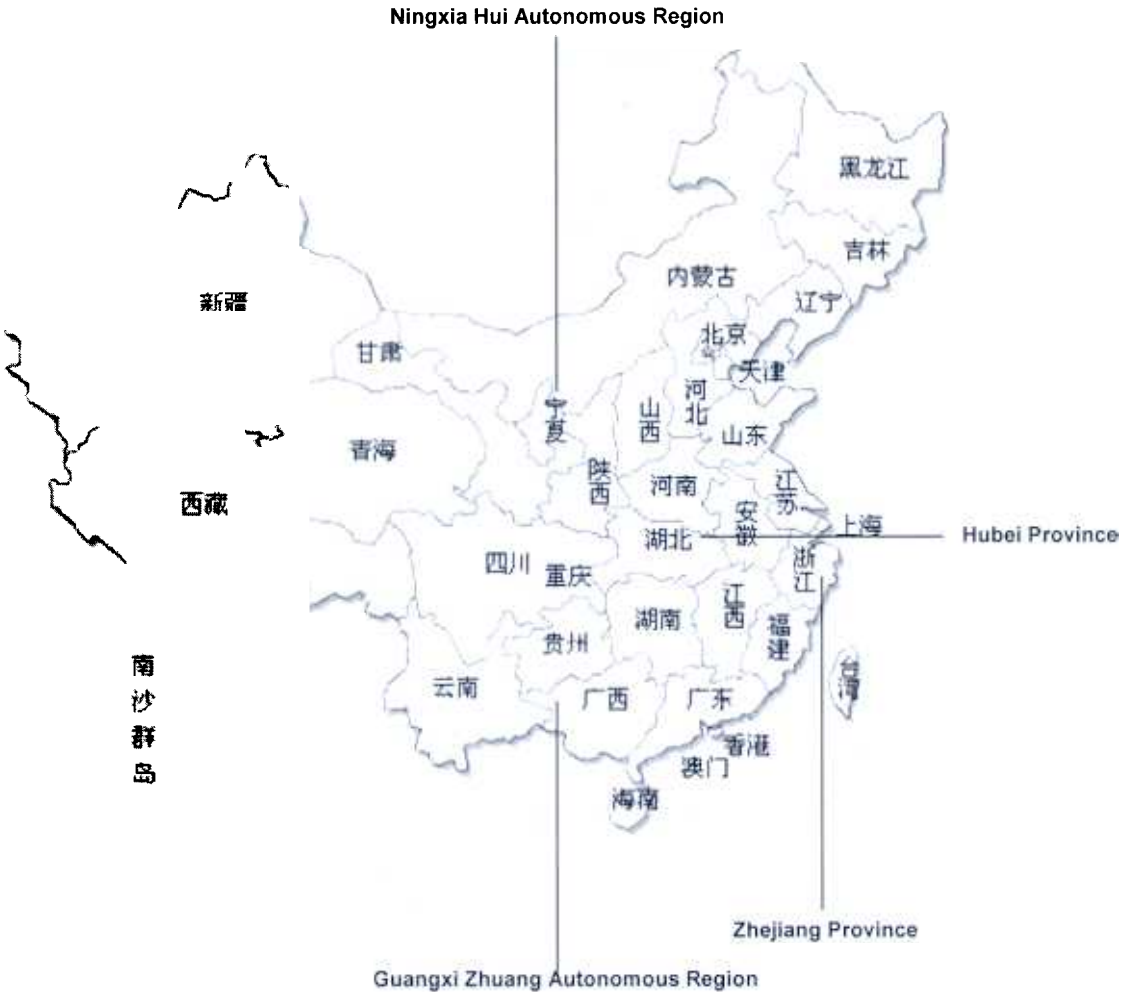
| Location[b] | Corn field area (mu)[a] | Corn income (RMB Yuan/mu) | Area changed to tea farming | Tea income (RMB Yuan/mu) |
|---|---|---|---|---|
| Shimu Village | 400 | 400 | 250 | 1000 (3rd yr)<br>1500-2000 (4th yr) |
| Shanzao Village | 150 | 350 | 150 | 1000 (3rd yr)<br>1500-2000 (4th yr) |
| Fuzhai Village | 100 | 380 | 100 | 1200 (2005) |

[a] 15 mu = 1 hectare
[b] TTF practitioner Professor Qian Qiai from CAAS serves the 3 villages.

**Social development and employment**

The TTF pilot initiative has also made a contribution to social development in the countryside. For example, living conditions have been improved in Xiaozhong Village, Suichan County, Zhejing Province. The average mountainous and agriculture cropland per labour unit is 11 mu and 0.66 mu, respectively in the village. There are 175 families and a population of 639 in this small village. Since 2003, TTF practitioner Mr.Ye Qingyi has introduced the biogas technology to the village. Now the villagers are using the biogas for cooking and water heating. In this mountain rural area 2500 families will be using this technology by the end of 2005. Increased environmental and social sustainability has a consequence of the integration of several activities: pig raising – collected manure – biogas tank – energy saving – protecting sloping forest land by planting bamboo – production of organic food – improved sanitation conditions with manure utilisation – improvements in village residents' health.

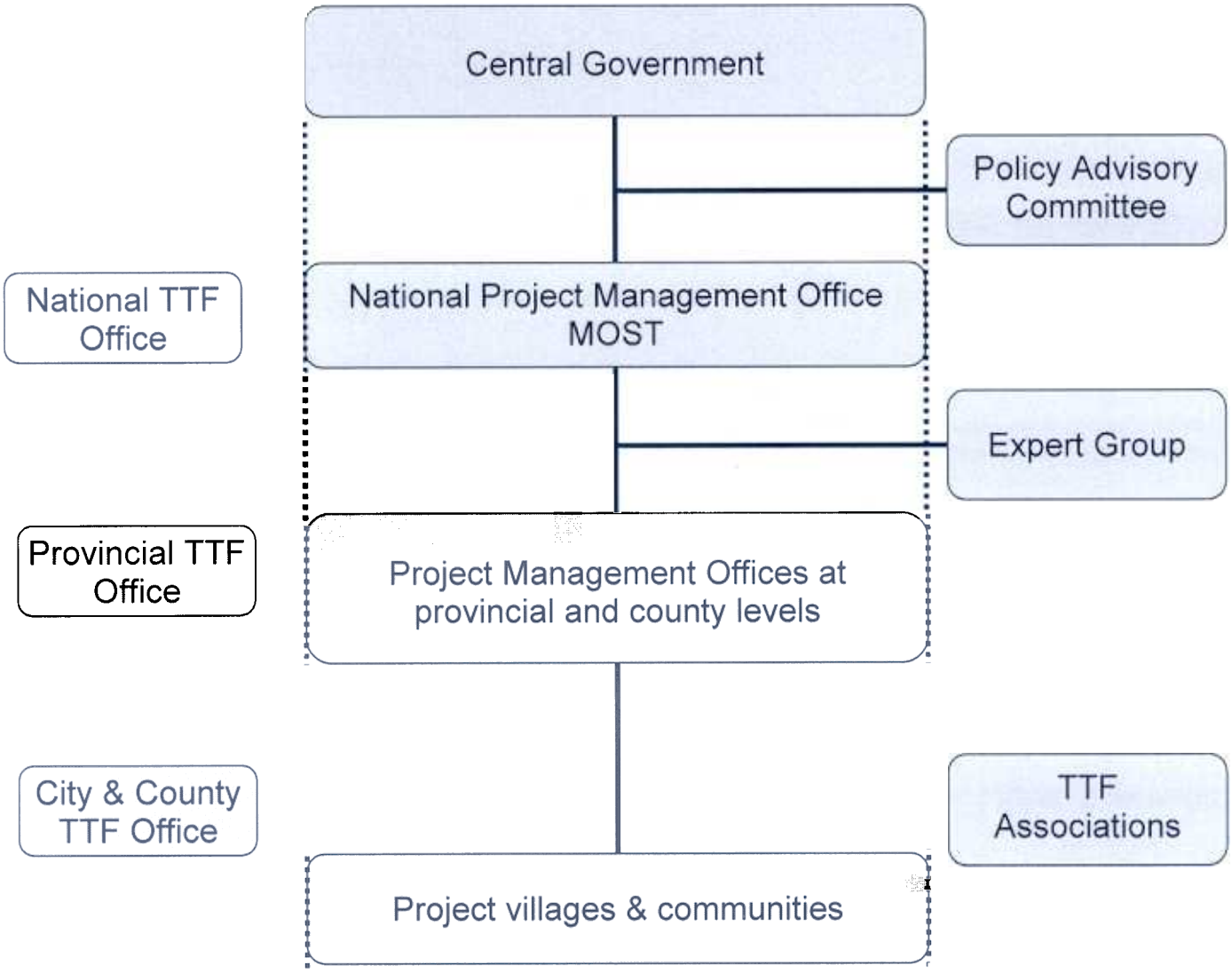
In Pinglou County, Ningxia Hui Autonomous Region, 129 unemployed college graduate students were selected, through competitive examination procedures, into the TTF Initiative in 2005. Mr. Yang Jinju, aged 36, graduated from Ningxia Agriculture College. He was selected as a college student TTF practitioner and has established a dairy farm with 150 cows. In this case, the TTF initiative has provided opportunities to deal with rural unemployment.




**Pre-suggested Pilot Provinces by the Formulation**

**Annex Three: Proposed institutional and administration structure**

**Pilot TTF Organizational Structure Chart**




| Current Administration | Project Management | Professional Support for Pilot Project |
|---|---|---|