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**Towards a Joint Regional Agenda
for the Alleviation of Poverty
through Agriculture and
Secondary Crop Development
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Targeting Poverty Alleviation through Agriculture in Papua New Guinea

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Agriculture and poverty in Papua New Guinea

Eighty-six per cent of Papua New Guinea's (PNG) total population of 6.3 million (estimates for 2007) depends directly on agriculture. The agricultural sector is and continues to be the main source of socio-economic development in the country. Most people live in rural areas and about 95 per cent of them are smallholder farmers ranging from subsistence to semi-commercial to fully commercial operators. Smallholder agriculture provides the bulk of the nation's fresh food and is a major source of income and employment for rural communities.

Over the past 15 years the socio-economic situation in PNG has been on the decline with a noticeable and significant downward trend in real GDP between 1990 and 2002. Real GDP grew at an average annual rate of only 1.0 per cent. However, PNG is experiencing rapid population growth of about 3 per cent per year. In recent years the economic climate in PNG has been improving with real GDP growth rising to 3.7 per cent in 2006. This is following three consecutive years of moderate expansion of 2.2, 2.9 and 3.3 per cent during 2003, 2004 and 2005, respectively. Growth of 4.5 per cent is projected for 2007 and this trend is likely to continue for some years. The non-mineral sector is expected to continue to grow by about 4 per cent. This growth has been driven by the mineral resource sector, accompanied by improved economic management, improved budgetary performance and lower interest rates. The agricultural sector has also been expanding. At the same time, poverty remains high, human development indicators are weak, the quality of education and health care delivery remains poor. Incidence of HIV/AIDS has increased sharply. Like many other countries, both relative and absolute poverty is present in PNG both in the rural and urban areas.

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The agricultural sector has huge untapped potential to assure food security, generate cash income, increase gainful employment, reduce poverty and contribute to rural development to help realize broad-based economic growth and development. In the longer term, the sector has the potential to empower people and create wealth, providing greater prosperity to the whole nation. Agricultural research and innovative developments are critical contributions to the development of the sector, especially given the current magnitude of the constraints and problems in this high-potential but largely untapped sector.

To reduce poverty, PNG needs to sustain recent economic gains while moving the economy to a higher and wider growth path. Achieving this goal is largely dependent on increasing investment in the non-mineral sector. The growth generated from the mining and petroleum enclaves is not sufficient to achieve broad-based economic growth and it is crucial that growth must come from the renewable resource sector, the important smallholder agriculture sector. This can only be realized through creating an enabling environment through policy changes, technical innovations and encompassing a broad spectrum of economic reforms.

However, so far adjustments at the macro level have not shown any measurable positive impacts for the majority of the people, especially the rural communities. Furthermore, production and income levels from subsistence and semi-commercial agriculture have been declining because of problems associated with poor infrastructure, law and order, health, access to markets and inadequate knowledge of improved technologies.

Overall development context

As a member of the United Nations, PNG is committed to the achievement of the Millennium Development Goals as declared at the UN Millennium Summit in September 2000. Five of the Goals directly targeting poverty reduction and improving livelihoods, that can be realized through agriculture and rural development in PNG are:

- Eradication of extreme poverty and hunger;
- Reduction in child mortality;
- Promoting gender equality and empowering women;
- Combating HIV/AIDS, malaria and other diseases;
- Ensuring environmental sustainability.

The PNG Government's Medium Term Development Strategy: 2005-2010 (MTDS) provides a focused framework for economic recovery and social advancement. The focus is

on broad-based economic growth made possible by empowering Papua New Guineans to realize income-generating opportunities through export growth by means of private sector development. Agriculture plays a prime role in these key strategies for empowering people toward an export-led economic recovery. Agriculture provides opportunities for poverty reduction and rural development especially through assuring food security, raising cash incomes, generating gainful employment and creating sustainable growth and development.

The National Strategies include a number of proposed policy and strategy interventions to address major constraints, opportunities and issues of the agriculture sector.

Agricultural issues and opportunities

Agriculture in PNG faces a number of specific issues (Quartermain *et al.*, 2003) as highlighted below:

- The sector is resource rich but does not generate production income anywhere near its potential.
- Cash incomes generated from agricultural activities are low, variable over time and extremely diverse across provinces and agro-ecological regions.
- Low and uncertain levels of employment in the sector are characterized by low productivity, underemployment and low wages.
- Customary land ownership and tenure are constraining investment in agriculture.
- Increasing degradation of the environment and depletion of natural resources are indicated by declining soil fertility, increasing population pressure, soil erosion and land degradation.
- There is weak growth in the export of agricultural commodities and a rising food imports bill.
- Market signals are weak and services, including input supplies, downstream processing and output marketing, are poorly developed.
- Agricultural infrastructure (roads, ports, markets, facilities, information and input supply, etc.) is poorly developed and maintained.
- The sector has weak institutional capacity, particularly in agricultural extension, and a lack of clear policies and strategies for agriculture and rural development.
- There is inadequate access to improved agricultural technologies and practices.

Agricultural research and development and poverty alleviation

The agricultural sector has huge untapped potential to assure food security, increase incomes, improve gainful employment, reduce poverty and contribute to rural development to help realize broad-based balanced economic growth and development. In the medium to long term, the sector provides the opportunity to empower people and create wealth to bring greater prosperity to the whole nation.

Many opportunities arise from PNG's rich natural resources base and the potential to achieve substantial productivity gains through science-based agricultural technology and transfer of knowledge to rural communities, thereby making communities food secure, income secure and future secure. Specific opportunities are explored through following research and development project/programme interventions.

FAO South-South Co-operation (Special Programme for Food Security)

Under the United Nations Food and Agriculture Organization (FAO), South-South Co-operation (SSC), its Special Programme for Food Security (SPFS) provides an opportunity to strengthen co-operation among developing countries at different stages of development with the support of interested donor countries and FAO. The initiative helps countries benefit from the experience and expertise of more developed countries as well as to exchange successful technologies. Under the agreement, Filipino agricultural experts and field technicians are in Papua New Guinea to assist the government with expansion of the SPFS for two years. The Filipino experts and field technicians are providing assistance related to field and horticulture crop production; soil fertility and micronutrient management; crop water-use requirements and in the design, implementation and management of small-scale irrigation systems. The team includes water use and management specialists, field crop specialists, horticulture crop specialists, and soil fertility management specialists, as well as laboratory analysis specialists.

The agencies involved are: FAO, Philippines Government, National Department of Agriculture, participating education institutions and farmers

Development of Sustainable Agriculture in the Pacific (DSAP)

The Development of Sustainable Agriculture in the Pacific promotes and implements sustainable agriculture that will improve food production thereby enhancing food security and income generation in the Pacific. On the atolls, the DSAP approach focuses on the identification of problems and the testing of technologies with farmers to improve the traditional tree crop-based multi-story agricultural systems as well as to ensure the

integration of livestock into this system. In the lowlands, the emphasis moved from research to identification and promotion of promising technologies including: improved crop varieties, pest and disease management, land conservation and agro-forestry technologies. DSAP also includes a project component for the production and use of a variety of extension communication to strengthen promotions within member countries. This component also enhances national capabilities in the production and use of extension communications methods such as radio, posters, handbooks, brochures and videos. The DSAP project is an important part of the Secretariat of Pacific Communities (SPC) Agriculture and Forestry Programme giving DSAP access to valuable technical assistance and training.

The PNG component of DSAP is based on two sub-components, institutional agriculture with emphasis on rice and small livestock production, and marketing and promotion of a sustainable taro industry in PNG with emphasis on taro production and marketing. This project complements PNG's Food Security Policy and Programmes with the goal to ensure that "all people of PNG at all times have access to safe and nutritious food in adequate quality and quantity to maintain a healthy and active life".

The agencies involved are: SPC, NDAL, NARI, participating education institutions and farmers.

Rice, Wheat and Grain Programme

The main aim of this programme is to establish a sustainable domestic industry to enhance food security, generate income for smallholders and reduce rice and wheat imports by increasing domestic production. There is a high demand for wheat flour in PNG and its consumption is increasing at a faster rate than rice. Wheat and rice imports are worth millions of kina annually. Rice research in the country is geared to evaluate promising varieties under upland conditions for high yield, pest and disease tolerance, and good eating qualities, etc., as well as rice variety adaptability screening in various agro-systems. Other activities include germplasm maintenance and foundation seed production and distribution.

The agencies and countries involved are: Taiwan Province of China, China, JICA, Trukai, OISCA, UOT, DNPM, NARI, provincial administrations, University of Vudal, DNPM, DoE, CIS, the private sector and NGOs.

Fruits and Nuts Development Programme

Good domestic and international market potential exists for both exotic and indigenous fruits and nuts. Various projects are evaluating the potential of indigenous nuts

like *galip* nut (*Canarium Indicum*), *taun* (*Piñata pometia*) and others. Key activities include evaluating the nutritional qualities of fruits and kernels, determining the attitudes and perceptions of smallholder producers to the use of these products for improved health and nutrition and assessing the opportunities to increase domestic consumption through genetic selection, market chain efficiencies, value adding and other requirements associated with expanding the food and other industries.

The agencies involved are: NARI, NDAL, FPDA, PDAL, NGO, Unitech, UoV, NAQIA, IPA, the Department of Health, ICCC, NSIT, WIADU and Food Sanitation Council.

Spice and Minor Crops Development Programme

The spice industry has the potential of generating millions of kina in export earnings. The vanilla boom in 2002-2003, encouraged vanilla production nationwide with an estimated 11,000 households involved in vanilla production. The main aim of this programme is to promote and develop spice and minor crops as alternative export cash crop commodities for improving the welfare of rural families and to contribute to the national economy. Current activities are focused on vanilla, turmeric, pepper, cardamom, chilli, nutmeg and mace, etc., and include identification of suitable growing areas, adaptation of commercial clonal propagation techniques, quality assessment, pest control, market research and provision of training and information to extension providers, partners and farmers.

The agencies involved are: NDAL, PDAL, DNPM, Department of Commerce and Trade, Spice Industries Council, NAQIA, NARI, NGOs/CBOs, the private sector and industry participants and international donors.

Livestock and aquaculture development

The main focus of research in the short to medium terms is on the utilization of local feed and by-products for small livestock (pigs, chickens, ducks, rabbits, sheep and goats) and the collection of baseline information on livestock kept by smallholder farmers. Recently, the programme started work on Inland Aquaculture and is setting up essential facilities for research on feed, feeding systems and breeding. Expansion of smallholder livestock production has the potential to impact on the diets and incomes of rural and peri-urban households.

The agencies involved are: NARI, LDC, NDAL, provincial DAL, district/ LLGs, NARI, University of Technology, University of Goroka, Vudal University, NFA, DCI, NAQIA, NGO's, farmer organizations, CBOs, donors, RDB and commercial banks, private sector partners (Trukai Industries, Markham Farm, Ramu Beef) and some line agencies.

Crop Improvement Programme

This programme is aimed at improving and utilizing genetic production potential of crops by using conventional breeding and advanced methods of crop improvement (biotechnology) with a view to addressing food security, improving livelihoods and eventually leading towards overall prosperity. The Programme covers evaluation, introductions, selection and genetic improvement (breeding) of crops not only to increase productivity and quality per unit of resources but also to address pest and diseases, nutritional improvement, processing requirements, product diversification, tolerance to droughts and frosts, and appropriateness to atoll environments.

The agencies involved are: NARI, CCI, CIC, OPRA (Dami) and Ramu Sugar.

Natural resource management

The major research focus of natural resource management (NRM) is on soil fertility management, water, weather and climatic issues; frost management; integrated pest management; rice, grain and pulses intercropping; plant genetic resources (sweet potato, banana, cassava), and disaster mitigation.

The agencies involved are: NARI, Ramu Sugar, Trukai, UoV, CCI, CRI, UOT and the National Weather Service.

Post harvest and food processing

This programme is geared towards developing techniques, technologies, skills and information in post-harvest handling, storage, preservation and processing of food, emerging food and cash crops, and livestock. It is currently implementing research projects, conducting training and providing information and technical support to farmers, commercial entrepreneurs and other stakeholders in the agricultural sector to improve the quality of produce and products, to reduce drudgery and bulkiness, to commercialize processing options, increase the use of domestic resources as well as reduce transport and handling costs.

The agencies involved are: NARI, FPDA, Unitech and Nestle Pty. Ltd.

Plant genetic resources

Plant genetic resources (PGR) are crucial to the present and future productivity of agriculture. PGR activities are helping to improve the management of these valuable resources and ensure the rich genetic biodiversity of PNG is safely conserved and used sustainably by present and future generations. Current activities include organizing public

awareness discussions on the importance of conserving genetic diversity on farms for food security, conducting on-farm conservation surveys to measure genetic erosion, and introducing improved genetic materials on-farm to broaden the genetic base. These activities are all geared towards broadening the knowledge to conserve, maintain and use on-farm genetic diversity to enhance livelihood of farming communities. They are also complementing these efforts with the long-term maintenance of national *ex situ* germplasm collections in the field of tissue culture, including taro, cassava, yam, sweet potato and banana.

The agencies involved are: NARI and NARS.

Table 1. Regional and national research and development programmes and projects geared towards poverty eradication in PNG

| Programmes / Projects | Transferring cash | Increase productivity & income | Wider process of economic growth | Reduce costs & increase prices through subsidies |
|--|-------------------|--------------------------------|----------------------------------|--|
| FAO South-South Co-operation (Special Programme for Food Security) | | ✓ | ✓ | |
| Development of Sustainable Agriculture in the Pacific | | ✓ | ✓ | |
| Rice, Wheat & Grain Programme | | ✓ | ✓ | |
| Fruits and Nuts Development Programme | | ✓ | ✓ | |
| Spice and Minor Crops Development Programme | | ✓ | ✓ | |
| Livestock and Aquaculture Development | | ✓ | ✓ | |
| Crop Improvement Programme | | ✓ | ✓ | |
| Natural Resource Management | | ✓ | ✓ | |
| Post Harvest and Food Processing | | ✓ | ✓ | |
| Plant Genetic Resources | | ✓ | | |

The above programmes are aimed at reducing poverty especially in the rural areas through improving and enhancing agricultural productivity through technical changes and innovative development. Most of these also contribute to poverty reduction through wider economic growth, as these programmes/projects create broad-based economic growth by empowering people and by investing benefits from macro level economic growth.

Concluding commentary

Economic growth at the national level brings spin-off and trickle down benefits to the masses. However, if these benefits are not properly invested in long-term productive economic activities for the masses, they will only amount to the masses getting into an unsustainable expenditure trap.

There does not appear to be any long-term impact on poverty reduction from simple transfer of cash to the masses. In special situations where people are affected by natural disasters and immediate humanitarian relief is needed, an injection of cash is beneficial in the short term. However, such short-term survival measures do not have any long-term contribution to poverty reduction.

However, there appears to be some positive role for subsidies, especially in developing countries, where market forces are not competitive. Also often economic scales and market imperfections influence negatively on productivity and benefit sharing. Under such conditions, subsidies supporting cost reductions and improving prices can become important interventions for the masses to improve efficiency, competitiveness and sustainability in the longer term. Such interventions need to be gradually phased out with more competitive and sustainable interventions through policy and technical changes.

Improved technologies and innovations supported by appropriate policy regimes can make a substantive positive contribution to poverty reduction. Such interventions, however, need to be ongoing and dynamic to sustain poverty reduction.

Therefore a multi-pronged strategy involving good macro-economic growth; efficient and effective technologies and innovations; sound and appropriate policies; broad-based economic growth with wider participation of population at all levels and in all areas; and gainful employment of people and resources are essential to realize the poverty reduction objective of any nation. Obviously, this strategy needs to be tuned to domestic and international scenarios and developments.

Conclusion

Present PNG development is characterized by the recent consistent economic growth at the macro level, the majority of people engaged in the agriculture and rural sector, huge untapped potential of agricultural development through technical and policy changes, and overall potential of both national and international markets. The country now has the capacity to address poverty reduction through all the above four types of intervention. The current development strategy is more focused on improving the productivity and profitability

of the agricultural and rural sector. It also targets improvement in infrastructure, education, health and other social services, thus contributing to wider economic growth. Selective interventions through subsidies may be needed at least over the short to medium terms. However, cash transfers need to be avoided except for humanitarian reasons in the case of natural disasters.

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