

Sri Lankan Agriculture for the Next Decade: Challenges and Opportunities

Proceedings of a Workshop

April, 2002

Editor

W.G. Somaratne



**Agricultural and Environmental Resource Management Division
Hector Kobbekaduwa Agrarian Research and Training Institute
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Sri Lankan Agriculture for the Next Decade: Challenges and Opportunities

In Collaboration with

*The Friedrich Ebert Stiftung
(FES)*

& *The National Science and
Technology Commission (NASTEC)*

Proceedings of a Workshop

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Foreword

Developing countries are currently faced with the challenges imposed on them by globalizaion. With global movement of capital and technology, they have to create the right environment in order to grab the opportunities offered by it for the betterment of livelihood of its people.

In Sri Lanka, agriculture is a critical sector in this respect. Recently experts on this sector were brought together in a two day workshop on "Sri Lankan Agriculture for the Next Decade: Challenges and Opportunities" held at HARTI on 4th and 5th April 2002 to probe and identify such challenges and opportunities.

These experts from government, private sector, NGOs and international organizations have reviewed national and international policy in this arena, reforms needed in agriculture research and development, strategies to promote investment, and sustainable and equitable development. Their presentations and deliberations are included in this proceedings of the workshop.

HARTI is grateful to all these individuals and organizations participated in this workshop.

**Professor M.O.A. de Zoysa,
Director, HARTI**

Acknowledgement

I am extremely grateful to Prof. M.O.A de Zoysa, Director, HARTI for his guidance and encouragement to conduct this workshop. In preparing this volume, much gratitude is owed to outside experts including resource persons (Dr Nihal Atapattu, Dr Sunil Jayantha Navaratne, Dr Wijaya Jayathilake, Dr H.M. Gunathilake, Dr Nihal Samarappuli, Dr D. Gamage and Dr C.R. Panabokke) and discussants (Dr R.H.S. Samaratunga, Dr Neville Edirisinghe, Dr P.A. Samaratunga, Dr M. Samad, Dr Fredric Abeyratne, Mr L.P. Rupasena, Dr Ananada Mallawatantri, Mr. Wicky Wickramatunga, Mr. S.N. Samarasinghe, Mr. I.R. Perera, Dr M.C.N. Jayasuriya, and Dr. Ranjith Mahindapala).

I wish to express my sincere gratitude to the Fredrich Ebert Stiftung (FES) and the National Science and Technology Commission (NASTEC) for providing necessary funds for conducting the workshop.

The assistance I received from many researchers including Mr. R.M.G.K.B.Ratnayake, Ms S.Dharmalingam and Mr. S.M.A. Samarakoon, secretaries, and supporting staff (SOs and SAs) of the Agricultural and Environmental Resource Management Division of HARTI helped in organizing the workshop while others (printing, technical and administrative staff of HARTI) assisted during the workshop. My thanks are also due to Ms N.N. Bawa, who ably transcribed the recorded proceedings, Ms W.Niluka Priyadarshani de Silva who word-processed the entire proceedings of the workshop and Mr. K.A.S Dayananada who provided expert editorial assistance are deeply acknowledged.

Dr. W.G. Somaratne,
Co-ordinator

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Sri Lankan Agriculture for the Next Decade: Challenges and Opportunities – Summary and Conclusions

The agriculture in Sri Lanka during the last two decades suffered from stagnation if not declining production and productivity. The impact of this was mostly felt on living standards of farmers operating smallholdings, investors dealing with functions of market integration and consumers. In this context, the target achievement of 5 percent growth in agricultural sector per year and sustaining it over the decades to come would be a major challenge for Sri Lanka. For the market and people friendly approaches to agricultural development there are four major strategies that the Sri Lanka can pursue in reaching the above objectives. These include integration into higher and regional niche markets and the global economy through regionalization and globalization; improving the climate for agro-enterprises through market integration; investments in human capital and technology; and maintenance of macro economic stability. Therefore, HARTI organised this two-day workshop under the 100-day development programme of the Ministry of Agriculture, Livestock and Samurdhi to identify challenges and opportunities in the Sri Lankan agriculture in relation to the issues it faces today.

The objectives of the workshop were:

- To review recent developments in national and international policy environment (i.e. globalisation and regionalization);
- to recognise challenges, opportunities, social and institutional reforms and other policy reforms in agriculture and research and development; and
- To identify strategies to encourage investment in agriculture and to maintain sustainable and equitable development.

The workshop was inaugurated on 04th April 2002 by Hon. S.B. Dissanayake, Minister of Agriculture, Livestock and Samurdhi, who gave the keynote address. Prof. M.O.A. de Zoysa, Director/HARTI made the welcome address, and Dr. W.G. Somaratne, Head/ Agricultural and Environmental Resource Management Division, HARTI, who was the Co-ordinator of this workshop, explained the objectives of the workshop.

Altogether eight thematic papers were presented by eminent scholars and after each presentation a panel consisting of experts on the subject led the discussions. Furthermore two group discussions were held. First one on the "challenges and opportunities, policy reforms and strategies in research and development (R&D) " was held after the plenary session, and the second one on the "problems, opportunities, policy reforms and strategies on private sector investment, institutional reforms and sustainability" was held before the closing session.

Globalisation and the Sri Lankan Agriculture: Challenges and Opportunities

This paper presented a brief description on the globalisation scenario and how it has changed the stance and effectiveness of traditional macro economic policy instruments. It describes globalisation as a process, which comprise of three stages, namely liberalization, regionalization and globalisation. Its main driving forces are technological changes, liberalization of trade and investment and internationalisation of business activities. Within the globalisation scenario, the challenge for Sri Lanka's agricultural sector has been identified as integration into niche, larger and global markets; improving climate for agro- enterprises through market integration; investment in people and technology; and maintenance of macro economic stability and gaining competitive advantage. In order to facilitate this process, there are prerequisites including

development of a National Agricultural Policy (NAP) and formulation of institutional mechanisms. Strengthening private sector led-growth and state sector competition are suggested to gain the sectoral target of growth in line with the globalisation.

Do Policies Matter? Negotiating Future of Agriculture through Volatile Times

This paper attempts to delineate past agricultural policies in the correct perspective and illustrate that many of them have run their course. It argues for discovery of a new role for agricultural policy in the light of development in the domestic and international scene and cites some experiences useful in that endeavour. Based on these experiences paper outlines some broad directions useful in identifying appropriate policies for development of the domestic agricultural sector. The paper has highlighted the critical importance of productivity improvement as a basic for facing competition in the new economic environment. Understanding productivity improvement from a narrowly defined concept tied to land is found to be inadequate in the present context. It needs to consider some other measures of partial factor productivity, namely labour productivity and capital productivity within the market oriented development. The shifting of structural changes in farming is observed in several fundamental ways, one of which in the farming as way of life has given away to farming as a business or an industry. Therefore, if food output is to continue to grow, labour productivity in farming must increase through technological advancement.

Mechanisms for Agricultural Policy Formulation in Sri Lanka: A Strategic Management Approach

The main objective of this paper was to question the present framework of paradigm of country's problem solving mechanisms. Compared to Japan and Singapore we had been left behind in economic development by a huge margin since our independence. Hence even at this later stage action has to be taken to improve effectiveness (do the right thing) and efficiency (do the things right) in a planned way while taking proactive responsibility in the formulation of synergy. It is something to do with national vision, mission, goals, objectives, strategies and performances for solving the present and long lasting problems. In this way market and product integration, role of state and private sector, investment and technological advancement, market orientation, maintaining food security, improvement of human capital in the agricultural sector are the dimensions necessary to deal within a national agricultural policy (NAP) environment to make a paradigm shift in the economy.

Research and Development (R&D) in Agriculture: Present and Future Partners in the Process

This paper presented an overview of the agriculture research system as it functions in Sri Lanka and the key stakeholders therein. The institutions and mechanisms that are involved in research specifically in agriculture form the National Agricultural Research System (NARS). To make any system that provides a service function effectively, identifying the key end users and their needs is vital. The dominant concerns in development administration such as globalisation and associated challenges, the market driven economic development policies, transparency, accountability, efficiency of participatory governance, and the facilitating role of the state in economic and production activities, external role of private initiatives in economic and social development offer all interventions including agricultural research. This framework provides the future directions and helps draw inferences about the partners in national research system. The integration of research and extension and the role of the state and private sector in R&D within a changing world should be concerned of higher priority in the development process of agriculture. The importance of building state-private partnership is the viable option within the globalisation scenario.

Natural Resource Management and Agricultural Development: The Question of Sustainability?

Sustainable development or sustainable agriculture have been the catch words for the last decade or so. We are still trying to define the word sustainability. The framework used for the presentation is agro-economic system that involves human activity for food production. Four basic factors are important in this system. They are productivity, stability, sustainability and equability. Equability involves socio-economic aspects. This is the most critical issue in this system. However there is a huge information gap here for policy formulation. One reason for this could be the absence of holistic approach for allocation of funds for research in this area. Absence of consistent agricultural policies is another problematic issue. It is difficult for any sector to adjust if policies are changed very often. The solving of the question of agro-induced externalities should be given the highest priority in the development process to create a sustainable income in agriculture.

Private Sector Investment in Agriculture: Constraints and Opportunities

Given the trends in production, exports, preferences and taste, the agricultural sector needs drastic changes to become commercially oriented. This requires removal of some major constraints such as high transaction costs, inefficiencies in resource utilisation, limited access to productive land, inadequate supply of quality planting materials, lack of diversification into high-value crop and livestock products, inadequate application of advance technology and lack of vertical integration and intra-industry co-ordination. Nevertheless Sri Lanka has the potential for capacity expansion, total and partial factor productivity improvement and to become a world class player in the agro-processing industry in particular. There is an urgent need therefore to channel private investment to meet the critical needs of the sector. Foreign Direct Investment (FDI) is expected to play a key role in this regard.

Too Little Space to Manoeuvre: Social and Institutional Constraints in Agricultural Development

The smallholding sector is in distress despite a range of policies and programmes implemented by the government. Agrarian structure and land tenure relation in Sri Lanka explain to a significant extent the problematic situation in the smallholder farming sector. Hence instead of attempting to increase productivity by better application of technology, farmer seems to maximise household income by integrating into non-farming activities. In terms of broad policy framework in which present problems can be addressed, it appears that industrialisation and urbanisation are very important to relieve the grip the land operators have on miniature holdings for meagre living. Further leasing out land results in economically viable holdings, especially in areas where commercial orientation of farming is apparently increasing. This shows potential for land markets. Another area of option that is available is voluntary collectivisation of smallholder farmers so that they address issues with purchasing inputs and marketing outputs.

Institutional Infrastructure Needs in Sri Lankan Agricultural Development

Following the first phase of the Asian "Green Revolution" which was initially based on an improved plant type, the subsequent phase showed up their need for strengthening the supporting institutions of agricultural production in order to better realise this full production potential of the next generation of improved cultivars. The new thinking of that period was that agricultural development in any country progresses in proportion to the strength of its supporting services. The post 1985 period had seen a rapid entropic decline in the integrity and effectiveness of national, provincial and district administration and this had an adverse effect on the functioning of all supporting services. What is now of priority concern is to carefully examine the present

state of each of the key supporting institutions, diagnose their main constraints, strengthen their base and have a system of close monitoring as prevailed in the late seventies. The changing scenario in the development process in agriculture in line with regionalization and globalisation leads to open a competitive environment for providing required infrastructural facilities including knowledge based mechanisms and extension.

Group Discussions

The major issues in agricultural and agrarian development discussed at the group were: challenges and opportunities; strategies to shift agriculture into commercialisation; policy measures in R&D within globalisation; constraints and opportunities in private sector investments; policy measures for encouraging private sector; institutional and social constraints and measures to overcome such constraints; necessity of institutional infrastructure; and dynamic role of the state. The groups discussions were conducted to build consensus in different views of the private and state sector participants on policy measures, programmes, and mechanisms for agricultural development, considering possible challenges and opportunities within the dynamic policy environment of regionalization and globalisation.

Considering the above vital issues in agricultural development, main policy options, programmes, and mechanisms emerged from group discussions are as follows:

❖ Policy Measures/Reforms

i. Consistent policy measures are needed for targeted agricultural development for domestic and export oriented agriculture. The following prominent issues/ aspects are necessary to be considered for reforming the Sri Lankan agriculture:

- Agricultural marketing and credit;
- Food security and food safety;
- Knowledge-based agricultural infrastructure;
- Land use and land market issues;
- Market and product integration;
- Role of private sector in investment and advancing technology on agriculture;
- Tariff protection and agriculture-induced externalities; and
- Water market and water use;

The national agricultural policy (NAP) for Sri Lanka should be formulated to transform the sector and gain efficiency and sustainability with a long-term vision by covering the above aspects.

- ii. Investment promotion through public/private partnerships for food crop production, processing and integration;
- iii. Holistic approach for allocation of research funding and setting priorities;
- iv. Promotion of efficiency in resource use through right pricing and removal of subsidies;
- v. Monitoring and evaluation should be organised to estimate the benefits and costs involved; and
- vi. Strengthening of integration in research and extension on targeted tradable commodities.

❖ Programmes:

- i. Strengthening demand driven research and development (R&D) programmes;
- ii. Improvement of accessibility for modern agricultural technology (ie. green houses and poly-tunnels and micro irrigation – sprinkler, drip irrigation etc.);
- iii. Improvement of entrepreneurial abilities among farming community particularly for rural youths;
- iv. Initiation of institutional development programme for integration of agricultural research and extension;

- v. Improvement of managerial capability among stakeholders;
- vi. Improvement of labour productivity by introducing agro-based industries with introducing new technology; and
- vii. Formulation of investor friendly laws, regulations, incentives and facilities.

❖ **Mechanisms:**

- i. Intersectoral agency co-ordination including private sector agencies involved in agriculture (eg. seed industry – CIC; Gherkin farming- Hayleys – Sun Frost etc.);
 - ii. Establishment of an effective farming lobby;
 - iii. Quicker testing and provision of issuing certifications including ISO standards for agricultural products and standards for 'Green Product's facilitating to get necessary standards from organisations abroad;
 - iv. Provision of crucial infrastructural facilities – market information, skill development, new cost-effective packaging systems, building economic centres etc.
 - v. Promotion of farmer companies/ group farming (for integration);
 - vi. Promotion of a land market/land consolidation.
7. Altogether there were 90 participants from various national and international institutions. The participating institutions for the workshop consisted of the Hector Kobbekaduwa Agrarian Research and Training Institute, the Friedrich Ebert Stiftung (FES), the National Science and Technology Commission (NASTEC), Ministry of Agriculture, Livestock and Samurdhi, Sri Lanka Foundation Institute (SLFI), Water Resource Board, Department of National Planning, University of Peradeniya, University of Colombo, University of Ruhuna, World Food Programme, Department of Agriculture, Fertilizer Corporation of Sri Lanka, Rajarata University of Sri Lanka, Agriculture Development Authority, Industrial Technology Institute, Institute of Policy Studies, Institute of Post Harvest Technology, Intermediate Technology Development Group (ITDG), International Water Management Institute, CARE International, FAO/ UNDP, USAID, IUCN- The World Conservation Union, CARP, CIC Agri Business, Department of Co-operative Development, Board of Investment in Sri Lanka (BOI), Tea Research Institute, People's Bank, US Embassy, Rubber Research Institute of Sri Lanka, Sri Lanka National Freedom from Hunger Campaign Board, Agri-World (Pvt.) Ltd., Harischandra Mills Ltd., Sunfrost Ltd., and Central Bank of Sri Lanka.
8. Both funding agencies (Freidrich Ebert Stiftung - FES and National Science and Technology Commission – NASTEC) expressed their greater satisfaction about the conduct and outcome of the workshop.

Welcoming Remarks

Prof. M.O.A. de Zoysa

Director, HARTI

Hon. S.B. Dissanayake, Minister of Agriculture, Livestock and Samurdhi, Mr. Dietmar Knaeitschel, Country Representative of the Friedrich Ebert Stiftung (FES); Dr R.O.B. Wijsekara, Chairman of the National Science and Technology, and Mr Mazlan Jusoh, Resident Representative, FAO, my colleagues in the Hector Kobbekaduwa Agrarian Research and Training Institute and distinguished participants.

First of all, on behalf of the Hector Kobbekaduwa Agrarian Research and Training Institute and the organisers of this workshop, I wish to express our sincere thanks to all of you for accepting our invitation and coming here to participate in this workshop. I welcome all of you on behalf of the Institute.

We all know that we have gathered here to inaugurate a two-day national workshop organised by the Hector Kobbekaduwa Agrarian Research and Training Institute on the theme of "Sri Lanka Agriculture for the Next Decade: Challenges and Opportunities". The workshop is organised with a view to open a wider forum to exchange expert views and knowledge of those who are engaged in various disciplines and activities in the agricultural development process such as researchers in the research institutes, academics in the universities, decision makers at the ministerial level, and donors in the international organisations and other private sector organisations.

The organisers expect them to identify the vital problems and issues that the agricultural sector in Sri Lanka currently has faced with, and identify possible remedial measures for those problems and issues, which will eventually, can be used to formulate a national agricultural policy (NAP) for Sri Lanka for the coming decade. I know that in this gathering, there are eminent personalities with expert knowledge relating to various issues in agriculture and, I hope they will contribute their knowledge to make our effort success at this workshop. Finally, I wish you a happy stay at HARTI and wish this workshop a success. Before I conclude, I wish to express my sincere thanks and gratitude to Friedrich Ebert Stiftung (FES) and National Science and Technology Commission (NASTEC) for coming forward to provide funds to organise this timely pertinent workshop. Thank you very much.

Objectives of the Workshop

Dr. W.G.Somaratne

Head

Agricultural and Environmental Resource Management Division, HARTI

Honourable Minister, Director/HARTI, distinguished guests, and colleagues. Today, we are going to have a national workshop regarding the "**Sri Lankan Agriculture for the Next Decade: Challenges and Opportunities**".

As you all know, for the last two decades, Sri Lankan agriculture had been attempting to take off to achieve the objectives of farmer welfare and integrate with market opportunities, particularly in agro-businesses. Nevertheless for the last decade, the growth rate in agricultural sector has been around two percent. Hence our prime target should be to reach at least five percent growth rate per annum here. With that objective in mind, HARTI decided to organise a workshop to discuss at a wider forum to identify issues on the policy environment, problems, strategies, challenges and opportunities, because the national and international policy environment is faced with a rapid change. As you all know, the globalisation, regionalization, and liberalisation are coming in a big-way to create competitiveness and commercialisation in agriculture. The agriculture should adhere to achieve the objectives within that changing national and international scenario. In this workshop, we are going to discuss issues and identify the challenges, and the opportunities available within this dynamic policy environment. Through this workshop, we are planning to get feedback from researchers, policy-makers, private sector participants who have to deal with market integration and other international organisations supporting this process. Finally, we are trying to develop a base for developing a national agricultural policy for Sri Lanka, which I think is timely important for economic growth. We are also planning to have a publication incorporating timely pertinent papers relevant to the Sri Lankan agricultural development which policy-makers, government sector and other officials, private sector and other donor agencies or international organisations can be used for formulating agricultural policies and programmes. Thank you all for patient listening.

Key Note Address

Hon. S.B. Dissanayake,

Minister of Agriculture, Livestock and Samurdhi.

Prof. M.O.A de Zoysa, Director, HARTI, Mr Mazlan Jusoh, Resident Representative, FAO, Mr. Dietmar Knaeitschel, Country Representative of the Fredrich Ebert Stiftung (FES) and Dr R.O.B. Wijesekara, Chairman of the National Science and Technology Commission, Distinguish guests, Ladies and gentlemen,

Let me thank the HARTI for organising a timely pertinent workshop on '**The Sri Lankan Agriculture for the Next Decade: Challenges and Opportunities**' and inviting me for delivering the key note address. Also I must thank the sponsors of the workshop, particularly Mr. Dietmar Knaeitschel, Country Representative of the Fredrich Ebert Stiftung (FES) and Dr R.O.B. Wijesekara, Chairman of the National Science and Technology Commission (NASTEC) for their generous financial support.

Current Position of the Sri Lankan Agriculture:

In the history of Sri Lanka, it has been known proudly as the '**Granary of the East**'. We maintained self-sufficiency in food including rice and other food crops until the British period. Once the plantation industry was introduced by the British rulers, we have lost the momentum of further improving the self sufficiency in food in this country. They have introduced cheaper food items, like wheat and wheat based products and other and converted Sri Lanka from a food surplus to a food deficit country.

We have been experiencing a dualistic economy, since middle of the 18th century, which comprised of commercialized plantation agriculture and a subsistence level of food crop agriculture, mainly rice and other field crops (OFC). These subsistence crops sector was totally neglected during the British period.

The dominant position that agricultural sector had maintained in the GDP at the time of independence, the direct contribution of agriculture to GDP had fallen to nearly 20 percent by 2000. While the share of agriculture is now only about a fifth of GDP, its contribution to employment is much larger, accounting for 38 percent of total employment in 2000. Over the years, with structural transformation, other manufacturing and trade in service sectors have taken the lead in the economy.

Our staple diet is rice. We need 2.05 million metric tons of rice per year. What we produce is 1.87 million metric tons per year. To bridge the gap we have to import 0.18 million metric tons per year, spending Rs. 3639 million per year.

If we can plan out and implement a self sufficiency drive and produce our own rice to safe guard the food security mainly for our staple food, rice, we will be able to save Rs. 3639 Million or US\$ 39 million per year.

Unfortunately, though we have provided necessary inputs for rice production – seed, fertilizer, irrigated water and extension, we have not been able to attain the level of self-sufficiency in rice

yet. The reason behind is that we have not been able to formulate a national agricultural policy (NAP) to pool our resources to achieve the long-term vision and goals of the Sri Lankan agriculture, e.g to make Sri Lanka self sufficient in food crops.

If we have a 'National Agricultural Policy' (NAP) framework, complementary to over all macroeconomic policy environment in this country, safe guarding the farmers' interests, we will be able to plan out how we can march forward to achieve other objectives and goals of the Sri Lankan agriculture to find a durable solution for food security issue.

The other objectives and goals in the national agricultural policy should be to deal with issues of food security and food safety; avoiding policy failures; change the orientation from farmer to industry of agriculture; to attract global capital and technologies; to encourage regionalization; and even to deal with ethnic harmony in this country.

Further, at least the target achievement of 5 percent growth in agricultural sector per annum and sustaining it over the decades to come would be a major challenge for Sri Lanka. For the market and people-friendly approaches to agricultural development, there are four major strategies that the Sri Lanka can pursue in achieving the sectoral targets. These include integration into the global economy (ie. Globalization); improving the climate for agro-enterprises, investments in people and technology; and maintenance of macro economic stability.

As mentioned above, the objectives of this workshop are to identify challenges and opportunities in the Sri Lankan agriculture, which is timely important for us to find new strategies for improvement of social welfare of people in this country.

I hope this seminar will help in bringing new insights to formulate sustainable and equitable agricultural policies which would help eventually to become our mother land self sufficient not only in rice but also in other all necessary food items, by reducing rural poverty in Sri Lanka and assisting to create a vibrant economy.

Finally, I wish every success in the deliberations of this nationally important workshop.

Thank you.

Session 1

Analytics

Globalization and the Sri Lankan Agriculture: Challenges and Opportunities

W.G. Somaratne *

Introduction

Visions about social and material conditions in the distance future are naturally encircled by a great deal of uncertainty. One reason is that future outcomes depend on public and private decisions among alternatives that could have rather different long-term consequences. The dramatic changes in technology particularly in telecommunication and transportation deregulation of global financial markets and liberalisation of trade in between nations through regionalisation (eg. EU, APEC, NAFTA, ASEAN, FTA etc.) have accelerated the forces of globalisation. The integration of countries through flows of goods and services, financial assets, technology, information technology, news and cultural interactions has reached unprecedented levels. The phenomenon of globalisation has changed profoundly both the stance and effectiveness of traditional macroeconomic policy instruments. Globalisation has impacts on trade policy; e-commerce; transfer of technology; protection of bio-diversity and the environment; media and cross-cultural issues. Particularly, technological advances in telecommunication networks or information super highways, information technology and modern transportation systems have radically changed production, investment and trading relations in most economies in the world by opening the path for a globalized world. The application of modern information technologies or through informatisation assists to create knowledge based growth in increased productivity and added values. However, the world economic depression generates lower rates of economic growth, unemployment and crisis in movements of global capital investments in many countries in the world. Within the globalisation process, in most developed and developing countries, liberalization of capital markets and reforming the economies through structural adjustment policies were experienced to facilitate the economic growth. The growing regionalisation is an another dimension in the globalisation process in developed and developing countries. The liberalization of factor (ie. capital, technology, and labour), product and trade in services markets is the major concern in the process, allowing free mobility between member countries with favourable terms to increase the rate of economic growth. In most member countries, harmonising tariff rates, removing non-tariff measures (NTMs) and other barriers in trade are the major instruments used. However, most developed countries (USA, EU, Japan etc.) still maintain a protectionist regime in agriculture to safe guard the various interests in their economies. After establishing the World Trade Organisation (WTO), all member countries of WTO have to remove trade barriers including tariff and subsidies imposed on agriculture in their economies by the year 2005. At present, the subsidy on agriculture in developed countries is about US\$ 350 billion per year (World Bank, 2001). These subsidies not only create inefficiencies in their production processes but also hurting consumers in developing countries.

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The aim of this paper is to explain some of the major emerging challenges and opportunities in the Sri Lankan agriculture for the next decade, that are likely to be important within the globalization scenario, concerning sustainable agricultural development.

This paper is organized as follows: Section 2 presents an overview of globalization, trade and growth and the driving forces of globalization. Section 3 reviews the globalization and the Sri Lankan agriculture and the challenges and opportunities for the next decade. Conclusions and policy implications are included in the final section.

Globalization, Trade and Growth

Globalisation means many things to many people. Globalisation is a multi-faceted concept in so far as it describes both economic phenomena and their social, political and distributional consequences. The term globalisation defines as 'boundryless trade and information' or 'integration of the world economy through trade, investment and the global movement of capital' (WTO, 1998). The term globalisation refers to an ongoing process – process of increasing integration into the world economy. Globalisation further defines as 'economic hegemony of Multinational Companies' (Govinnage, 2001). The economic aspect of globalisation can be measured through the flow of goods, services and capital and migration around the world. Statistics show that expanding trade and capital flows, in an appropriate regulatory environment, have generally coincided with strong growth and political stability, especially for those economies which have welcomed liberalization and technological change (WTO, 1998). The last 50 years have seen the expansion of world trade faster than world output by a significant margin, increasing the degree to which national economies rely on international trade and foreign direct investment (FDI)¹ in overall economic activities (*ibid.*). Further, the short term and long term capital flows have also grown. The average daily turnover in foreign exchange markets has increased from about US\$ 200 billion in the mid 1980s to well over US\$ 1.2 trillion in end of 1990s (WTO, 1998).

The improved international transport systems (ships, container carriers, oil tankers, cargo planes, refrigerated trucks etc.) with information technology directly influence the growth trends in most countries. The countries heavily rely on trade today than at any time in history. The openness measured by the ratio of trade to GDP has been increased in many developing countries. Faster growth in developing countries indicates their share in world trade, which has increased from less than one quarter to almost 30 percent between 1985-1998 period (de Melo and Grether (1998). The global figures mask some regional differences in trade shares of the world trade. Asia's share of world trade increased from 15 percent in 1948 to 27 percent in 1997. Further, the composition of world trade shifted from agriculture to manufacturing and trade in services. In Asia, most developing countries managed to achieve the average growth rates between 5 percent to 7 percent per year since the beginning of 1960s. As a result poverty in Asia has been reduced dramatically (WTO, 1998). The recent financial crisis in part of the region may reverse the gains to a certain extent. The countries with low trade orientation show relatively poor growth rates.

The Driving Forces of Globalisation

There are various forces behind the globalisation process to improve the sustainable and equitable development. Among them, three key elements can be identified as the driving forces of globalisation, namely technological change, liberalization policies – opening markets and removing regulatory mechanisms in trade and investment, and internationalisation of business activities. These three driving forces have made nations around the globe more competitive,

¹ The FDI stocks increased from US\$ 165 billion at the end of 1973 to US\$ 3205 billion in 1996. This implies an annual growth rate of over 12 percent of FDI (WTO, 1998).

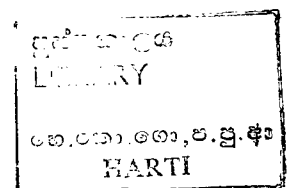
economically interdependent, creating unprecedented opportunities as well as new economic, political and social challenges.

Technological Change

Technological innovations have led to increase productivity in all spheres of production processes and slashed transportation costs greatly. The technological inventions such as electricity, the telephone, the automobile, container ships and pipelines resulted in increasing production, communication, and transportation. Further, the recent developments in information and communication technology, and computers have led the way for reducing time for communication and expanding geographical coverage for communication to interact and transact individuals and enterprises around the world. New waves of technological innovations in biotechnology will continue to increase incomes and improve social welfare of people. Technological improvements have cut transportation and communication costs dramatically. The computer usage increased both in developed and developing countries and world annual sale of personal computers have passed the 50 million mark and now exceed the sales of cars. One billion telephone and mobile phone connections now exist world-wide and it is estimated that 300 million people or 5 percent of world population will be connected to the internet (ITU, 1997). The technological development has extended the pathway for what can be produced and where it can be produced and advances in transportation technology have continued to bring people and enterprises closer together, the boundary of tradeable goods and services has been greatly extended. More recently, telecommunication improvements have led the way for more trade in services to be traded world wide from tourism to financial services. In the global economy, when more people are connected to the internet, electronic commerce will be the main mode of trade in future. It is estimated that e-commerce itself will create the value of trade more than US\$ 300 billion per year (Bachetta et al, 1998).

Liberalization of Trade and Investment

The liberalization of trade and investment has expanded the boundaries of factor and product mobilities. Liberalization has allowed any country in the globe to get what ever the amount of capital and improved technologies. Many countries have moved greatly to gain benefits through international trade between nations. Further, liberalization has mainly focussed on trade and investment regimes and a range of regulatory issues. In this process, GATT/WTO system has played a vital role in the reduction or elimination of border barriers to trade through eight rounds of multilateral trade negotiations. In industrialised countries, tariff rates have been reduced from high double digits level to less than 10 percent in the late 1960s to less than 4 percent once the Uruguay Round is fully implemented. In addition, most non-tariff measures (NTMs) on trade except those imposed for health, safety or other public policy reasons have been removed. Following the GATT/Uruguay round negotiations, textiles and clothing and agriculture are being brought within the multilateral framework and subject to progressive liberalization. Further, GATT/Uruguay round introduced new disciplines on Trade Related Intellectual Property rights (TRIPs), General Agreement on Trade in Services (GATS) and Trade Related Investment Measures (TRIMs). The post-Uruguay round commitments to eliminate tariffs on a broad range of information technology products have assisted in preparing national economies for the 21st century. Through globalisation, liberalisation of current and capital account transactions and development of international financial markets is also promoted. Over 140 countries have subscribed to the IMF's Article VIII, which encourages free current account transactions. Most member countries have liberalised capital account and exchange transactions, so that exchange rates and interest rates have become increasingly market driven and new financial instruments have emerged. This would facilitate international trade in most member countries and enable them to implement a right policy mix, which lead to gain efficiency in the economy.



Internationalisation of Business Activities

With the globalisation scenario, it is encouraged to remove trade barriers in economies. The lower trade barriers and liberalization generally invite more and more companies and investors to globalise production structures through foreign direct investment (FDI) abroad. It would stimulate and expand international trade between nations. The increased information flows and the greater tradability of goods and trade in services have influenced the decision on location of the business. Modern businesses are increasingly able to locate different components of their production processes in various regions and countries and still maintain a single corporate identity. In general, firms sub-contract part of their production processes to their sub-contractors or other enterprises abroad. In this context, jobs, technologies, capital and skills necessary for the entire processes of production, marketing and distribution are transferred around the globe. The classic case is the US car industry². Thirty percent of the car's value goes to Korea for assembly, 17.5 percent to Japan for components and advanced technology, 7.5 percent to Germany for design, 4 percent to Taiwan and Singapore for minor parts, 2.5 percent to the United Kingdom for advertising and marketing services, and 1.5 percent to Ireland and Barbados for data processing. Accordingly, only 37 percent of the production value of this 'American' car is generated in the United States. This example clearly explains why a well-functioning world economy depends so strongly on open trade and investment regimes. In future, the greater specialisation on trade in components and parts can be observed in production processes in manufacturing and trade in services sectors. In agriculture, foreign and domestic contributions to the entire production process may be changed in line with globalisation. Moreover, trade in components and parts is growing significantly faster than trade in finished products, showing the increasing trend of interdependence of countries through production, marketing and distribution. In developing countries, this new trend will be expanded at a rapid rate in future attracting trade and investment for importing components and parts and then re-exporting them in finished form to the original country by adding some value for the final product. In this globalisation process, the advantages can be gained for developing countries by generating employment opportunities.

Emerging Issues in Global Agricultural Development

Agricultural development in the 21st century is vital to assure the food security for the global population in the coming decades. However, recent years have witnessed important changes in the financing, management, and institutional structures in the process of agricultural development in many parts of the world. After the green revolution, growth in agriculture has slowed down in most countries and in some countries annual spending on mechanisms of agricultural development has declined. Particularly, expenditure on research and development (R&D) is reduced in developing countries. The private sector is now contributing more on agricultural R&D while governments are reducing their expenditure on agricultural R&D (Alston et al., 2001). Particularly, in the developing world, poverty reduction, maintaining food security and sound natural resource management are becoming as triple challenges (Serageldin, 2001). In this context, changes in agricultural development paradigm from traditional development models to new models and other mechanisms for development are surfacing an array of multiple important issues.

Environmental Damages and Sustainable Natural Resource Management

The agro-environmental problems are more pervasive in developing countries. Rapid deforestation, excessive soil erosion, land degradation, loss of biological diversity, watershed degradation, contamination of water, and overgrazing are some of common agro-environmental problems in most parts of the developing world. Although macro and microeconomic policy measures are devised to deal with environmental problems effectively, experiences so far yielded abundance of failures and a scarcity of successes (Panayotou, 1993). In assessing the impact of

² See David (1997) for a detailed description.

macro and micro policy reforms, particularly in developing countries, it should be recognized that both market and non-market failures are pervasive. This is particularly so in the case of agriculture. These externalities and "public bads" create economywide effects that are not limited to agriculture alone, but influenced negatively to other agricultural, manufacturing and service sectors in the economy. Further, agriculture faces a problem of government or "non-market failure", which can misdirect resource allocation through policy distortions and imperfections (Johnson, 1991). Unsustainable agricultural systems and practices are promoted by inefficiencies in institutional mechanisms and policies that greatly influence the natural resource degradation. If the economies need to maintain sustainable development and achieve the efficiency in natural resource use, the policy and institutional failures should be avoided.

Food Security and Food Safety

The world's population is expected to exceed 8 billion people by 2025 and India will have the world largest population. Urbanization in the world aggravates the problems of food shortages. The income growth and food needs in developing countries are expected to more than double and global food demand could nearly double (Serageldin, 2001). The challenge to world agriculture to feed the world population is enormous. In future, land and water resources (irrigation) are becoming increasingly scarce. Future food needs will be fulfilled by production of biological food or genetically modified (GM) food rather than naturally produced food by area expansion, and more irrigated facilities. The lands used for cultivation of food are fragile in most countries. Urbanization and land degradation caused problems in area expansion for cultivation of food crops. Further expansion of water for irrigation purposes can not be expanded effectively. The future demand for food can be met by biological food or GM food. In this context, in future food safety will be a major issue rather than the food security.

Genetic Diversity or Biological Diversity

In line with globalisation, no country can impose any restriction on factor and product mobility between nations. Bio-diversity can be protected through the phyto-sanitary measures of GATT/Uruguay Round Agreement on Agriculture (GURAA). Member countries should be strengthen their regulatory mechanism to safe guard the national and long term interest of the society. The regulatory measures can be used to encourage MNCs to invest in introducing new products with protecting the patent rights for countries of the origin under the brand of their own. Even in this way member countries are in a position to introduce new products and generate employment opportunities attracting more foreign direct investment (FDI) and new technologies. Particularly developing countries can maintain a market power and generate additional rent for trading other natural genetic resources. Further, the countries of the origin can protect the conditions stipulated in the Trade – Related Intellectual Property Rights (TRIPS) agreement for member countries. Developing countries are in a position to improve the social welfare of the people in their countries, using the endowment of natural capital including the genetic or biological diversity.

Mechanisms for Transferring Technology

Within the globalization scenario, no country can impose barriers in mobility of technology in between nations. Once technology is received by the recipient countries, they should have a clear-cut mechanism for transferring the technology to the multiple groups of targets including farmers, agro-processors, policy makers, researchers, agro-exporters and importers and the general public. In developing countries, one of the barriers to the adoption of new agricultural technology is lack of knowledge. Extension services are institutions aimed at filling this vacuum. Another major barrier in extension is over regulation of agricultural technology transfer (World Bank, 2002). Within the present scenario, the main functions of extension services are to inform farmers and other target groups of new products and new techniques, and to gather and transfer information from farmers to other participants. This includes collecting feedback on farmer needs

as new research priorities and learning techniques from one farmer and sharing them with other fellow farmers. The state has to play a major role of getting technologies available in the globe and delivering to the identified targets efficiently. For this purpose, institutional reforms may have to be initiated by reforming the conventional model of extension. Private sectors are also encouraged to play a deterministic role in transferring technologies efficiently with the state sector institutions within the competitive environment by identifying the clear targets. Considering the present trends in mobility of international technology in agriculture, the interest of subsistence farmers should be looked after by the state extension institutions whereas the extension in agricultural tradeable sectors should be implemented through the private sector (eg. Private sector extension services in Argentina). Further, information technology (IT) can be used to build knowledge on technology, new systems and other improved mechanisms among the target groups.

Poverty Alleviation and Hunger

The Green Revolution-induced technological change has proved the Malthusian arguments on food supply and population growth are wrong. Concurrent increases in agricultural productivity also resulted in a sustained decline in the real prices of food. Despite these achievements, rising population and unequal participation in growth have left 1.3 billion people in the world struggling to survive on less than a dollar per day. About 800 million of them are hungry, undernourished or malnourished. More than 500 million children under the age of five are not receiving the nutrition they need to develop mentally and physically (Sergeldin, 2001). However, recent report, completed by Stern *et.al.* (2001), based on experiences in 24 developing countries, has shown that early globalizers managed to reduce poverty levels by increasing the GDP per capita growth rates and real wage rates. Addressing above problems of world hunger and its related issues requires integrated policies, mechanisms and efforts in agricultural and rural development and poverty alleviation throughout the world, paying special consideration for food deficit and slow growing countries.

Sanitary and Phyto-Sanitary Measures

In the world agriculture, after signing the WTO agreement in 1995, most countries have to remove their trade barriers (ie. Tariffs and non-tariff measures-NTMs and subsidies) before 2005, to obtain efficiency gains from trade. However, some countries are still following the protectionist regime and closed the door for efficiency gains from trade on par with the world market trends. Presently, most countries are trying to remove protectionist policies in agriculture by shifting to NTMs, which includes sanitary (ie. human and animal health) and pyto-sanitary (ie. plant health) measures through the regulatory mechanisms, using them as NTMs. However, if they really need to formulate strategies to improve the growth rate in agriculture, they should go ahead with minimum sanitary and pyto-sanitary measures, rather than creating heavy NTMs.

Globalization and the Sri Lankan Agriculture: Challenges and Opportunities

The major structural change in the economy in recent decades, has been a reduction in the share of agriculture and an expansion of the share of manufacturing and trade in services. However, agriculture, together with agro-processing activities and allied services, remains a major sector of the economy. From a dominant position at the time of independence, the direct contribution of agriculture to GDP had fallen to 19.7 percent of GDP by 2000. While the share of agriculture is now only about a fifth of GDP, its contribution to employment is much larger, accounting for over 36.3 percent of total employment in 1999³.

³ Central Bank of Sri Lanka, (2000), Economic and Social Statistics of Sri Lanka, Colombo.

Within the agriculture sector, the non-plantation sector is now larger than the plantation sector, and contributed 12.3 percent of GDP in 2000 (being nearly 80% of the agricultural sector GDP). While the non-plantation agriculture sector is primarily domestic market oriented, recent economic policy changes have stimulated exports of some annual crops (eg. vegetables, fruits, cut flowers and foliage etc.), with exports going to markets in the Middle Eastern, as well as some Asian and European countries.

The decline in the relative importance of agriculture reflects the normal pattern of structural change during economic development, as well as the impact of specific policy interventions. Broadly speaking, the ISI policies - which protected manufacturing industries and resulted in overvalued exchange rates, can be said to have aggravated the earlier direct taxes on the export oriented plantation sector. To the extent that trade barriers on imports exist, there is continuing implicit taxation of export agriculture. On the other hand, the domestic food sector, in particular the rice sector, has benefited from a range of direct and indirect subsidies. In particular, it has been the beneficiary of large-scale expansions in irrigation systems designed to provide an assured water supply for rice cultivation in the dry zone. (Some of these irrigation schemes have also had a hydropower component. The Mahaweli project, for example, provides nearly 60 percent of hydropower in the country.) Further, many food crops such as chillies, onions and potatoes, have also had a protection through import barriers. Particularly, without considering the sustainable agricultural development and externality question of non-plantation agriculture, government has imposed 60 percent tariff on non-plantation crops such as rice, potatoes, onions and chillies in the budget of 2002 to safe guard the farmers' short term interests. However, analysis has shown that tariff protection for non-plantation crops may create short term lucrative benefits for farmers but it will damage the efficiency in factor mobility in non-plantation agriculture and ability to reduce policy-induced externalities in non-plantation agriculture, (Somaratne, 2000). The R&D in the agriculture should be based on demand driven approaches to minimise the risk in transferring technology or products and gain higher rate of return for the investment of R&D.

The other dominant sectors in agriculture comprise plantation (ie. tea, rubber, coconut, and other export crops – spices, and beverages), livestock (ie. dairy, poultry, piggery and other) and fish (ie. marine and fresh water fish – shell fish, prawns, lobsters and ornamental fish), and forestry products (ie. furniture, woodcarving and wood based household items).

Globalisation and the Sri Lankan Agriculture: Major Challenges

Globalization opens the door for free movements of factor and products between the nations through the liberalized economic development process. While moving along with the globalised growth path, Sri Lanka has to face some emerging challenges in the world economy. The WTO⁴ has designed the rules of the game for liberalization of world trade. Considering the future likely challenges in the globalization process, the following are some emerging challenges in relation to the Sri Lankan agriculture identified.

Integration into the World Economy

Integration into the world economy will be a major challenge for the agricultural sector in Sri Lanka with the existing structural and institutional mechanisms, product coverage, R&D investment, role of the state and integration mechanisms followed within agriculture in Sri

⁴ The WTO has a legal and institutional foundation to implement the multilateral trading system in the world. It provides the principal contractual obligations determining how governments frame and implement domestic trade legislations and regulations. And it is the flat form on which trade relations among countries evolve through collective debate, negotiation and adjudication (WTO, 1995)

Lanka. The main thrust area of agricultural development process has been identified as to maintain food security. But the globalization encourages to produce mainly tradeables to earn more foreign exchange within the agriculture and agro-based products environment. Particularly formulating and implementing strategies to integrate into niche, larger and global markets. Globalization may create domestic demand for niche products, which can be channeled through the existing super market chains, hoteling industry and airline catering services in the country. In addition, globalization encourages regional trading blocs to integrate within the specified region through harmonizing trade with the trade creation strategy. In future, Sri Lanka should make initiatives to join with Asia Pacific Economic Corporation (APEC) and ASEAN, rather than confining to SARRC and South Asian countries only. But, it will be a challenge with the existing barriers in structures and the facilitating process of export promotion in agriculture. Integration into the world economy should be based on competitive advantage. The competitive advantage of the products is based on low cost combination of product in agriculture and value added products based on world consumerism, catering to the changing consumer preferences in the world economy.

Improving the Climate for Agro-Enterprises through Market Integration

Globalization creates opportunities to integrate distance markets to open up investment opportunities for domestic investors. The conventional supply driven R&D and extension should be reformed and identified the role of the state as a facilitator to assist to create demand driven R&D mechanisms in agriculture. Demand driven R&D should be based on the needs of the target group. Initiating demand driven product development, getting and development of new technologies, and improving post-harvest technologies are the major areas to be concerned. Globalization opens the door for new technologies to develop agro-based products. Existing R&D system is biased towards farmers and no serious initiatives have been taken to popularize agro-based products. The state should take the lead as a facilitator to invest in human resource development on agro-based product development, marketing, business management etc. identifying products, which can gain competitive advantage. Further it is necessary to disseminate information on product development and demand to the world economy to create world demand, transferring agricultural technology to the client, get the services of the private sector through state-private partnership to integrate domestic agro-based products to the world economy. This would be a major challenge for the Sri Lankan agriculture to integrate into the world economy. For this purpose we may need to reform the institutional mechanism to encourage to build partnership with world food giants through joint ventures, partnerships, and management partnerships. It will be a paradigm shift in a right direction to attract foreign capital and technology to gain globalization benefits for Sri Lanka.

Investment in People and Technology

Consumerism will be the major thrust area in demand driven R&D to cater to the target needs. However, existing investment scenario in people and technology is diminishing over the years. (Somaratne, 2002). This should be carefully reviewed by the state sector to formulate policies for future human resource development in agriculture. It is necessary to invest identifying the clear target. Other wise generic type of human resource development (HRD) will be a challenge for economic development. Unemployment is severe in the country, and hence HRD can play a role directing to train people to cater not only to local needs but also to the international needs. The technology generated and used in agriculture is supply driven, which is a clear challenge for the Sri Lankan economy to shift to demand driven system. For this purposes institutional reform process should be initiated to cater to the need of demand orientation of HRD in the Sri Lankan agriculture.

Maintaining Macroeconomic Stability and Competitive Advantage

Sri Lanka has initiated the liberalization process in 1977 to maintain the macroeconomic stability in the economy. It was a paradigm shift to take advantages from the regional and global economies. However, some rigidities and structural problems created as stumbling blocks in the development process particularly the risk factor due to unsettled condition in the country. In the Sri Lankan agriculture faced the same fate in attracting FDI and technologies to integrate the sector into the global economy. If the economic fundamentals (real rate of economic growth, budget deficit, current account deficit, investment, domestic savings, inflation, and unemployment rate) are right, we can expect improvement in growth in investment from various domestic and foreign sources by infusing new technologies. Even to improve the growth rates in agriculture it is a must to maintain macroeconomic stability. If Sri Lankan agriculture is going to gain advantage in trade in agriculture, it is necessary to maintain competitive advantage, which creates to maintain the lowest cost compared to trading partners. The policy environment should be sound and efficient to face the dynamism in the domestic and international (ie. global) policy environments which will reflect in increased growth rates in the sector concerned.

Globalisation and the Sri Lankan Agriculture: Opportunities

The world economies are moving ahead with new strategies, taking consideration of dynamism in all spheres of production, marketing, distribution, transferring of technologies, and adopting mechanisms in information technologies. In the Sri Lankan agriculture to take advantages of globalisation process, it is necessary to make structural, policy and institutional reforms in the sector to transform the agriculture into a dynamic sector, contributing more on GDP, generating more employment opportunities and thereby improving the social welfare of not only farmers but also all participants and the consumers in the process. For this purpose there are some prerequisites to overcome the first hurdle in the transformation process of the Sri Lankan agriculture.

Globalising the Sri Lankan Agriculture: Prerequisites

In the process of globalizing the Sri Lankan agriculture, there are some prerequisites in the Sri Lankan agriculture to be transformed from subsistence level to market-oriented, export-led and vibrant agricultural sector in the economy, which are as follows:

- **Development of a National Agricultural Policy (NAP) Framework:**

It is necessary to avoid policy failures and maintain a consistent and conducive medium and long-term policy framework in agriculture with the objective of more contribution of agriculture to GDP in the country. It can be used to transform the Sri Lankan agriculture from farmer orientation to industry orientation with a long-term vision for the sector and trying to achieve the sustainable rate of growth (ie. 5 percent per annum). The NAP should include strategies for attracting FDI and technologies and creating market integration with value addition and modifying the production, distribution and promotion bases. Further, the NAP can be dealt with the major concern of food security as well as food safety in the country. The agriculture – induced externalities (ie. land degradation-induced damages in the down-stream agriculture) and maximising social welfare by generating new opportunities for rural farmers can be taken care through the NAP. Through the NAP, strategically we can identify the regional specialisation to attract investment and technology for agriculture. Even whatever the policy measures we apply, it is possible to measure how far the ethnic harmony will be broken down and how it can be rectified through the NAP framework.

- **Development of a New Institutional Framework**

Within the transformation process, to attract FDI and new technologies, there should be a 'One-Stop House' to facilitate the whole process of investment, by building partnerships, joint ventures with the foreign investors, adopting existing incentive packages designed by the BOI. It will be able to avoid policy and institutional failures in attracting FDI and technology. This house will provide necessary infra-structural facilities for investors. It will be able to use this house to analyze the short, medium and long-term impacts of whatever the micro policy implemented and if necessary reformulate the necessary strategies to achieve the target rate of growth. This institutional framework should facilitate to get the ISO standards for the future export agricultural products (eg. green or organic products) and encourage to build contract farming initiatives to avert the risk of both exporters' and farmers' in the process. Further, this institution can be used to formulate policies to gain benefits under the 'Green Box' policies of GATT/Uruguay Round negotiations. The formulation of micro sectoral complementary agricultural policies should be formulated to encourage land saving technologies (eg. green houses and poly tunnel), measures for minimizing agricultural externalities, and to encourage competition through a regulatory framework.

Globalization and Opportunities in the Sri Lankan Agriculture

Within the globalization scenario, various opportunities are opened for the Sri Lankan agriculture. These opportunities are used to achieve the objectives of sustainable level of sectoral growth, efficiency in natural resource use, generation of employment opportunities and improvement in the status of social welfare of the all stake holders involved in the process.

Some of the opportunities in the Sri Lankan agriculture within the globalization scenario are as follows:

- **Market Integration:**

It is possible to attract FDI and new technologies into the sector through market integration. It may be either horizontal integration (eg. market oriented crop diversification – Potatoes Vs Cut Flowers) or vertical integration (eg. Seed and seedlings production, agro-based products – vegetables, fruits, tea, rubber, spices etc). The world demand is moving to nature-based products, herbal products and natural products. In the agriculture, it is possible to introduce new green products or organic products (eg. Organic spices in Matale district, and Pesticides free rice in Badulla district).

- **Technological Advancement:**

The initiatives should be taken to introduce 'green house' and 'poly tunnel' technology among youths and agriculture graduates to grow some products for identified niche markets (eg. Vegetables for the supermarket chain and the airline catering services and cut flowers for the export market). The demand for these products is showing an upward trend in the world market. Further the technological advancement should be encouraged to tea, rubber and coconut sectors to increase the level of integration to generate new range of products (eg. in tea sector – instant tea, flavored tea, herbal tea, tea bags, green tea etc.) through private sector. For the domestic market, demand driven distribution of technologies in the horticultural sector (eg. Rambutan, Guava, Durian, Cashew, mangoes, and banana) should be organized for product integration. The necessary technologies have been already developed in other tropical countries (eg. Malaysia, Thailand, Indonesia etc.)

- **Regional Specialization**

The regional specialisation mechanisms should be organised by pooling regional resources to gain higher productivity, increased farmer income and generating employment opportunities directly and indirectly. The planning and executing market oriented regional integration strategies can be formulated through Contract farming mechanisms in collaboration with the private sector. The earlier experiences on regional specialisation mechanisms namely: Export Promotion Villages (EPV); Agricultural Productivity Villages (APV); and 'Yaya programme' in the paddy sector programmes can be revitalised in order to cater to the today's demand through participation of both state and the private sectors by pooling resources.

- **Supply Driven Vs Demand Driven R&D and Extension in Agriculture**

The opportunities are open to change the ineffective supply driven research and development and extension in agriculture within the globalized environment. The demand driven R&D will generate higher rate of return for the investment of research. The R&D can be conducted for adaptive or applied research rather than basic research for tradeable products and development of new products considering the consumer preferences. It will assist to manage scarce resources efficiently. In the Sri Lankan agriculture, the priority should be given to the green house products, horticultural products, forestry based products and fish based products. The private sector should be encouraged through incentive packages for targeted extension in the exportable product sectors, while the government should look after the extension in the subsistence-farming sector.

- **Private Sector Led Investment in Agriculture**

Sri Lankan agriculture has the high environmental potential to attract foreign investors. The targeted sectors (eg. green house based tissue culture gardens, cut flowers, seedlings of fruits etc) can be identified to invest FDI and new improved technologies through contract farming projects. The forward marketing ventures can be initiated through private sector investors and farmer organizations (eg. for pesticide free rice, organic spices and organic rice in Badulla and Matale districts). The other opportunity for investment through private sector is linking the agricultural projects with eco-tourism (ie. bush walking, fishing and camping), providing food and lodging facilities at farmhouses.

- **Genetic Diversity Trade and Market Power**

The genetic resources in Sri Lanka are categorized as common property resources. The ownership of such common property resources is vested with the state. Sri Lanka has the potential for getting foreign investors with their technologies to develop new products based on the Sri Lankan genetic resources. By strengthening the legal environment, safe guarding the patent right of genetic-based products for Sri Lanka, private sector companies can be invited to generate new products on the basis of profit sharing. In this process Sri Lanka can build a market power and attract a huge rent for our genetic resources. It will help increase the possibilities to obtain new technologies, foreign capital and improved human capital.

- **Minimizing Agriculture – Induced Externalities**

The sustainable development can be achieved by minimizing agriculture – induced externalities such as the loss of productivity in down-stream irrigated agriculture, loss of productivity in hydropower generation, cost of health hazards etc. The removing tariff protection in non-plantation agriculture through the globalization process encourages to shift upland lands from high soil erosive crops to low soil erosive crops. As a result, cost of agro-based externalities in Sri Lanka can be minimized.

• Trade Creation Through Regional Trading Blocs

Sri Lanka has signed a free trade agreement (FTA) with India to harmonize trade between Sri Lanka and India on the basis of preferential trading arrangements. It is possible to gain benefits through trade creation and mobilizing other factors and products through the regionalised environment. Further, Sri Lanka can import Indian products at the concessionary terms and re-export them to other destinations and generate additional income for investors. It also encourages investors to invest in either country (eg. Ceylan, DAMRO, and ARPICO have invested in southern states of India under FTA) through building joint ventures and partnerships.

Concluding Remarks and Policy Implications

Globalisation is a process, which comprises three stages namely liberalization, regionalization, and globalisation. The major driving forces of globalisation are technological change, liberalization of trade and investment and internationalisation of business activities. The emerging issues in global agricultural development are: agro-environmental damages and sustainable development; food security and food safety; genetic diversity trade and market power, mechanisms for transferring technology; poverty alleviation and hunger; sanitary and phyto-sanitary measures. Within the globalisation scenario, the challenges for the Sri Lankan agriculture have been identified as: integration into niche, larger and the global markets; improving the climate for agro-enterprises through market integration; investment in people and technology; maintenance of macroeconomic stability and gaining competitive advantage. If the Sri Lankan economy follows the strategies of globalizing the Sri Lankan Agriculture, there are pre requisites to be fulfilled to facilitate the entire process namely: development of a national agricultural policy (NAP), formulation of an institutional mechanism including identification of a dynamic role of the state and complementary micro-sectoral policy mechanism. The several opportunities are opened for the Sri Lankan agriculture to transform the sector in line with the globalisation scenario. These opportunities are: market integration; technological advancement; regional specialisation; demand driven R&D and Extension; private sector led investment in agriculture; market power and genetic diversity trade; minimising agriculture-induced externalities; and trade creation through regionalization. The opportunities in the globalisation process can be used to achieve the national objectives of food security, generation of employment opportunities, diversifying the sector; and increasing farmer income through liberalising the Sri Lankan factor and product markets. Further, it is necessary to improve the efficiency in the sector through formulating a regulatory mechanism to encourage competition and discourage monopoly and monopoly powers either in the state and private sectors.

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Discussion

Discussants' Comments

R.H.S. Samaratunga

This topic is of particular importance today with the change of the new government. The state authorities have initiated the discussions in the process of devising government and sectoral policies. The discussion that we have today and tomorrow will be useful material for the ongoing process on deciding and verifying macroeconomic and sectoral policies. There going to be a couple of committees for this I guess. Dr. Somaratne's paper looks at the interface area of agriculture and trade basically.

This paper is divided into two sections, the first part provides some background information. Second part is basically focussed on the Sri Lankan side. In the first section, we discuss many aspects relating to global trade and investments activities, technological change, trade policy liberalisation regimes, the conclusion of negotiations, internationalisation of business, specially through Multi National and Trans National corporations, highlights of emerging global agricultural issues, specially with environmental damage and agricultural resource management and some other issues like food security, etc. They are all dealt with adequate analytical soundness. Secondly, he discusses basically the challenges and opportunities we have in Sri Lankan agriculture followed by conclusion.

But, one point I want to make on the first part of his presentation is that, we know that after the eighth round of negotiation, agriculture is now an international issue for further discussion. Currently protection is more transparent, tariffs are transparent. But, non-tariff measures are becoming prominent, including what is mentioned in the paper as sanitary and phyto-sanitary measures and related regulations, which are hidden, and it is not transparent. Mostly, scientific evidence-based and also country-specific. Those barriers cause a huge problem in the agricultural trade internationally. More recent example being, (I don't want to talk more about this), again in South Asia, Afghanistan bound Indian wheat had to be transported to Pakistan. Pakistan didn't allow wheat to be transported to Pakistan. Because they said that the production standards followed in India is much lower than theirs. I don't know. There may be other reasons as well. This is the reported reason which blocks the transportation of Indian wheat to Afghanistan

through Pakistan. This could happen to any agricultural commodity, specially in raw form when it comes to trade. But there are hundreds of technical barriers to trade in, which we should look at since bulk of our exports are still agricultural commodities. This is more so in developing countries, the technical capacities of tracing those things are not available to us and this is a problem faced in general, by developing countries.

Then, the second section, Dr. Somaratne has identified not only challenges faced by Sri Lankan agriculture in the globalized context, but help us to understand the opportunities available to us. But the opportunities are conditional. Many things we discussed, like for example, the horizontal and vertical integration that we haven't focussed only on technological advance in certain sectors, agricultural sub-sectors, and regionalization. Those are valid points in my view, and useful thoughts for various committees. Of course, we know that we all have to understand that opportunities are placed within the context of efficient market-based exported agricultural context. Because those are inescapable conditions that we have right now in the world system. Then, in the discussion of the second part, Dr. Somaratne brings about a very interesting point that, the inter-subsectoral factor mobility within the agriculture. Because of the protection provided to agriculture over the years, the agriculture has become inherently efficient. The other one is that factor mobility needs to be rationalised if we look at the further growth. Minister has talked about 5% annual agricultural real growth. It should be in line with efficient agriculture that does not allow unconditional, free movement of the factors within the subsectors of agriculture, i.e. that helps sustainable growth, this is a very important point he mentioned in his discussion.

Further, his paper discusses about macro-economic stability as a pre condition for achieving sustainable level of growth. Macro-economic stability is one key ingredient of our macro economic policy management. One key factor is the budget deficit. Budget deficit is growing and it is not on a sustainable path. It is tight up with two major things, one is the ongoing ethnic strife, and the second is the debt repayment problem. We need to curtail budget deficit at the same time you have to incur certain unavoidable expenditure, these are very difficult macro economic management problems at least in the medium term. In the second part he talks about appropriate macro economic conditions supported by complementary micro policies. In his discussion, he elaborated several points. But, I would rather like to have at least one example. I know that you know the complementary micro-policies in various sub sectors of the agricultural sector. But, for an illustrative purpose, take one small sub-sector, and give us some illustration, what are the types of complementary macro-policies which will help that particular sub-sector grow at a rapid rate, given of course, with this conditional macro-policies. Last, Mr. Chairman, Dr. Somaratne's conclusion in the paper adequately substantiated with the analysis going in the body. Thank you very much.

Dr. Neville Edirisinghe

I think we have the real challenge in future as a large number of people and political clout are involving in the process. So how do you interface this reality at the ground level with these very superb global and regional driving forces. How do you combine these two together? Because that is finally the real issue. This entails commercialist, bringing line together, capital, huge capital requirement to meet this kind of thing. It entails human capital development, which we don't sufficiently have. So, how do you get people into the plan of action, is my question. Thank you.

Responses:

Dr. W.G. Somaratne: Thank you Dr. Neville Edirisinghe. It is a very important question. How we can increase the level of growth in agriculture? At the moment, we are maintaining around 2% level growth. We should have a targeted approach, say 5% growth, considering the opportunities locally, regionally and globally. Because, regionalization and liberalization of the domestic economy are basic elements in the whole process of globalisation. My focus here is, of course, the small farming sector which is facing a lot of problems, particularly in technology, capital, skills, and knowledge to shift from traditional agriculture to commercially integrated agriculture. If we do not take any initiative today, the future is definitely bleak. My point here is, if we have a targeted approach, go with small farmers, have a regional specialisation strategy to feed our own people, by taking care of their interests. But at the same time, you have to take care of other sectoral interests as well. And also, Dr. Samaratinga mentioned about the 'Budget Deficit'. Isn't there a way out on the heavy spending on defence? If peace comes, then the macro-economic growth will take care of, to a certain extent, the small farmers' issues. That is one point. The other point is if the agriculture sector is ready shifting from subsistence to commercial level, then there are investors who are ready to invest. So, my point here is to take advantage of that environment and shift from subsistence to commercial level at least for 25% in the short run, by maintaining food security and social development etc, etc. Otherwise, we won't be able to get at least some advantages from global movement of capital and technology within the process of globalisation.

Other Discussions

Dr. Samad: Like the other two speakers before, I like to complement Dr. Somaratne for his presentation, and I think I was quite taken up by the statistics he showed, that even after liberalization in 1977, it has been a drastic reduction in performance in the agriculture sector. And the solution, one way to overcome the declining rate of agriculture is to integrate into global and regional markets by capturing the benefits of globalisation. And in that process, we were trying to capture markets and the examples that you used were mostly from the European countries, the new markets and so on. Now, my question to you in that respect is, are those benefits theoretically possible? Are they really free, for us to enter as a developing country and, how far international organisations are neutral enough to permit the other smaller countries to enter. That's one question.

The second question is - on the "Protectionism is against the free market mechanism and factor mobility". As Dr. Samaratinga also pointed out, if protectionism really leads to inefficiencies, it should be necessarily discouraged then. What you need to do is, to remove protection. There would be factor mobility on much more efficient lines - eg. investments. Now, the question is in real life, is that, whether the factor mobility actually feasible? Because, what are the alternatives? In one classic example is when imported potatoes were plunged into the markets and provided cheaper potatoes, in Welimada, what did the farmers do? They left the potato farms fallow. There was no substitution.

Dr. W.G. Somaratne: Thank you, Dr. Samad - That is also a very important question. Of course many developed and developing countries have signed agreements with WTO. They have signed to reduce their tariffs as well as subsidy levels by the year 2005. I don't know how far they genuinely reduced, but there are conditions laid down by WTO. If developed countries impose any regulations or regulatory environments, there are provisions for using economic power. They have to reduce their subsidies, at the moment, the value of agricultural subsidies is US\$ 390 billion per year. And the other thing is, by putting any subsidies they are damaging the markets in

developing countries. My point here is the factor mobility should be allowed only through micro policy environment. The problem is if we go ahead with the existing level of protection given, the factor mobility will be distorted. Then we are giving a huge protection for inefficient agricultural industries by creating distortions in factor mobility in the economy. If we want to have an efficient agriculture in future, we have to have a targeted approach. Go with small farmers with separate set of complementary micro policy environment. Go with other potential or commercial farmers with separate set of policy environment. Finally what matters is how we can improve the growth in this sector. Through the targeted approach, while maintaining food security and other objectives, we can attract investment. A classic case is the investment in Boralanda. Likewise, we can shift small farmers into commercial level through various means with targeted approaches of integration.

Dr. Sunil Jayantha Navaratne: Thank you Chairman. I congratulate Dr. Somaratne for his excellent presentation. I find that his presentation is partial. He is touching only the opportunities and the treatments from the global side or the outside. But to face with these opportunities or to grab the opportunities or face with the challenges, I think internally we have strengths and weaknesses. I think he has not focussed on our strengths and weaknesses. So without talking, without identifying our strengths and weaknesses it is useless to talk about the opportunities. There are many static factors in Sri Lanka which are hidden or which are not facilitating us to utilise the opportunity. I think that is the main problem. While we are talking about opportunities and strengths, I think the more important part is to focus on internal environments. Internally, we are very weak. There are strengths also. Try to identify those strengths and try to identify our weaknesses, strategic weaknesses, structural weaknesses and people-wise. So try to identify those things and develop a better study. If we can include that part it might help you to improve this.

Prof. C.S. Weeraratne: I think that Dr. Somaratne's paper is on 'Challenges and Opportunities'. Probably he did not have the opportunity to indicate about those two factors, which are very important, when discussing the agriculture in Sri Lanka. Probably, Dr. Somaratne has something to say on this.

Dr. W.G. Somaratne: I think this is a very good comment. Of course, there are structural and strategical weaknesses inherited in the Sri Lankan agriculture. There is no denying factor there. But, my point is, as Chairman mentioned, I tried to show that, what are the opportunities available, if we go with globalisation. Because, we have already signed the agreement with conditions laid down by WTO. Then, we have to get ready with that, to have a counter-strategy to overcome the issues or the likely impact, which will arrive in future. If you don't get ready today, the time might come, when we cannot do anything. Then, my point here is, we have to analyse it very carefully, and rigorously. We have to analyse, what would be the short, medium and the long-term problems, issues and repercussions. Then only, we can see what would be the likely impacts. I am not denying your comment, well taken that comment but, we have to think twice. What are the opportunities? Because these inherited or structural problems were prevailing for so long, for the last two decades or more. I think this will be sort of a paradigm shift, at least to have a targeted approach. I am not saying that, go with small farmers alone and protect them totally. Of course, protect them 50% or 60%, so the balance can be given for the efficiency criterion. Then only we will be able to attract at least capital and technology for targeted product sectors. Both ways we are trying to push hard to improve the sectoral rates of growth. Thank you.

Dr. Fredrick Abeyratne: Just a short comment. I would like to refer the proposition of factor mobility within the sub-sectors. As I say, you know, it is very much linked to the issue of diversification. Since the 70s, the policy of the government has been to diversify crops from rice and so on and so forth. But, we still see there is only a small farming sector, which has diversified even though other crops like chillies and things like that. The main reason for that, has been the risk-averseness of our farmers on the run, and the risk in nature of the commodities

when the domestic markets are concerned. Unless, we concentrate on that, how this risk can be reduced. I think advocating factor mobility within the sub-sector will not be much of a success.

Dr. W.G. Somaratne: I think risk is there. We have to avoid that risk through various means. If we can have sort of multinational or international investors, then we can put farmers as a link in tradeable agro-enterprises. Farmers will provide their labour, but the technology and the capital will be provided through investment by the other investors. That way, as you mentioned, the risk factor can be minimised. I am not saying that we can totally reduce, totally remove that. But we can have sort of minimisation approaches through encouraging investments.

Mr. L.P. Rupasena: Just I want to make emphasises on Dr. Edirisinghe's comments. That is very important. Because, theoretical explanation and the practical situation are two different things. Because there is an argument going on, that liberalisation has forgotten on some particular areas. One is social aspect, second is institutional aspect, third one is political aspect and the last one is, what you call regulatory aspects. These four areas are very important in regulating globalisation activities. There is one thing, factor mobilisation, there is a success story in Embilipitiya. Embilipitiya farmers have diversified paddy into banana. Now, we have three thousand hectares in banana cultivation, because of profit is five times higher than paddy cultivation. If there is profit, there is some incentive, there is no problem of diversification as Dr. Abeyratne mentioned. Problem is the risk.

A Participant: Now we have been talking about globalisation. But this globalisation would be common to all the countries that would be competing. I would like to just suggest that we should try to see how we can make Sri Lankan agriculture becoming a preferred supplier to the global markets. How we can position ourselves as being preferred supplier. Give something more or different to what other countries can give. Thank you.

Dr. W.G. Somaratne: The problem here is competitive advantage. I am not saying that, go with wholesale diversification or investment. Only thing you can encourage investment in agriculture is whether Sri Lankan farmers are having a competitive advantage. It means that, how far we are economically feasible, how far we are environmentally sound and how far we can use our environmental potential. That's why I only emphasise targeted approaches, not the generic type of approaches for attracting investment. Then only, we can create sound strategies to improve the sector.

Prof. C.S. Weeraratne: I think we have to stop at this point. We have to get into the other paper by Dr. Nihal Atapattu. But before we stop, this session, Dr. Somaratne's paper was well discussed and I thank Dr. Somaratne and those who were involved in the discussion. I think it is a very important topic as Dr. Sunil Navaratne said, we should have discussed on 'Strengths and Weaknesses' of agricultural development. There is no point in discussing only the 'Challenges and Opportunities'. I suppose there will be another opportunity to discuss these two aspects.

Do Policies Matter? Negotiating Future of Agriculture Through Volatile Times

*Nihal Atapattu**

Introduction

Policies do matter in agriculture and they matter a great deal. Both in the developing and developed countries alike, government intervention in agriculture had been the rule rather than the exception. So much so, even raising the question of policy relevance would have been unthinkable a few years ago. The debate on agriculture policy in general focussed on the degree of intervention and the magnitude of distortions resulting from such interventionist policies and not so much on the need for one.

What the new scepticism embraced in the topic suggests is that the effectiveness of agriculture policies, in the context policies are understood conventionally has become doubtful. Massive transformation has taken place in agriculture in the recent history making many elements of the old policy prescription antiquated and forcing policy analysts to entirely rethink the strategy. The present treatise argues that even in today's context agriculture policies have critical roles to play, and yet finding the correct role requires a great deal of ingenuity on the part of analysts.

The paper attempts to delineate past agriculture policies in the correct perspective and illustrate that many of them have run their course. It argues for discovering a new role for agriculture policy in the light of developments in the domestic and international scene and cites some experiences useful in that endeavour. Based on these experiences the paper outlines some broad directions useful in identifying appropriate policy for the domestic agriculture sector.

A Framework for Analysis

This section outlines briefly the generic framework adopted in identifying and evaluating policies with the purpose of recounting how the 'old' policy became obsolete and defining parameters of new policy environment, thus serving as a roadmap for guiding subsequent assessments. Goals and objectives commonly pursued in policies and instruments employed are depicted.

Policy Goals

Policies are positions adopted by Governments or organizations on overall goals. At a sufficiently basic level useful for analysis, goals pursued by policy analysts are robust against the test of time and remain intact. Goals frequently mentioned in relation to agriculture sector may comprise some or all of the following:

1. Improving welfare of the farm population
2. Accelerating economic growth and development
3. Increasing consumer welfare
4. Conserving natural resources.

* Note: The Author is the Director (Projects) of Ministry of Agriculture and Livestock Development, Colombo.

With changes in the stage of economic development and preferences of the public, the relative standing of each parameter outlining national goals may change and the scale determined. Beyond that, there is little dispute on identification of goals.

Policy Objectives

Government intervention in agriculture has been explained and often justified eloquently giving reference to many vital objectives. However, such interventions are not free from the context in which it is applied and even change over time. Of many reasons outlined over the years as providing justification for adopting various policies, the following are mentioned quite frequently.

- a. Improving food security
- b. Encouraging innovation and modernization
- c. Improving income stability
- d. Earn or save foreign exchange
- e. Generating surplus for investment
- f. Promoting rural development
- g. Improving prosperity of farm community
- h. Promote private sector participation
- i. Providing a market for outputs of other sectors.

It is noteworthy that some of these objectives have found a place in the Ministry's Mission Statement for the agriculture sector. Furthermore, several of these objectives have relevance under widely different contexts and development stages finding a place for them in many policy statements.

Much too numerous policy instruments have been employed to achieve above policy goals and objectives making it impractical to list all of them. Some of the more popular tools are the following:

1. Guaranteed prices and state procurement
2. Tariff protection
3. Input subsidies – fertilizer, seed, implements
4. Free land and water
5. Subsidized credit
6. Free research and extension services
7. Export subsidies.

While policy goals and objectives being pursued today have changed only marginally, policy instruments considered appropriate for use have changed their character fundamentally. Several, now well known forces sweeping the global economic and political milieu, mostly during the last two decades, have shaped this shift in focus with respect to choice of instruments. The key forces are the process of globalization, increased market orientation and commercialisation and concerns of sustainability. These processes have dictated that policies are employed within an increasingly market-oriented, transparent and environmentally-friendly setting.

What is most significant about the impact of these forces on the policy process is that they have removed the predictability maintained in the domestic economies by isolating themselves from the global market place. Practices that allowed countries to cushion impacts arising in the international commodity and financial markets are no longer in the realm of choices available. Vast strides made in areas of major concern such as availability of global food supplies and the access to them, importance of international flows of technology and investments as sources of growth and pressures to comply with a new international code of conduct in terms of being responsible towards environment etc. have curtailed abilities of individual countries to pursue isolated policy choices. Therefore, policies have to be flexible, well targeted and less disruptive to the functioning of market forces.

Domestic Agriculture Policy

In the context of domestic agriculture policy, it is useful to briefly review the situation with respect to the relevance of policy objectives routinely advanced as providing a justification or a rationalization for the state maintaining a major role in directing agricultural production. Policies adopted by the state in the last decade or so advanced the following objectives as primary motives for policies practised.

1. Enhancing resource utilization and creating rural employment
2. Improving nations food security
3. Generating a surplus for investment.

Below, the relevance of each of these objectives are examined in the context of current macro-economic policy framework of the government and the developments in the international scene.

It can be immediately seen that the last objective of generating a surplus for investment can easily be dispensed with as less relevant in the current investment scenario. While extracting a surplus from agriculture to support investment in other economic sectors well served some of the newly developed countries, in the context of scale of required resource today it is largely inadequate as a financing strategy. Investment patterns in the domestic economy in the recent period confirm this fact.

The relevance of the second objective, improving food security does not appear to be any longer relevant in terms of major food commodities. With the growth in world trade, for small countries such as Sri Lanka domestic food production is not a major parameter in achieving food security. It can be easily seen from statistics that relying on the global market place for most or even all of our primary food needs including rice is a relatively low risk option (See Table 6.1).

After availability, the second aspect of food security in the context of imports is the affordability. The expenditure pattern of food imports at the national level suggests that increased reliance on trade as a means of meeting an increased share of imports has become a relatively more affordable option (see Table 6.2). Of course, this largely ignores the differences in affordability of food at the sub-national or household level from the point of view of distribution of individual incomes. However, solutions to that have to be addressed largely outside the agriculture. The widely accepted notion that food security finally is not a question of availability of food but the accessibility to it from an income perspective is confirmed in the Sri Lankan situation too¹.

This leaves resource utilization and creation of income earning opportunities as the most appropriate need that has to be achieved by agriculture policies and strategies. If this is accepted as the basis for agriculture policy making, the complexion of policies appropriate in the present context may not be the same ones faithfully followed for decades.

It has been a widely observed fact that, during periods of rapid economic growth non-agriculture sectors in the economy such as industry, construction and service sectors grow at a much faster rate than agriculture, thereby causing a relative contraction of the agriculture sector. This can be clearly witnessed in the case of Sri Lanka economy as well. Over the years, the relative contraction of the agriculture sector in the GDP has declined to less than 20 percent. Although, the employment in the agriculture sector has also undergone a relative decrease, due to the rigidity in shifting employment across economic sectors, about 37 percent of the employed population is still classified as primarily agricultural workers. This suggests that the main problem in the agriculture sector in Sri Lanka is one of low relative incomes.

¹ It may be argued here that the above account of food security ignores critical aspects of nutritional security where domestic food production may have a significant contribution to make. However, in the present context major food crops have little to do in terms of improving nutrition.

This is not unique to Sri Lanka. Certain other countries have even worse ratios (see Table 6.3). Parity between agricultural employment and income share has been achieved rather late in the development process as shown from data for selected countries at different development stages.

There is no reason why the situation will not improve over time. However, in the short term this disparity in agricultural and non-agricultural incomes can have impacts of a more permanent nature unless timely corrective action is taken. As evident from the performance of the domestic agricultural sector, some implications of this phenomenon have been already noticed. Some of the more prominent impacts have been,

- a. Abandoning of farm land
- b. Stagnation of productivity
- c. Lack of participation of youth in agriculture.

The New Agricultural Policy Environment

It is useful to briefly examine what the terms of new policy environment dictated by the new global economic order are. Several features quickly stand out as salient features of the new order:

1. Market orientation
2. International in focus
 - In keeping with international commitments such as WTO, FTA
 - Non-distortionary on the international comparative advantage
 - Transparent
3. Interdependence.

This new economic order also reinforces some concepts that were always a part of the solution, i.e. productivity, efficiency and competitiveness. Increasing productivity has been almost instantly identified as a policy objective essential to remain competitive under the new order dictated by globalization forces. However, what has been slow to realise is the productivity gains have to come not from sources traditionally expected.

Another factor that shaped the nature of incentive framework for agriculture is the secular decline in real prices of major agricultural commodities particularly in the last 3 to 4 decades. Even with sizeable productivity gains, producers were under constant pressure to protect their incomes due to the erosion of margins. The response to this occurrence is emergence of a package, at least first in the western economies, which led to the process now termed as 'Industrialization of Agriculture'. The main features of this process were monoculture (in both crop and livestock operations), heavy reliance on external inputs such as seeds and chemicals, increased mechanisation. The process was skilfully assisted by research and development, support schemes including subsidies and other incentives, aggressive market development both domestic and external. This process resulted in the development of very large farming operations that utilise scale economies to protect competitiveness.

Proposed Agenda for New Policy

The foregoing highlighted the critical importance of productivity improvement as a basis for facing competition in the new economic environment. Productivity improvement has been a concept repeatedly brought in to the discussion whenever competition under open economic environment becomes the core of debate.

Whenever productivity was identified as a critical factor in agriculture, it was customary to express it in relation to land. Vast strides have been made in increasing land productivity as evidenced from Green Revolution technologies. Yet, nearly after 4 decades of its widespread practice agriculture seems to have run its course fully and in need of a second green revolution.

Understanding productivity improvement from a narrowly defined concept tied to land is found to be inadequate in the present context. Increasing land productivity was definitely a significant aspect of the green revolution technologies. However, with diminishing returns to inputs applied to land being quickly exhausted in declining resource productivities and real prices, degree of labour saving became more important than land saving (Johnson, 1997). Many of the external inputs introduced in to agriculture were both land and labour saving the degree of labour saving far outpaced land saving. Comparative data from Japan and US for the 1880-1980 period illustrates this clearly (Table 6.4). Both land and labour saving occurred at faster rates in Japan in the first 6 decades, where as growth in labour productivity was much higher in the (US 6.1%) than in Japan (3.55%) and land productivity was nearly the same in both countries in the second 4 decades. The amount of arable land decreased 11 percent in Japan in the second period while there was no change in the US. Thus, the primary effort of research, development and investments has been to increase the productivity of labour rather than of land.

These shifting structure changed farming in several fundamental ways one of which is the farming as a way of life has given way to farming as a business. This changed agriculture's unique nature and justification for some special policy treatments accorded to it. Therefore, if food output is to continue to grow, labour productivity in farming must increase through finding substitutes for labour. Such substitution must occur if two desirable results are to be achieved – continued growth in agricultural production and in labour productivity with the end result returns per unit of farm labour.

In the context of Asian rice production in general and the domestic situation as well there are obvious limitations to widespread adoption of western industrialised-farming model due to structural and social constraints. Yet, as evident from data the effects of the failure to adapt to changing economic environment are all too obvious from rice production data for major rice growing areas in Sri Lanka. As shown by the net returns to rice production over the final two decades in the last century net returns to farmer's labour and management has failed to keep pace with the transformations in the economy (Table 6.5). As a result, farm incomes have continued to slide at the operator level as well.

In general, policy makers and researchers have neglected the importance of labour saving innovations on the notion that there is surplus labour in agriculture. This has to be approached not just from a viewpoint of finding substitutes for labour but more from a broader perspective of increasing investment on human capital. This serves two purposes, because as farming becomes more commercialised, returns to managerial competence of the farmer operators assume a greater importance. Secondly, improved human resource skills enhance their prospects in non-farm employment as farmers continue to exit agriculture.

Secondly, from a sustainability point of view conserving the nation's productive resources through appropriate technology seems to require immediate policy attention. Obsessive pursuance of increases in land productivity has introduced its own limitations at the farm level from a long term sustenance point of view. Excessive dependence on high levels of external input, narrow genetic base and biologically sensitive pest management practices etc. are causing to a host of problems.

Conclusions

The foregoing outlines the challenges which policy makers in Sri Lanka have to meet. Answers to problems in the farm sector no longer found within the sector itself. It has to be looked at from an increasingly broader rural development perspective in line with the dynamism in the national economy and the international agricultural policy arena. Policies have to address two issues broadly:

- a. Improving economic opportunities through integration in agriculture in rural areas
- b. Conserving the nation's natural resources for future sustenance.

Table 6.1: Production and Trade of Food Commodities in Sri Lanka: (1996-1998)

Product	WORLD		SRI LANKA	
	Production Mill. Tons	Trade Mill. Tons	Production Mill. Tons	Trade Mill. Tons
Wheat	552	99	0	0.91
Rice	571	23	2.3	0.07
Maize	554	70	0.03	0.07
Potato	299	7.3	0.06	0.1
Onion	39	3.5	0.05	0.1
Chillies	16	0.2	0.07	0.01

Sources: FAO Production Yearbook, Various Issues
Annual Report, Central Bank of Sri Lanka, Various Issues

Table 6.2: Sri Lanka: Import Shares of Food and Value of Exports (1995-2000)

	1995	1996	1997	1998	1999	2000
Total Imports (Rs. '000 M)	272.2	301.1	346.0	380.1	421.9	554.2
All Food (Rs. '000 M)	36.9	44.4	46.0	46.5	47.1	53
(as % Imports)	13.6	14.7	13.3	12.2	11.0	9.5
Total Exports (Rs. '000 M)	195.3	226.4	274.2	305.8	318.8	420.1

Source: Central Bank of Sri Lanka (Various Issues)

Table 6.3: Percentage Share of GDP and Labour Force in Agriculture

Income Category	Percentage Share of GDP in Agriculture		Percent Labour Force Agriculture	
Low Income				
Bangladesh	50	30	74	64
China	30	20	76	74
India	38	27	70	64
Nepal	62	43	95	95
Pakistan	30	26	62	56
Sri Lanka	28	22	52	49
Middle Income				
Malaysia	22	13	41	27
Philippines	25	20	52	45
Thailand	23	11	71	64
High Income				
Australia	5	4	6	5
Korea	15	6	37	18
Japan	4	2	11	7
New Zealand	11	10		
USA	3	-	3	3

Source: Annual Report, The World Bank, Various Issues

**Table 6.4: Labour and Land Productivity in Japan and US Agriculture
(1880-1940)**

	Labour Productivity	Land Productivity
1880-1940		
Japan	1.68	1.01
USA	1.16	0.22
1940-1980		
Japan	3.55	2.12
USA	6.10	1.90

Source: Johnson, 1997

Table 6.5. Net Returns from Paddy (Rs./ac) Selected Districts

Season	POLONNARUWA		ANURADHAPURA	
	Maha	Yala	Maha	Yala
78/79	1198.41	1414.93	1616.83	781.68
79/80	1507.01	-	1105.13	-
80/81	1304.84	2010.40	1426.94	2006.12
81/82	3427.74	2326.49	1604.78	351.19
82/83	1636.55	1845.91	1103.00	1668.91
83/84	879.39	1087.98	733.00	523.32
84/85	824.50	1630.10	1668.01	696.90
85/86	2010.87	1284.93	939.77	468.82
86/87	1387.47	1673.12	1819.75	-288.49
87/88	1238.79	708.85	1056.73	490.87
88/89	1959.29	3286.03	-	-
89/90	3435.00	4242.71	-	-
90/91	634.54	2702.54	2522.19	-
91/92	2317.27	3114.72	2818.03	-
92/93	1610.54	5228.78	1271.29	-
93/94	-924.52	3163.01	-	2414.97
94/95	844.00	1329.00	2063.65	506.99
95/96	2956.00	5716.00	2267.14	5178.80
96/97	5627.00	7181.00	3905.91	5372.14
97/98	1922.00	-	6738.61	-
Season	GAMPAHA		KALUTARA	
	Maha	Yala	Maha	Yala
78/79	-	-	441.21	508.70
79/80	-	-	677.42	-
80/81	-	1855.35	613.69	551.72
81/82	1696.74	870.80	958.29	486.67
82/83	2192.08	721.25	744.90	901.98
83/84	1850.64	907.37	1203.99	23.25
84/85	1141.27	651.83	996.10	-411.43
85/86	1137.81	431.89	327.28	116.50
86/87	662.92	920.82	904.36	-212.44
87/88	621.25	350.38	927.90	145.66
88/89	562.46	-	-	-501.63
89/90	4980.03	1340.75	-	1154.71
90/91	1892.92	-815.63	-445.92	-481.11
91/92	1811.12	360.29	-771.27	-1495.36
92/93	2138.85	-1507.05	451.27	107.59
93/94	533.54	-1145.81	-1308.80	-3092.88
94/95	-5416.40	-4544.62	-3064.30	-2513.01
95/96	-	-	-1741.26	-851.45
96/97	-460.69	228.80	-460.00	-972.81
97/98	-	-	-4355.98	-

Discussion

Discussants' Comments

Dr. Neville Edirisinghe

We all should agree that this is a very interesting approach in the challenges we are looking for. We have been used to the traditional way of looking at our issues. Sometimes our stifled growth encouraged problems, rather than solutions. So, in that sense looking at differently, contributions that come from Dr. Atapattu's paper are very vital. I also want to congratulate him for bringing the global and historical perspectives into our own analysis and examining our programmes, because most of the time, we don't look at history, and we think it is all in the past. We take decisions and sometimes they are mistakes, because we are not keeping our ears and eyes open to the global situation. I want totally agree with the main thrust of all the issues he mentioned. On the whole he throws a big challenge for researchers at HARTI to carryout in-depth research.

Again the issues are coming from the globalisation and as well as the historical perspectives. When we were doing the historical comparisons from industrial and developed countries, we can also come out with an understanding of how the developing countries like our neighbours have responded. In these times proper understanding of trends will be very useful.

One thing that baffled me a little bit was the title. Again we saw, there were a couple of titles that were going on, on the paper. The first part of the title, 'Do Policies Matter', immediately kills all sorts of attention and interests, especially because the incision policy bashing we have seen coming from propositions like market liberalisation. Fortunately, he quickly realises this is a strong man, the author himself drops it down. In the first sentence, declaring that "Policies do Matter". Personally, to me, this was a bit disappointing. Because, I thought this title would lead to a discussion. The title saying "Do Policies Matter", would lead to a discussion on, whether past policies did in fact matter, to get agriculture on the appropriate cause. This is learning from history. If this was the case, perhaps, we may have encounter some interesting issues, such as the efficacy of pursuing self-sufficiency in food, necessity of large-scale investments in agricultural infrastructure, impact of pricing and tariff policy. These are all important issues to think for a future. Just look at the three broad pillars of the traditional agricultural sector policy. These are enhancing resource utilisation as we put down and creating rural employment, improving national food security and generating a surplus for investment. The third one, I don't think it is a real issue, because I don't think anywhere we had the surplus generation, all classical models where you know, we could keep the labour rate slow, and then get agriculture going into the industrialisation. Even in our period of industrial development, we identified in the early 60s, we didn't have that kind of policy.

A close examination of the three pillars, we will accept the three and show that creating rural employment, improving national food security and generating savings are basically contingent upon resource utilisation. In fact, the pertinent issue is not just enhancing resource utilisation but doing it in an efficient manner, because then only we could examine. For example, whether attempts at improving food security have resulted in inefficient use of resources. Is it at any cost? This point is somewhat hazy in the paper, for example, the author concludes that with the growth in world trade, domestic food production is no longer a major parameter in achieving food security in small countries like Sri Lanka. The application here is, that small countries like Sri Lanka cannot master a comparative advantage, to compete with the bigger economies. Does this mean that, we become static enough in our policy approaches? and we cannot depend on imports forever.

We saw the chart there, and we saw how the world's supplies are abundant, at any time to get the world supplies to help us in our food security. That is how we can get the 2.3 million tons of rice from the world, because there is a hell of a lot of rice in the world. But I think, we also must realise that the fact, that we are getting only 0.9. So, 0.1 of rice import is because, we had fruitfully an efficient policy of rice intensification, subject to a lot of discussion and challenges on that. Because of that policy, we are now seeing that amount of imports that we need for the major staple is a little, and that also perhaps explain why the total input bill is low. Why the total input bill is low is also explained by not so much by the magnitudes of absolute values of our exports or the relative value of our food imports with the total import picture. So, it is very difficult to get a proportion like that and say, that we can now assure that there is no problem in food security. The idea is good, but practically, what does it entail we may lose out the opportunities, where we can muster comparative advantage. Therefore, the real issue on that analysis is, do we have a comparative advantage? if not whether there is an import market abundant?. Is it necessary to import if we have comparative advantage? Get our farmers to be competitive, compete with the Australian farmers or the American farmers so that we don't have to import rice, the rice in the country will be cheaper than the rice to be imported. The opportunity cost of resources for rice production per unit will be higher than if we spent a dollar to get one unit of foreign exchange. What we can do on the field in terms of improving our comparative advantage. For example, why productivity is stagnant? Is it because the dynamic research basis absent, or is it because the extension and education support has lost their enthusiasm?. Our farmers staying away from investing and improving land productivity because of bottlenecks in the land markets. If so, is this linked to issues of land rights or marketing constraints. We also have to look at opportunity cost of foreign exchange we uses for imports. Would these be greater than the social cost of production, emphasising domestic production for food security but within the comparative advantage. The point I'm trying to make is we need a rigorous analysis before we conclude that imports are the only way out for food security. We cannot give up the agricultural sector, because the other sectors have not grown, yet grown sufficiently to absorb a vast rural labour force through factor mobility.

The real challenge today is to design the policy environment that would help increase efficiency in farming which is what Dr. Atapattu has been explaining all the time. We have to agree that improving food security at any cost including distorting resource use is a wrong policy. But doing that, by increasing resource use efficiency cannot be a bad policy.

The paper highlights the serious problems of relatively low incomes with the domestic agricultural sector. As indicated by the fact, that the sector contributes only 20% of GDP while containing about 40% of the agricultural labour force. The income levels of rural households imply that they have many avenues of incomes and agricultural incomes to about 50%. How do we ensure that, 50% that is got from agriculture is higher to increase that? So, what is the role of agriculture in making like a 75% first. Second, other side is the fault, then it looks like its with the non-agricultural sector. What is necessary to realise the bottom line of all this is the poor people. Even with the 100% coming from agriculture and non-agriculture, they are still poor.

Dr. P.A. Samaraturunge

It was implicitly said that this is what is going to be there, and we have to be with that, and that is the good things for us. Well, I am not fully convinced again, as Economists, including myself, we are very innocent in this matter. We are an innocent lot, because we are fascinated with the prospects of overall welfare gains and all that, we were taught in our economic theory. We are like small children who are smiling, looking at the star. But the real people who are behind this operation are the politicians and the very big businessmen, multinational corporations, where objectives may not be the same as what the economists expect. This is something we have to

think, when we make any policy decisions under the present scenario, its not 100% economic. Then, we go on to the domestic agricultural policy and Dr. Atapattu goes up on these three things - NRC, resource utilisation and creating rural employment, including nation's food security, and the third generating a surplus for investment, and he discussed within the viewer's order. Generating a surplus for investment, he says, ok, it is not relevant in today's context.

Second one, improving the nations food security, is also argued to be of much less important in today's environment. But again, I have to say the same thing. This is not 100% economic. When it comes to food policy of any country, it is not 100% economics, political and basically political considerations comes in fact, not behind economics, it jumps in front of economics.

I have an additional implication to be added to this one. Is it not poverty alleviation and income distribution, the real basis of the policies we had early. I think, rather than resource utilisation for creating income earnings, its direct transfer of income, if direct income transfers and the expected poverty alleviations, elements were there, and in fact, these things clash specially with the poverty, this income policies and all that, there is a chance of reduced efficiency. So, we have to think twice about that I think. Yes, the new policy environment, its all agreed, market-orientation, international focus and inter-dependence, but, now, out of all this, three things were highlighted - productivity, efficiency and competition. These are the things we have to include. Is it not the same things we are talking about again? This was the kind of justification given to all the policies we had earlier. Now we voice down after all the discussions, we are coming back to the same goal or the objectives. Maybe, that is the reason why Dr. Atapattu said that goals and objectives are same, but only the instruments have changed. But this is something to think about.

Then the industrialisation of agriculture has been suggested as the solution. I think, industrialisation means large-scale, market-oriented, production of agricultural commodities. I think right now, we cannot just jump from the present status to industrial agriculture. It has to go through a process in which I feel that we should think of the system, the agricultural system and instead of mono-culture, monocropping, what do you call multi-cropping. Multiple cropping, and this is important when it comes to food security, nutrition, and only from other social needs of the farming community in this country. We cannot just jump from this present state of agriculture to a highly industrial level. But, I have no argument against the fact that we finally should end up with that.

The other thing I have in this proposal is, agenda for a new policy, it is available - the technology, and the efficiency of the technology, productivity. Land productivity is all right, it was all right, and Dr. Atapattu argues that now it is a different case. In fact, in the theory of induced innovations, maybe it is a factor endowment that determines what types of technology a country should generate. US for labour efficiency, Japan goes for land efficiency and I don't know whether labour productivity is the inputs we should look into. I think, other resources particularly why not water. In the dry zone, I think water is a major issue, and it can improve the productivity of water, we can with the same amount of land we are having, we can produce more from the same amount of labour we are having. So, that is something I think we can think about. And the minor point about reducing labour value from family income, i.e. farmers labour and management.

Over the years, these things have reduced according to Dr. Atapattu. I have a query. Is this just factor income, or is it the personal income in a country like ours. Family or the personal income matters a lot, because in certain cases, the price of labour is zero in agriculture sector. It is something fishy. And finally, coming to the conclusions, it is nothing new even though after a good novel kind of an analysis, we come back to the question of improving economic opportunity and conserving natural resources. But, the real answers to this paper, to the title of this paper, is that, what policies we can adopt. The paper identifies that improving opportunity of agriculture and conserving natural resources are the goals we should target at. What policy

options do we have?. That question has not been answered. I think that you will have to include in the final paper. Thank you very much.

Responses:

Dr. Nihal Atapattu: I think, I fully agree with the question raised. That was part of the crux of my presentation. It is not just learning from, say domestic economic, but just learning from others, perhaps internationally also and without that, I don't think we can make productive policies, and beyond that I don't think I need to take time.

On one question, actually, Dr. Edirisinghe brought several interesting dimensions to the presentation. In this presentation I tried to be purposely simplistic in my argument, because I thought by doing that I can get people to the core of the problem. I agree fully that we have to look through the multiple activities by rural populations to increase incomes. Now, some of the agricultural policies that we have being adopting in the past, I think, are responsible for not having enough alternatives created in the rural economy. Because wrong agricultural policy we can prevent intersectoral factor mobility in such a way that you don't create non-agricultural opportunities through integration. This is a serious problem, that wrong policy has prevented rural economy from goal and then we go back and say there are not enough alternatives in the rural economy. So let us go back to agriculture. But to start with, we created the problem ourselves. So that is one approach, I think we need to seriously look at from analytical point of view. But I think some of the people who are serious researchers in this aspect need to look at the particular idea. And on the other one, WTO and all that.

Mechanisms for Agricultural Policy Formulation in Sri Lanka: A Strategic Management Approach

*Sunil Jayantha Navaratne**

Abstract

The main objective of this paper is to question the present "Framework and Paradigm" of Sri Lanka's prevailing mechanisms for problem solving in the agricultural sector. At the outset following example will explain the situation. Just after the 2nd world war and today, our country's progress comparing with Singapore and Japan is as follows:

Per capita Income in Selected Asian Countries

Year	Sri Lanka (US\$)	Singapore (US\$)	Japan (US\$)
1950	89	30	90
2000	841	30,000	33,000

The above statistics show different dimensions in growth and development in above selected countries. When we consider the Sri Lankan agricultural sector, it will be further pathetic. Year 2000 as the land mark year, our GNP at market price is Rs. Billion. 1,234.2 (or US\$ Billion. 16.3). In the same year 40th company among the 500 Fortune companies of the world - Honda's total turnover is \$ Billion. 18.0 with a total employment of 100,000 people While Sri Lanka's sectoral composition of GDP is as follows:

Sectoral Composition in Sri Lanka

Sector	Percentage Share
Agriculture	19.4
Manufacturing	16.8
Services	54.6
Construction	7.3
Mining & Quarrying	1.9

Source: Central Bank of Sri Lanka, (2000)

* Note: The Author is the Chairman, Ceylon Fertilizer Corporation, Sri Lanka and Director General, Samurdhi Authority, Colombo.

The sectoral population of the country is: Rural 72.2 percent, Urban 21.5 percent and Estates 6.3 percent. In other words 19.4 percent of the GNP distributed among the 72 percent people in the country. Will you please calculate the per capita income of the rural people? Some of the other statistics also show the latest situation of the agriculture of our nation. For example Average Annual Growth Rate of Agriculture 1991-2000 is 2.0 percent of Sri Lanka while Pakistan has 4.6 percent and India has a 2.8 percent growth. All these facts show something, which is very important in the policy analysis of the Sri Lankan agriculture.

Within last 50 years something has gone wrong. We have been complaining to various factors but not to the real causes. It's time to improve the effectiveness (do the right thing) and Efficiency (do the things right), not in ad hoc way but in planned way while taking Proactive Responsibility in the formula of Synergy. It is something to do with national vision, mission, goals and objectives and strategies with a conducive environment and appropriate policies. At the same time we have to develop Agricultural sector with a sectoral vision, mission, goals, objectives and strategies and programs to solve the present and long-lasting problems. We should not discuss the problem alone. Always we should go for new and better solutions to the problems with Continuous Improvement (Kaizen). For this we have to question the present paradigm and go for better ones. Not only with strategies but also considering dynamic changes in structure and people's aspirations also have to be taken into consideration of this model. Stakeholder approach should be followed while always try to be creative and different.

Instead of production orientation in agriculture, now we have to change the paradigm as customer or market orientation. Synchronised policies, strategies, structures and aspirations of stakeholders give the synergy effect with ultimate satisfaction to the ultimate customer that is people or voters in the country.

Discussion

Discussant's Comments

Dr. M. Samad

Thank you. I am not in a position to critically review Dr. Navaratne's presentation, simply because I didn't have his paper. But I will make my comments based on salient points he made in his presentation. He is frank at times entertaining the presentation. And the novelty of Dr. Navaratne's presentation is that, he is trying to look at the agricultural sector from a management science perspective. And in doing so, he stressed three important points. One is strategic management - management focussing the agricultural sector. Second is on, a need for a paradigm shift in agriculture and also, then he wanted us to ask some very frank questions about what we have done in the past, and what had gone wrong.

He started off with some very revealing and very important figures, then he makes some comparative analysis of per capita incomes in three countries - in Singapore, Japan and Sri Lanka. And that was very revealing, and in 1950 we were just a dollar behind Japan, and if we take year 2000, I think it will be nearly 30 thousand dollars behind. I mean, that tells us quite a lot. And it might be also appropriate if we had looked at Malaysia, which is much more comparable in terms of various factors, economical and ecological factors and the agricultural sector and so on.

And I remember reading a paper very recently by Snod Grass, who was here some years ago as an Economic Advisor, and he is currently a Professor at Harvard, who called Sri Lanka, a 'land of mis-opportunities'. It had missed those opportunities at various points in time and he highlights and picks out those points in the early 50s and then somewhere in the mid 60s and in the late 70s and early 80s and then and so on. So the opportunities have come, they have made some entry points, but then we have gone back. I think we need to go back and really look at it, do a thorough analysis of what happened.

I think the structure as a whole, merely responding in a piecemeal fashion towards globalization or commercialization, without creating the necessary conditions for us to do so. It might be only a short-term strategy, but in the longer run may not be able to sustain those efforts. Dr. Navaratne then went on quite rightly to talk about paradigm shift that is needed, and the shift is needed to keep up with the environmental changes that are occurring both externally and within the country. The nature of agriculture and the structure of agriculture are changing, the people, i.e. population shift, younger people who would be out of agriculture, people going out of the country. And then, there may be in some areas, there is a feminisation of agriculture who directly get involved in agriculture. Then rather, some of the ageing population, that is now taking up to agriculture, new opportunities for cropping systems and so on. What we need is really some kind of national vision, and that national vision should be longer term, it should be a national vision that caters to our national interest that would be highlighted - the importance that it should not be merely to satisfy international agencies, but it should be with national target national-oriented and more indigenous.

And he also stressed the need for consistencies in policies, and that I think is a major issue. Particularly, because when the different components of the agriculture economy are with different Ministries and each Ministry pursues its own policy, much against without even consultation with the other Ministries and sometimes these are incompatible. There is contradiction than consistencies in trade policy, and agriculture. We have seen that before the Minister for Consumer Affairs importing, chillies or potatoes at times of harvest to satisfy urban consumer needs. There are inconsistencies in these policies and there are much more co-ordinating efforts required fulfilling the sectoral targets. The co-ordinated effort towards even policy-making, policy formulation and within the government itself, there must be some kind of consistency.

Then he cautioned us about the free market, and free market is not really free from the world. Just going along with the free market mechanisms, can be counterproductive. There must be free marketers, but within some kind of regulatory framework and similarly must take into account our domestic requirements. Then he quite frankly posed a question to us - to all researchers. Now there is, quite a lot of research being generated, and to what extent these researches are really going down to the farmers benefit directly. Research should not be solely for the purpose of generating some kind of international public goods or global knowledge. And finally, how old approach to agriculture sector development should shift from much more input-oriented to outputs and much more results-oriented. Thank you.

Other Discussions

Ms. Herath: I am interested about Dr. Navaratne's comments. We have been introducing incentive packages for small-scale investors, medium scale investors and large-scale investors over the last 20 years time. But response is very poor. I think, as he said, there should be a paradigm shift in policy-making environment.

Dr. Edirisinghe: I think Dr. Navaratne's presentation itself is a paradigm shift. Typically whatever situations, what ministries, what regulations, what service centres would be made available to manage what is entirely different, looking at the issue.

A couple of points about paradigm shift is relevant to HARTI and other researchers. All paradigm shifts, the basis is good research, rigorous comprehensive research. So huge responsibility, if you want paradigm shift on a kind of a productive path, he is talking about. We do a lot of research, comprehensive research and neutral research not to satisfy politicians - neutral research, that's the point. The other one of course, paradigm shift cannot work unless you enlist support of people. It cannot come from top, it should really come from down. Finally, this small, provocative suggestions, when you look at those numbers, the income numbers for Malaysia, Singapore and for Japan, and for Sri Lanka. There is one salient feature you all know. Sri Lanka adopted democracy, going through a huge process of democracy, very good from a philosophical point of view, there are lots of shortcomings. If you look at those three countries, there is some sort of democracy, there is no autocratic systems there. But just managed democracy in Japan, Malaysia and Singapore. So, isn't that, what is for changing? So, what is the paradigm shift then. Should we not move for a managed democracy, as Felix Dias said it 40 years ago. I am not so provocative, I am just for the sake of asking what is a paradigm shift relative to other countries. Should not that be the major paradigm shift again?.

Research and Development (R&D) in Agriculture: Present and Future Partners in the Process

*Wijaya Jayatilaka**

Introduction

This paper is presented in four parts. The first part presents in brief the components and normative functions of a national agriculture research system (NARS). Second, the present agriculture research system of Sri Lanka is presented with a situation analysis with special reference to the various components and their functions and the linkages to partner organisations. Third, in order to identify future partners and partnerships, the trends and issues that are of relevance to make the research system more responsive to emerging challenges are presented. Finally the future partners and partnerships are discussed.

The Research System

A national agriculture research system (NARS) will be all those organizations and institutions carrying out agriculture research in the country (Jain, 1989). In Sri Lanka as in all other countries, agricultural research is undertaken by a complex system of individuals, organizations and institutions. The individuals consist of the policy makers, managers, scientists, technicians, administrators, and support staff. These persons are arranged into several hierarchical orders and also divided into specialist groups, divisions or departments. Research teams are grouped by organization. Each organization will have a separate mandate focussing on a defined range of issues. Thus in order to ensure that the mandate of the organization is effectively carried out a specialized, efficient and skilled team is required.

Among the first of the institutional frameworks would be the policy formulating mechanisms and guidelines within which agriculture development and research would be developed. In order to make the policy frame effective and meaningful, there must be the associated legal framework, allocation of resources and the development of human resources to manage and effect programmes and activities to effect the policy frame. Principle and practices and guidelines for the effective and appropriate decision making at all levels are also required. In other words, setting of standards for functioning of the various decision making bodies as well as those associated with the processes of research and development are required in order to ensure that there is a sustained effort at addressing the R and D needs of the country.

In addressing the R & D needs of the country it is imperative that the research undertaken is useful and is being used. The research findings and recommendations would be useful to several user groups:

* Note: The Author is the Director of Sri Lanka Foundation Institute (SLFI), Colombo.

Table 8.1: User Groups of Agricultural Research and Purpose

Users of research outputs	Purpose
Commercial agricultural entrepreneurs	Adopting of technology to improve profit margins, minimise costs
Farmers	Improve income and reduce drudgery of work.
Extension officers	Transmit new knowledge and technology to farmers and agricultural entrepreneurs. Provide appropriate training.
Policy makers and planners	Review and revise policy directions and priorities and draw appropriate plans, allocation of national budgetary resources. Develop mechanisms for development monitoring.
Development managers and administrators	Monitoring and evaluation of projects. Trouble shooting and adoption of appropriate methods and technologies.
Educators	Training and education of scientists, technical personnel.
Media	Educate public about new developments in agricultural technology, methods and policy.
Credit/ Insurance Agencies	Appraise agricultural project proposals for granting of credit or insurance coverage

Stake Holders of Agricultural Research

Stake holders are those who are directly or indirectly affected by an endeavour or intervention. The degree of benefits or severity of costs of agriculture research vary with different groups. Those who have a higher stake can be considered as close stakeholders. Those who are marginally affected could be described as being more distant stakeholders. The following is a list of agricultural stakeholders:

Direct Users of Technology

1. Subsistence farmers
2. Commercial farmers
3. Collectors / harvestors – fisheries and forest communities
4. Estate (plantation) owners/managers
5. Food and product processing organisations

Secondary Users, Socio-Economic Information Users of Research

6. Marketing agents (middlemen) and transport agents.
7. Agricultural extension agents
8. Development planners and administrators
9. Financial agents (banks)
10. Insurance agents
11. Policy makers
12. Donor agencies, international financial agents
13. Professional organisations of researchers and other professionals involved in agriculture.
14. Social activists and lobby groups
15. Media
16. Other development agencies

Generators of research findings

17. Researchers – formal sector / research stations vs. indigenous knowledge base of the local community
18. Research team leaders, managers and monitors
19. Product and impact evaluators
20. Resource allocators
21. Technical support personnel
22. Professional organisation – reviewers.

Basic Components of a National Agriculture Research System:

For the effective functioning of NARS three interrelated components are required, (Jain, 1989). They are as follows:

1. Qualified scientists and technicians;
2. Field and laboratory facilities in the form of well-equipped experiment stations; and
3. Stable budgetary supports consistent with the needs of the evolving research programmes.

A research system comprising the above three components has two major functions. They are the management/administrative function also known as the governance function, and secondly, the research functions (Jain 1989). The governance function involves the allocation of resources and its management. First, this has to be done to ensure that there is a rational allocation of funds in order to optimize returns to such investments. Maintaining a proper balance between allocations for staff salaries and research operations need to be ensured to optimize the effectiveness of a NARS. Once a rationalized allocation is made, it should be followed by management of the resources at the experimental station level with appropriate and efficient supply and procurement of procedures. Second, a most vital component in the allocation of funds for research is the management of human resources. Human resources consists of the research scientists and their support staff. The training, recruitment, retention and career development of scientists who will develop the research outputs are core requirements. Attracting appropriate high quality talent and their management to optimize their output is a major challenge. This core resource, "the scientists", is what will keep the entire system in place and running. Third, most research systems function as traditional government departments. They tend to be centralized with power concentrated in the centre directing what needs to be done in the regional and field research stations. The managers of the peripheral research stations are controlled by the head of the department or ministry. Although some form of facilitating and management by the centre is required, a balance between autonomous and accountable functioning needs to be maintained.

A well-established research management system will have five basic functions. Namely (i) research policy and associated resource allocation (ii) programme formulation (iii) programme implementation and monitoring (iv) research co-ordination and (v) forging links with extension.

National Agriculture Research System (NARS) consists of various organisational components. Drawing from the experiences and the systems in Africa, Asia and the Arab states (Harari 1990, Jain 1989, Trigo 1986) the following can be identified:

A National Agriculture Research System is made up of three components. They are the national level policy making and resource allocation authorities, which constitute the "super structure". The NARS proper will be the research institutes their satellite stations and field experimental stations made up of the various personnel and physical facilities. The third component would be the "normative aspects" of the system. It provides the norms and rules that ensures the conduct of work and the delivery of products and services as required by the users. It is the third dimension that provides the methods, techniques and standards to effect the various objectives and mandates of the different entities of the research system. The three components disaggregated to its constituent parts are presented below:

Governmental level:

1. National development policy formulation and resource allocation entities. Ministries of Planning and Plan Implementation and Finance.
2. National level Ministries responsible for agriculture, fisheries and forestry.
3. Other related Ministries – human resource development/education.

The National Agriculture Research System – Institutions:

1. National level agriculture research and extension policy formulation and co-ordination organisation.
2. Commodity and or disciplinary research institutes or organisations
3. Field research stations
4. Museums, seed banks, data base management
5. Agricultural standards bureau

The National Agriculture Research System – Normative systems, procedures, standards and methods as agreed by the various agencies to undertake the following:

1. Human resource management policy and strategy to govern recruitment, retention, career development and retirement
2. Inter-institutional linkages among different organisations for synergies
3. Resource allocation procedures and mechanisms
4. Central and field or regional research activities
5. Linkages and networks of research, extension and end users.
6. Research needs assessment of end users and information transfer to research planners
7. Systems efficiency, rationalisation and reorganisation
8. Information generation and dissemination
9. Institutional reforms based on performance appraisals
10. Capacity development and restructuring
11. Accountability to end users

In an ideally structured and functioning national research system the following features are identified, as is evident from the preceding discussion:

- i. Government: As the major entity responsible for directing development efforts, the State will continue to be a major facilitator in the development and effective functioning of the agricultural research system.
- ii. The various components of the national agriculture research system acting in co-ordination in order to strengthen each other.
- iii. The different stakeholders. They may be any or a combination of the following:
 - Subsistence farmers
 - Commercial entrepreneurs producing for local markets
 - Commercial entrepreneurs producing for global and regional markets
 - Agents or middlemen who may commercially develop and market the technology.
 - Educators and students who use the scientific know how in the training of future scientific personnel.

These stakeholders can be found as aggregates of individuals, sometimes unorganised and at times organised into associations and interest groups.

- iv. Professional bodies and statutory agencies that will ensure that the research system is able to function adhering to the best possible standards at all times.

Having discussed the 'ideal', a framework for providing a reference point or analytical framework, it is necessary to examine the NARS of Sri Lanka as it functions and to assess the major challenges it faces in being effective to meet the needs of the future.

Present Partners in Agricultural Research

The research system in Sri Lanka is quite complex. The research work is undertaken by a multitude of commodity based and discipline based research institutes as presented in Table 8.2.

Table 8.2: The Organisations of the National Agriculture Research System of Sri Lanka as Identified by the Council for Agriculture Research Policy

Ministry	Research Organisation
Ministry of Agriculture and Livestock	Council for Agriculture Research Policy (CARP) Horticultural Crops Research and Development Institute (HORDI) Rice Research and Development Institute (RRDI) Rice Processing Research and Development Centre (RPRDC) Field Crops Research and Development Institute (FCRDI) Regional Agriculture Research and Development Centres at Angunukolapellessa, Aralaganvila, Bandarawela, Bombuwela, Kilinochchi, and Makandura (RARDCs) Food Technology Research Unit (FTRU) Farm Mechanisation Research Centre (FMRC) Natural Resources Management Centre (NRMCC) Plant Genetic Resource Centre (PGRC) Socio-Economic and Planning Centre (SEPC) Department of Export Agriculture (DEA) Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI) Veterinary Research Institute (VRI)
Ministry of Plantation Industries	Tea Research Institute (TRI) Rubber Research Institute (RRI) Coconut Research Institute (CRI)
Ministry of Co-operatives	Sugar Cane Research Institute (SRI)
Ministry of Fisheries and Ocean Resources	National Aquatic Resources and Development Agency (NARA)
Ministry of Environment and Natural Resources	Forestry Research Unit of the Forest Department (FD)

Although the agriculture research organisations presented in Table 8.1 constitute the National Agriculture Research System (NARS), (CARP, 1999), there are several other organisations associated with agriculture research. Some of them undertake substantive research into agricultural issues. These organisations are:

1. National Science Foundation (NSF formerly NARESA)
2. National Research Council
3. Universities (Faculties and Departments undertaking agricultural research)
4. The Central Bank
5. Institute of Policy Studies (IPS)
6. National Development Council (NDC)
7. Ministry of Internal and International Commerce and Food
8. Ministry of Policy Planning and Implementation
9. The Customs Department
10. Ministry of Education and Higher Education

Any organisation, institution, or programme for which funds are allocated needs to find out if the resources are utilised in an efficient manner. Such reviews or objectively evaluations are helpful to identify major constraints and limitations faced. The CARP, the apex body that is responsible for providing policy directives on agriculture research in Sri Lanka and also co-ordinating the research efforts was subjected to an external review in 1999. Further the other research organisations that were also reviewed are Hector Kobbekaduwa Agrarian Research and Training

Institution (1998), Sugar Cane Research institute (1995), Tea Research Institute (1993), Rubber Research Institute (1996), National Aquatic Resources Agency (1999), Department of Export Crops (1997), Veterinary Research Institute (1997). The reviews were very comprehensive, objective and robust. The main focus of the review of the documents was to identify the inferences drawn about linkages with the users and other stakeholders. The following situations are identified as common challenges that cut across the entire research system. Although all these institutions are governmental, some of these review documents are treated as confidential materials.

Each of the research institutions is made up of departments, divisions and/or units. Each institution also has a separate arm with the responsibility of ensuring that the research outputs, technology and know-how are disseminated to users. They also provide feedback to the research system on information and technology requirements of the different users.

- i. It was found that in most organisations the inter-institutional linkages were poor and needed improvements. These are the links between the different structures within an institution or organisation. Poor intra-institutional co-ordination and teamwork across disciplinary boundaries was reported to be common. This situation is not conducive to taking advantage of the all-important interdisciplinary research within institutions.
- ii. Further the links with other external agencies and as with potential users of the technology were poor and required strengthening. These linkages were those that should exist between each of the research organisations and other agencies in the NARS system. The opportunity to synergies and obtain the insights, skills and capability of researchers in other institutions is not optimised due to this situation. Occasions of successful inter-institutional collaborations on specific projects, which are externally funded, were the exception. Although this situation was common in the non-plantation crop research system, in the plantation researches institutions a well-developed networking and links among scientists in different research institutions exists (De Silva 1996).
- iii. The links and communication with the "super structure" i.e. Ministries was also poor in most instances. It was quite common for communications and requests to be completely ignored. Acknowledgement of documents and providing required feedback has been reported to be wanting.
- iv. The links between the research and extension arms of the institutions was also found to be weak and needing strengthening in many instances.
- v. The links and networking with the user subsystem were poor. In all sub-sectors the users are very heterogeneous. The existing linkages were limited to some of the users but were not broad based, thus limiting the benefits of research and know-how to only some and not others. Stakeholder identification, defining their roles and developing mechanisms for effective communication to ensure their needs are met are major challenges.
- vi. The need for openness and developing modern efficient management structures was also recognised. Such management systems will be more outward looking and develop and strengthen stakeholders and technology users, so that the various entities of the NARS sectors grow and mutually reinforce each other.

The need to develop research agendas reflecting not only national needs and the technology requirements of clients, but also are responsive to regional and global changes and trends will remain a major challenge in the future.

Collaboration and co-ordination among various entities undertaking agriculture research is not very widespread. For the past five year period up to March 2002, of all research projects monitored by CARP, totalling 352, only 19% were collaborative projects. Of the total projects less than 5% were undertaken by private sector researchers (Information obtained from CARP). Prof. Samarajeewa in his review (2001) also identified several areas of collaboration. However

these are mostly on a project basis and not built into the objectives and strategy statements of the research institutions.

The research system is characterised by having several organisations, which collectively are expected to address the range of research requirements of the country. The commodity based research organisations provide the research needs for the tea, rubber, coconut, sugarcane and export agriculture crop sectors. The Veterinary Research Institute caters to the livestock sector, the National Aquatic Research Authority (NARA) addresses the fisheries sector while the DOA was established to address the needs of the food crop sector. Socio-economic aspects are the focus of the HARTI. The University system also undertakes research on various aspects of agriculture, primarily in the Faculties of Agriculture and the Faculty of Veterinary Medicine and Animal Sciences as well as by other faculties such as the Faculties of Science, Arts and Engineering.

This multitude of organisations (Annex A) undertaking research is a reflection of the multidisciplinary nature of agriculture. Thus it poses serious challenges in the systems ability to respond effectively to the needs of new technology, management systems, policy guidelines as well as in the objective identification of priorities and alternatives for investment and development. The effective addressing of research needs will require an appropriate and facilitating institutional framework.

In Sri Lanka the NARS is made up of several research organisations that have historically come under the management of a multitude of Ministries. At present the major agriculture research organisations come under five different Ministries. CARP (1999) identifies four sub-sectoral scientific activities in the NARS. They are (i) crop production (ii) fisheries and aquatic resource development (iii) livestock development (iv) conservation and sustainable use of natural forests. To undertake the research activities in the non-plantations sector as of 2002, there are 14 research institutions under the Ministry of Agriculture and Livestock. Three commodity based research institutes function under the Ministry of Plantation Industries. Each of the Ministries of (a) Co-operatives, (b) Fisheries and Ocean Resources and (c) Environment and Natural resources manage one research institution (Annex I).

The actual entities that are associated and contribute to agriculture research go beyond the officially recognised institutional network. For example (i) universities and (ii) the private (corporate) sector, and (iii) individuals who undertake research as traditional cultivators. Agricultural research is undertaken either in the modern "scientific" formal, sector or in informal unsystematic ways. The use of the scientific approach as well as public funding channels determines the boundaries of the NARS. However, the collaboration between the NARS institutions and the Universities as well as the private (corporate) sector is acknowledged (CARP, 1999). This exclusion in the conceptual frame of a NARS is a problem.

Networking amongst institutions and between scientists is vital for the development of interdisciplinary thinking and effective addressing of research problems. In most of the secondary cases, it has a very high drop out rate. The commodity based research institutions of the NARS, there are many instances of networking and collaborations documented (CARP, 1999; Ministry of Plantation Industries, 1993; Samarajeewa, 2001). These research partnerships are where researchers with different specialities have pooled their talents effectively to examine a research issue. Although there is some networking with scientist in these organisations it is not institutionalised, therefore it is not mainstreamed and beneficial links will be ad hoc.

The collaboration and partnerships between and among organisations could occur in ways other than networking or building teams to undertake research. This could be in areas such as identification of research issues, identification of effective mechanisms of applying research

findings by well-defined intervention programmes, or in the collective efforts at institutional and organisational reforms and management improvements. Among these, it is only in the first mechanisms that there seems to be more frequent efforts. This is, where members of committees are drawn to represent different organisations or disciplines. However, this is seen in organisations that have a research disbursement function rather than in organisations that is directly undertaking research.

Human resources in these research organisations constitute the scientists, the technical and other support as well as the management staff. The total number of research scientists in the NARS was 477 in 2002. Of this number 43% are in the Department of Agriculture. During the period 1995-2000, the total number of research scientist fell from 527, by nearly 10%, the highest rate of depletion for any country in the Asia-Pacific region (CARP, 2002). The scientific research staff also is relatively poorly trained. 45 percent of staff is lacking any kind of postgraduate training. The minimum standards required for recruitment of scientific officers to the research institutes of the non-plantations sector are lower than that of the Universities, the Central Bank and several other commodity based or specialised research institutions (CARP, 2002).

The limited capacity of research organisations in their human talent base poses severe constraints and inability to meet the requirements of the organisational mandates. This aspect has been documented in almost all the external reviews that were commissioned by the CARP. However, there could have been a more serious and concerted effort at optimising the use of the limited research scientists who are scattered in different institutions. This has not been possible. The reasons for this situation may be the fact the research institutions come under different Ministries and there is not apex co-ordinating body that could give policy directives regarding human resource management or developing inter-institutional mechanisms that would ensure better use of the limited human resources. Such an effective resource use monitoring and change facilitating body has not developed.

Furthermore, the need for developing and nurturing of junior scientists is well recognised. However, the dearth of senior scientists is a major hindrance to this slow process. The possibility of using senior scientists from other institutions has also not happened to the extent that one could conceptualise. Senior scientists and good managers could be mentors to juniors staff. The former could be drawn from universities, the private sector, international organisations, the donor community, as well as in other research organisations has not been attempted. This has not been recognised as a need and possible strategy either.

The problems of human resources management in the NARS have been well recognised. This is in the methods of recruitment, promotions, tenure systems, retention, career development etc. The high levels of brain drain in the research institutions have been documented in the reviews of the research institutions. The poor human resource management plans or the lack of them has been identified. The need to consistently monitor the well being and productivity of the human capital in each institution is not undertaken. However, in the private sector talent management and human resource management is undertaken very seriously and in a very consistent manner. Links between managers of research organisations and the human resource managers could help change the mind set as well as to develop appropriate mechanisms to ensure that the research system also is able to address the problem in a more effective manner.

Research systems need effective mechanisms to ensure that the research undertaken has an end user and that the resources allocated for research is prioritised to have the maximum positive impact on agriculture productivity or the wellbeing of those engaged in agriculture. Thus the needs of the end users are assessed and prioritised and informed to the research system by the extension arm of the respective institutions. The 'Clients', sometimes as individuals as well as groups such as growers associations or professional societies may also bring to the notice of

research establishments their needs and expectations. In the reviews of the research institutions commissioned by CARP, the ineffectiveness of the 'extension arm' or the link between research and the end user is highlighted. Further, the need for having a close understanding of national, regional and global trends in developments, demography, trade relationships, technological breakthroughs sometimes that are remotely related to agriculture but which have tremendous impact and implications to the agriculture sector need to be monitored and appropriate policies adopted and interventions instituted. The mechanisms or partnerships for this type of monitoring and trouble shooting has not developed and remains to be realised.

No research institute has the full quota of professional staff required. Most institutions have severe shortfalls of required skilled researchers. Thus there is an urgent need to re-examine the manner in which human resources within and outside the institutions are used to meet national agriculture research challenges. The need may be to re-examine administrative and management policies, principles, rules and regulations in order to make the system more responsive to the present and long felt problems. These boundaries are set and managed by the "supper structure" of the agriculture research system explained in the previous section. Thus recognising the need to strengthen this link or partnership in order to make the necessary statutory changes that would hopefully improve the management culture in research organisations. Infusion of some effective and good principles and practices from organisations that are efficiently managed and have the know-how will also benefit.

National Priorities and Development Policies

Development efforts and interventions of any sub sector should be undertaken within the broader policy directions. The department of National Planning in the Six-Year Development Programme 1999-2004 as well as the "Vision 2010 Sri Lanka" (2002) document, presents the agenda for agriculture development focussing on commercialization of agriculture. The thrust areas for development are listed as:

- i. Commercialisation agriculture
- ii. Optimising land use
- iii. Diversifying and improving the Mahaweli economy
- iv. Community Based Irrigation and Water
- v. Improved efficiency of resource management
- vi. Building a competitive edge for plantation products
- vii. Fostering forest development
- viii. Exploiting the maximum potential of fisheries
- ix. Livestock: Making it the next food revolution through appropriate technology and institutional changes

In order to pay attention to the above, a broader policy framework is adopted which include the following.

i. HRD policy direction: Within a economic framework of globalisation, economic liberalisation and growth the efforts will be to develop inquiring and adapting minds, capable of responding quickly to rapid technological changes, as well as emerging economic opportunities. Policy to be directed at developing a knowledge based society with educational institutions producing personnel of globally acceptable quality (National Planning Department, 2001).

Poverty & Empowerment policy direction: Make growth pro-poor, targeting inequality and emphasizing empowerment of the poor. Social protection policies to effectively manage risks faced by poor. Reduce poverty by half by 2010 and increase per capita income (National Planning Department, 2001). Poverty stands at 25% in 1995/96. About 70% of the population

live in rural areas, 90% of poor live in rural areas (National Planning Department, 2001).

The major problems in agriculture as identified by the National Planning Department (2001)

- i. Slow productivity growth and inadequate transformation to high-value crop and livestock production systems.
- ii. Inefficiency in resource use.
- iii. Underdeveloped marketing system that is not attractive for investment in production, processing and value addition.
- iv. High risk in production and marketing
- v. Low levels of adoption of improved technology in production systems and marketing.
- vi. Inadequate export avenues.

Policies to address these problems:

1. Commercial orientation to face the realities of the economy.
2. Institutional and policy reforms to encourage private sector participation and investment in agriculture.
3. Develop a competitive trade policy while ensuring food security at both micro and macro levels. Provide development assistance in the strategic areas such as marketing infrastructure, market driven research, extension, education, and training
4. Responding to a sophisticated consumer market, encourage diversified production system
5. Improve seed and planting material production
6. Improve access to global markets of vegetable and fruits by adopting international standards in varieties as well as production and processing methods
7. Support improvements to the market infrastructure
8. Establish an appropriate legal framework for the marketing of quality seeds and planting material
9. Improve rational land use and diversify from un-competitive crops

Strategies identified for commercialisation and development of agriculture:

1. Research to focus on developing varieties and production technologies for the different agro-ecological zones
2. Promotion of consuming value added rice products and diversifying crops in paddy lands
3. Increase the efficiency of land use through off season food production, staggered cultivation and exploitation of the diverse agronomic conditions
4. Value addition in livestock products and promotion of livestock feed crop production
5. Improve processing and marketing to add value to agricultural products and improve employment opportunities in rural areas
6. Develop strategic markets to stabilise prices
7. Private sector to develop organic and high tech agriculture, niche-market products, seed production and biotechnology related products
8. Improve product quality of the minor-export crop sector
9. Transform subsistence agriculture to commercial agriculture through improved credit and improved land markets

The Department of National Planning (2001) has identified five major programmes for implementation to enhance commercialisation and development of agriculture. They are:

1. Implementation of a ten year agriculture research programme
2. Production promotion in specific agro-climatic areas to help farmers specialise and produce for the market
3. Develop an agricultural extension service based on "pay for effective service"
4. Promotion of private sector participation in commercial agriculture.
5. Development of twelve dedicated economic centres to improve marketing.

To create an enabling environment for the above policies and strategies the Department also identifies the following as vital:

- i. Accelerated development of infrastructure through increased investment both by the public and private sector.
- ii. Reaching out to world markets and being export-oriented.
- iii. Having a modern agriculture with production increasingly becoming from smaller extents and improved productivity
- iv. Sustainable exploitation of marine resources
- v. Environmental friendly growth
- vi. A knowledge based economy
- vii. private sector lead growth and investment
- viii. The public sector becoming a facilitator
- ix. Institutional reforms and improvement of public-private partnerships
- x. An employment friendly labour market
- xi. Stimulating the urban economy through strategic growth centres
- xii. A north south renaissance
- xiii. Health care partnership
- xiv. Reduce poverty through accelerated growth
- xv. A caring society which preserves Sri Lankan values

The above sets out clearly the framework within which development planning will take place and the need for agriculture research also to realign and organize itself accordingly.

The CARP has identified priority areas for research as follows CARP (1999):

1. Crop and animal genetic improvement using both traditional and modern tools of breeding for yield improvements, disease resistance and stress tolerance.
2. Conservation of genetic resources and sustainable use of natural products.
3. Investigation of physical, chemical and microbiological degradation of soils and resolution of measures for soil productivity improvement
4. Developing cost effective crop nutrition models using:
 - leaf / soil nutrient level indices
 - selective or differential fertiliser usage
 - use of inorganic/organic fertiliser treatment
 - biological nitrogen fixation and mobilisation
5. Development of soil and moisture conservation methods and low cost irrigation systems for highland crops.
6. Development of low-cost integrated pest management systems with emphasis on bio-control measures and use of non-synthetic products in disease control
7. Developing multi-cropping and farming systems
8. Development of farmer friendly field operational options including manual, mechanical and automated devices for reduction of field management costs as well as for human energy conservation.
9. Evolution of farm diversification procedures with selected crops to promote commercial farming and production of high quality farm products for exports.
10. Processing primary materials for product development and value addition, especially in respect to non-conventional products.
11. Market research, technology assessment and forecasting in respect of new and non-traditional products. Many of these research operations are already in place. What needs to be strengthened and facilitated are the collaborative mechanisms for multidisciplinary and inter-institutional research (pp 30-31)

"Moving out of the box" - Research as networks of relationships and issues therein: Adopting a systems approach in organisational management is a well-established tradition. However, examining research systems, as networks of relationships may not be widely adopted. This perspective provides a new method of examining the effectiveness of the system in its ability to meet the expected needs of the research output users.

⇒ The research system could be looked at as a **partnership** between generators of know-how and technology and their distributors and end users. This approach ensures that the user as a stakeholder plays an important role in the research process. Although this is also known as the "bottoms up" approach, and much has been written about its merits the approach is not properly institutionalised and mainstreamed. Yet, in Sri Lanka we have several successful attempts documented on the adoption of this approach and its effectiveness. The research projects that adopted an interdisciplinary approach as well as where the users were actively involved, adopting an 'inclusive' approach, are (1) the buffalo research project financed by SAREC, lead by the Faculty of Veterinary Medicine and Animal Sciences and (2) the farming systems research lead by CRI with the VRI and the DEA as partners (CARP 1999, a).

⇒ **Inter-Sectoral Approach:** Link with other livelihoods or industries and looking for synergies. Another approach is to extend the boundaries of conceptual thinking beyond agriculture and be more inclusive. This will ensure that the livelihoods of the end users and a holistic array of activities are taken to consideration. Further, development of localities and communities are looked at in a holistic manner rather than the traditional micro or fragmented approach. The successful inclusion of rural tourism into rural development efforts in Western countries is a case in point. Thus the approach will be to identify "new livelihoods and opportunity systems"

Ex: Agriculture – tourism, industry, infrastructure, education, health, culture - creative and performing arts, history, archaeology, housing, etc.

This is particularly relevant in Sri Lanka due to the changing demographic structure as well as the shift in the dependency and dominance of agriculture. Although the vast majority of people live in rural areas, their main source of income is not agriculture or farming anymore (Department of National Planning, 2002). Thus in keeping with these changes and the diminishing or changing importance of agriculture, addressing agricultural research issues may also require adoption of innovative approaches.

⇒ **Inter-Systems Approach:** Agriculture research planning may be done at a eco-system level to address the needs of the users to optimise resource available and face challenges in a relatively homogeneous ecological zone. The resource use at the field level by users happens based on social relationships linked to their enterprises. The specialisation of institutional functions in research establishment has followed commodity or disciplinary boundaries in taking advantages of the merits of specialisation. However, at the production level people are more multi-skilled and have a broader perspective and agenda. Further, development planning also take to account the heterogeneity at the local level. Within a given ecosystem there may be a multitude of production systems for which research inputs may come from several research organisations. When the research systems work in relative watertight compartments, the end users needs may not be addressed in a practical and realistic manner. Use of time budget surveys has shown that farmers engage in a multitude of production activities. Thus, the need to undertake research as a collaborative and collective effort towards improving a region or relatively homogenous geographical entity. Teams of researchers attached to different research organisations may have to work together to address development efforts in a comprehensive manner for these locations at the planning and design stage. But advise and adoption of technology may happen based on decisions made by individuals.

⇒ **Knowledge Base Systems** to ensure good living. Linking with health system research, industrial research, environment and ecosystems research, public administration and management research to provide required information for holistic planning and addressing of problems. Society is moving towards one that is based on knowledge. This will require making information accessible to people as well as making them aware of the right to information. Developing skills to be more proactive so that they use information and knowledge will be required. Research will have to move in this direction and become more transparent, accessible and adopt mechanisms to facilitate this process.

Other challenges that are drawn from section II are as follows:

- The need to manage research institutions to be more efficient adopting modern organisational management tools and procedures.
- The broadening of the scope for good governance, transparency in public institutions will require new alliances to be made and new partnership developed with all segments of the key stakeholders for better long-term relationships and productivity.
- The trends in globalisation and regional integration and the efforts at developing larger blocks of economic interest groups due to the risks faced by small economies.
- Balancing specialisation needs and the need to have a broader holistic picture both at the individual and institutional levels.
- Recognising the role of the corporate sector and small and medium scale users of technology and research outputs, since they are the new focus of economic growth. The diminishing and changing role of the state with state institutions playing a facilitator role.
- Incorporating the principles of transparency and accountability not only into the public sector organisations but also in future alliances with non-public sector players.
- Realigning the research establishments to be knowledge based where all research staff are trained and have access to information.
- Increased participation of civil society in matters pertaining to public interest and the recourse to legal means to seek redress in situations of harm or unfairness.
- The high levels of economic disparity and social exclusion in development interventions which are not acceptable and the need to pay attention to the problem.

Future Partners and Partnerships in the R&D Process

In examining the status of the agriculture research system in Sri Lanka the structure and functions have been briefly reviewed. The challenges faced are also enumerated. By linking the two, a few major partners and types of partnerships can be identified. These need to be nurtured for the agriculture research system to meet the expectations of the stakeholders:

1. The Private (corporate) Sector:

Research will have to be geared to meet the needs of the private sector since they will play an increasingly important role in agriculture production, processing and marketing activities. Identifying the key actors, targeting their needs, coming into collaborations and developing more robust systems of communications and dialogue to ensure effective partnerships.

The Chambers of Commerce are formal organisations with considerable institutional capacity. They are major players in development policy formulation. In the future they will be an active partner in the agricultural research system. The system may have to identify the mechanisms of involvement and the means of obtaining the best synergies. There are several national chambers as well as regional chambers. There are also specialised interest groups for example the Women's Chamber of Commerce and Industry, the Youth Chamber of Commerce, etc. The issue of territoriality and subtle antagonisms and competition that exists may need to be managed so that the system benefits from the strengths and are not adversely affected by conflicts of interests.

The partnerships may have to be at all levels and in different ways. At research needs identification, setting of policies and priorities, allocation of resources etc. the private sector may be required to participate as a socially responsible partner. Thus these relationships may have to be approached as learning efforts. The goal will be to develop the most appropriate and beneficial alignments adhering to good principles and philosophies of justice and fairness.

2. The NGOs Sector:

The NGOs will continue to play a vital role in enhancing the capabilities of the less fortunate and also addressing public issues requiring interventions to bring about social change to achieve equality and justice. The challenge is to provide engagement, creating awareness and a sound knowledge base to take rational decisions. The needs of the majority and minorities as well as intergenerational equity need to be addressed while keeping a balance between pragmatism and idealism.

Innovative methods of developing networks with appropriate networks who have a stake in the research efforts is pragmatic. Inclusion may help develop an objective understanding of issues and the willingness to give and take on issues do that proper balances are kept between short term gains and long term needs. The NGO sector can also be a partner in undertaking adaptive research or even in other areas of research priority setting as well as in evaluation. Their special strengths can be used to enhance the impact of research institutes in a more effective manner. Their networks, training programmes etc. could be used to channel information and know how in a more cost effective manner. They are a possible partner in extension and technology transfer functions.

3. The State Sector

The relationship between state or national level entities such as Ministries, national authorities etc. need to be managed. The influence on the research system by the *super structure* should be one of facilitation, enhancement and enabling. It is well accepted now that the traditional role of the state as the controller needs to be changed to one of facilitator. The aspirations of all people need to be met in a just and fair manner. Thus there is a need to help the state organisations build their capacity and change their working culture. Associating with the state sector *super structure* in a proactive manner will be most beneficial in the long run. Such associations maybe to create awareness and sensitivity and to develop the need for change within.

4. International Organisations

The globalisation phenomenon has many dimensions. The adherence to international standards in conducting trade and commerce as well as in all other spheres are being articulated. There must be an awareness of these areas of change, the principles and procedures being developed primarily by the UN system, the international financial and judicial systems, as well as global and regional organisations of socio-economic co-operation. The TRIPS agreement, spear headed by WIPO is a case in point.

5. International Agreements

Much of the development activities are being affected by standards agreed upon with the global community. These agreements will be in areas of environmental management, trade and commerce, human rights and governance etc. As a member of the global community Sri Lanka also participates and joins hands with the international community in developing these standards and procedures. Once ratified the country is bound to adhere to them. Thus the research system must also be aware of these and how they affect agriculture development and research. New mechanisms of relating to this sector need to be developed and institutionalised so that the country does not suffer from isolationism or delay in responding to global agreements for change.

6. Global Trends and Initiatives

Related to the above is the need to be aware of global trends and initiatives. Since these will have an impact, early detection of these trends and assessing how they will affect Sri Lanka is required. There is thus a need to develop appropriate responses and interventions. This will be a function of an entity that should have strong working links with the research system. Partnering with entities that are developing this capacity specially in the civil society (NGO) sector within Sri Lanka as well as other developing countries is pragmatic. Being ready to respond in partnership with similar countries and lobby groups is pragmatic. Such preparedness to deal with powerful segments of the global community is very necessary. The recent changes that were incorporated into the TRIPS agreement in Doha were purely due to networking and lobbying by the groups and governments of the Third world.

7. Professional Organisations

The need to improve standards and the work culture of organisations is recognised. The professional groups need to be strengthened. They are recognised for their ability to promote and develop on a continuous basis, the skills of professionals. Professionals in the developed world require membership of recognised professional organisations. The latter ensures that the members adhere to accept standards of performance and that their skills are upgraded effectively on a regular basis. Such links need to be nurtured and the professional bodies assisted to develop their capacity. Such facilitation will contribute to the long-term development of human resources in the research sector and the professionalism of all aspects of research work.

8. Local and International Standards Institutions

The work in any institution need to be standardised to ensure that there is consistency and adherence to practices that ensure good results. Procedures need to be standardised so that minimum standards are followed in not only research but also in management. These standards and procedures may be available with local or international standardising institutions. Where standards are not developed, the research system could take initiatives to develop the standards and objective procedures for recruitment, performance and development of the staff to ensure that the objectives of the institute are realised.

9. Modernisation and Globally Competitive Niche Products?

The NARS should constantly be sensitive to global changes and trends so that within a context of commercialised agriculture and export promotion on niche agricultural products is developed for Sri Lanka. Therefore there is a need to monitor and undertake relevant research. This function will be even more important in the future as the economy and agriculture gets more integrated to global markets. In a globally integrated agriculture system, modernisation to develop a competitive edge as well as to ensure adherence to global standards of production and processing will be required. There will have to be institutions and persons responsible for this task. The research system will have to develop close links with such entities to ensure preparedness and success.

Development of new partnerships and partners to make the research system responsive and futuristic will require a reorientation of thinking, retraining and the institutional framework. The required institutional support will be appropriate policy and the legal and administrative regulations. Discussions of this nature will help us realize such a goal.

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Discussion

Discussants' Comments

Dr. Fredrick Abeyratne

Dr. Jayatilake has done a comprehensive study on how research and development system should operate in a very normative sense. Further he explained in greater details on the present system of NARS, its limitations and what should be done in the future with respect to the changes in the global scenarios which need different kinds of partnerships. So, what I intend to do now, is to touch upon a few areas, among many things that he has noted in his paper which I think are fundamental in my opinion, as vital for his systems to operate efficiently. In fact, I agree almost all of the points that he has pointed out. Now, Dr. Jayatilake has identified four areas for a proper research and development system to operate.

First of all, at the highest level where policy frameworks and directives are made with the starting point. Secondly, the NGOs linkages, including farmers, traders, bankers, etc. Thirdly, the professional bodies to ensure that research system which function with the best possible standards and so on, and fourthly, the future partnerships that one has to think about for a proper R&D and extension, because global scenarios are changing very rapidly.

Now, I would like to touch upon, specially the first three aspects a little, what I believe is very vital. With reference to the policy area, he emphasised the importance of having a policy framework, and to sustain the requirements of a proper legal framework, resources and development of human resources for R&D. In this area, we see that we have two problems. The first thing, especially in Sri Lanka, a proliferation of a large number of bodies handling the agricultural sector which makes it very difficult for the system to respond to changes in new technology, management systems and policy guidelines. We know that CARP is handling quite a large number of research organisations. However, there are a large number of other organisations, which come under different ministries and so on. In fact we do know over the last half a decade or so, at least two policy documents are floating in Sri Lanka with regard to agriculture policy. He really mentioned and notes that this thing has to be rectified at a highest level and we do appreciate that this particular seminar/workshop is trying to do that same thing. It is very timely.

Secondly, the research system itself is trying to analyse by looking at the papers that have been reviewed by CARP and so on. He highlighted several problems. To name a few, requirement in number and quality of human resources is very much noted. Although he points out that there has been a brain-drain over the last few years, but no analysis has been done - what the reasons are behind for this brain-drain probably we do know, but I think it should have been very much better if it was put in a perspective. But the important thing is, no attempt has been made to arrest the situation, no attempts have been made to maximise the utilisation of research capacities scattered in various organisations throughout the country. And he knows that this is mainly due through vertical and horizontal linkages, both internal and international research organisations. However, one thing that he tries to know that the plantation sector to some extent has tried to build linkages among agencies when problems do come up. For example, we do not know that, couple of years back, there was an infestation of insects in the coconut plantation, specially in the eastern areas, and Coconut Research Institute really linked with the other organisations for research capacities as well as the support staff and to bring it under control and it was a very strong success I would say. Although the plantation sector has done that, it is not recorded in the non-plantation sector where linkages have built to use the limited capacities that we have in the

research areas.

Now, another important factor is that, very fundamentally Dr. Jayatilake pointed out the difficulties in management and governance in the research institutes. In fact, in my opinion I would say that he has not covered it enough, because this factor is recognised more and more and the main reason why systems collapsed rather than due to lack of financial and physical resources. Although we mention always here and there no funds for research, there are no people for research. In fact, what globally people have found is because of bad governance that systems have collapsed rather than due to the lack of resources in terms of physical and financial. Further, he did mention at least two factors; one thing is lack of openness and paucity in using modern management systems. I would say that there are many more factors that have gone into this picture, where bad governance has reasons for collapsing of systems. I would like to mention some other factors like, lack of transparency, lack of participation in the decision-making process, more emphasises what ever made with regard to efficiency and effectiveness. Dr. Navaratne, in his presentation, I think mentioned that very much. We do not think about the result orientation at all, lack of accountability, and, are very serious concerns that needs attention as far as good governance are concerned in having a good research system.

Now, Dr. Jayatilake also knows the importance of doing useful research. We heard this from a couple of other people who spoke earlier as well. In fact a lot of people say that research is donor driven on the one hand or that it's interest is given. Because the researcher is trained in a field he would like to do research. He is comfortable there rather than in what is needed. Even in demand driven research the limited resources we have in hand can utilise properly. These are things that has to be rectified with the new policies on research that we are talking about. Thirdly, he talks a lot about the use of human resources specially in the national agricultural research system. One of the things he emphasises is the need to be responsive and to cater to the private sector needs. This I would say sadly is not very strong in the current system. Because they are more supply driven research rather than demand driven that is being going on.

In a sense, Dr. Jayatilake is advocating partnerships between researchers and the users. To me for example, this is almost the farming systems research approach that was very fashionable in the 80s. Now, we should think about the people who are living on the field as well. I believe Dr. Jayatilake is referring to the same farming systems research approach that has been very fashionable in the 80s. I would like to have a clarification on that point.

Now, lastly, he brings out this new point about the partnerships that, one has to forge because of the changes in the global scenario, for a national agriculture system to be effectively implemented. The building partnerships between state and private research and development are very vital for the fact that, we are living in an open market scenario within the globalisation context. In spite of all the difficulties therein, unfortunately or fortunately we have to buy this bitter pill and take precautionary measures to reduce any risk involved. We did hear from the earlier speakers, we have to buy, whether we like it or not globalisation is coming in a big way and we have to buy but there are issues and problems. But we do not do our homework but go on complaining about the problems of globalisation rather than taking preventive measures in order to meet these challenges.

Earlier we were talking about physical relationships in between organisations. These are new paradigm shifts in a sense we are not talking about institutions alone but about the regulatory things that are happening in the world - say TRIPS for example, is a regulatory force. It is not a particular institution per se, but we have to take into recognise that you have to build a partnership with that, so as not to have long term negative implications. We have to formulate new paradigms. Dr. Navaratne says a paradigm shift is needed and we must have the guts to implement it. I would say Dr. Jayatilake pointed out very important issues and suggested

various devices to strengthen the integration of R&D and build partnerships with the state and the private sector.

Mr. Rupasena

First I would like to thank Dr. Jayatilake for his comprehensive paper. I would like to point out some issues in the paper that should be discussed in this forum, how to make workable partnerships in R&D in agriculture and research in market development. Most research studies are categorised as book research. This is a criticism levelled against the agricultural research done by the state sector. A couple of examples mentioned especially by vegetable exporters, in this regard. This regarding varieties developed such as purple winged beans and small size snake gourd. Apparently, there is no market in this country for such varieties of crops.

Most paddy millers mentioned that there are paddy varieties, which have a higher broken percentage. Traders are always complaining that post-harvest loss prevention mechanisms and systems used are not market-driven. It is very difficult to implement that type of post-harvest loss prevention mechanisms. Dr. Jayatilake mentioned that a clear necessity is there for post-coordination between research organisations as well as between researchers and the users. Even as regard to dissemination of research findings, there is an argument that there should be a user pay extension system, even I think that the National Planning Department also suggested that type of system. I do not know even under the perennial crops development project whether they are implementing the user pay extension system. There are some arguments going on, that we don't need to spend too much money on basic research under the globalisation process. We can borrow the technology, and we can adapt research. That is one aspect. And also, there is an argument that we have to give more attention to evaluation research and action research. Even in CARP priority areas, action research is not in the list. Even in evaluation research we are talking about high value crops, and although most of the people do not know what are the high value crops? Also, even Dr. Somaratne mentioned that we should have given more attention to horticultural crops as well as food crops. I think research is lacking in this area. Even the exporters mentioned that we can export fruits like mangosteen. But there are problems of diseases and other things. But research is lacking on those areas in the high value crops. And also we found that we have given more attention to the pre production area of research and post-production areas of research is lacking. That is post-harvest activities. This is a priority concern as the market is the engine of the growth rather than the private sector. We have to do everything focused on the market. We have to spend more money on post-harvest activities related research. Thank you very much.

Responses

Dr Jayathilake: I just want to clarify whether I am going back to the farming systems approach, Yes or No? What I am saying is that, I think we heard from other speakers that with economic development, the role and the importance of agriculture is going to diminish. But in Sri Lanka, for the foreseeable future, our dependence on agriculture, particularly in terms would continue to be somewhere, and get the larger majority of people will continue to live in so called rural areas. And then Dr. Atapattu, in his presentation made that the point that we need to create opportunities to make money or incomes in these rural areas. I think agriculture will have to get out of the boundaries of thinking as agriculture. I think we have to find methods of improving the livelihoods of people, given the different types of resources and industries that can be developed in the region. When I said that there is a structural limitation to this. When you have commodities specific research institute established, those guys are not going to talk to the

industrialists or the livestock people or to foresters. I think we might have to re-visit some of the ideas presented in the farming systems approach. It is basically system's approach. But you have to relate to some geographic locations, and to find out how livelihoods can be improved. It can be agricultural, it can be other ways also, and to try to develop certain strategies within these different research systems. That is the way I was looking at. I was taking the example - for instance in Sri Lanka, there is a tremendous potential to combine tourism in the plantation sector. Because you have this large number of bungalows that the British built in this country based on English traditions. You can actually market novel ideas of eco-tourism. To some extent its happening actually. All these tea factories are now becoming tourist attractions. That is an example that I have. Then, as to how to get research to respond, to be demand driven or how to do research for private sectors. I think you might have to have innovative ways of doing this, you might have to have part funding systems, or research grants advertised. Certain research problems that have been identified previously by certain users, or might want to come in, to provide some funds or you can have systems where you share in the profits.

Other Discussions

Dr. Jayasuriya: I just like to make a small comment here, having listened to four speakers this morning, and two of them virtually talked about policy. Now I don't know whether we have spent enough time to find out why some of the policy decisions that we have taken during the course of the last so many years, have not been implemented or have we been able to push these policies towards to the governments and then got them implemented? Now, I think this is a good point that we need to discuss, because we keep on making policies, we keep on coming up with new ideas, but they never get implemented. Now, I am talking with experience from NASTEC, where I have been working for one and a half years. We have tried very hard. Now, can we analyse this, why this is not happening. To my mind, I can think about two things immediately. One is that, I think it is the fault of the scientists - us. We are not taking an active part in pushing our policies. We are doing business, we are saying ok we have published it or maybe we are even taking it to the farmer, but we are not pushing it with the political system. And to push it to the political system, we must look for political will. I think the political will has not been there in this country. There are people, there may be certain politicians who would like to take certain matters out to the field. But in general terms, science has not been given its place in the political system in this country. I don't know whether you agree. But that is what I have seen - the whole issue. If you look at the whole scenario over the last so many years. May be, when we really discuss not only we should be making political policy decisions, but we should also think, how can we push this, our policies, our thinking into the political system?

Dr. Jayatilake: I think I agree with you totally in what you are saying. We have to look at ourselves, how we train ourselves, how we train students in the universities in what. I think globally in this country there are two things that are bad and we would not want our children to get into if they had a choice. One is politics, second is business.

I think it is a matter of training ourselves, looking at how we communicate with politicians. I think politicians do respond to certain types of information and it's a varied package. Perhaps, HARTI should take this up as a challenge after organising a workshop with good communication specialists as to how scientists should strategize to market themselves into the political arena.

Private Sector Investment in Agriculture: Constraints and Opportunities

*Nihal Samarappuli**

Introduction

Agriculture still continues to be the backbone of Sri Lanka's economy. It constitutes 20% of GDP, 35% of total export earnings and 38% of total workforce in 2000. In addition, the agro-processing industry also makes a significant impact on the national economy and its development via its contribution to GDP, government revenue, net foreign exchange earnings, employment generation as well as its forward and backward linkages.

Sri Lanka's agricultural sector grew at a sluggish 2.5% per annum in the 1990s. The government is planning to at least double the rate of agricultural growth for this decade. Since very little scope for growth in the paddy sector is evident, almost the entire growth should derive from the higher-value commercial agricultural commodities. Agro- industries need to expand capacities to create a demand-pull and thereby stimulate agricultural commercialization.

The international environment for the agricultural sector includes all activities related to crop production – annuals and perennials, horticulture, livestock, fisheries, forestry and agro-processing unless stated otherwise is changing. It will both open up new opportunities and pose new threats to Sri Lanka's agricultural sector. Sri Lanka appears poised to enjoy wider market access in markets hitherto subject to significant trade protection. At the same time, greater reliance on global markets will expose Sri Lanka's agricultural sector to increased competition.

The agro-industrial sector has significant scope for capacity expansion and domestic employment creation. However, the private investment required to finance such growth is also very high indeed. The government should therefore create an enabling environment for private sector to earn a reasonable return on its investment in the agricultural sector. Investment promotion is an important strategy in achieving the objectives of increasing agricultural production of both primary and value-added products while creating maximum employment opportunities.

Foreign Direct Investment (FDI) is expected to supplement the domestic private investment in enhancing production capacities, which would also result in transfer of technology, improvements in managerial skills and gaining access to international markets. There are also opportunities for investments in technology infrastructure such as packaging, storage, transportation and certification.

Present Status of Private Sector Investment in Agriculture - The Facts (year 2000)

Sri Lanka's Agricultural and Agro-industrial Sector:

- 1.9 million Ha of arable land of which 90% under cultivation.

* Note: The author is an Executive Director (Research), Board of Investment of Sri Lanka.

- Total agricultural production inclusive of both primary and processed products was worth of US\$ 3,245 million.
- Total agricultural exports worth of US\$ 1,350 million and constitute 25% of national exports.
- Agricultural exports in primary form worth of US\$ 1,000 million and constitute 18% of national exports.
- Agricultural exports in processed form accounted for US\$ 350 million and constitute 6% of national exports.
- Direct employment in the agriculture sector including agro-industries was 2.3 million or 39 % of total employment.

Agricultural and Agro-industrial Enterprises Operating under the BOI Law

- Total production in agriculture (inclusive of both primary and processed products) worth US \$ 462 million account for 14 % of the total agricultural output in Sri Lanka.
- Total exports of agricultural products worth US\$ 420mn, constitute 31% of national agricultural exports (Figure 1).

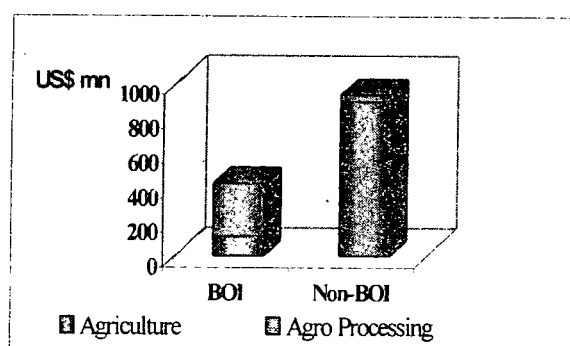


Figure 1: Contribution to the Agricultural Sector Exports - BOI vs Non-BOI (Year 2000)

- A total of 558 agriculture related projects (both under Section 17 and Section 16 of the BOI Law) have been approved, of which 314 are in commercial operation (Table 9.1).

Table 9.1: Agriculture & Agro Industries- Present Status of BOI projects (Sec.17 & 16)*

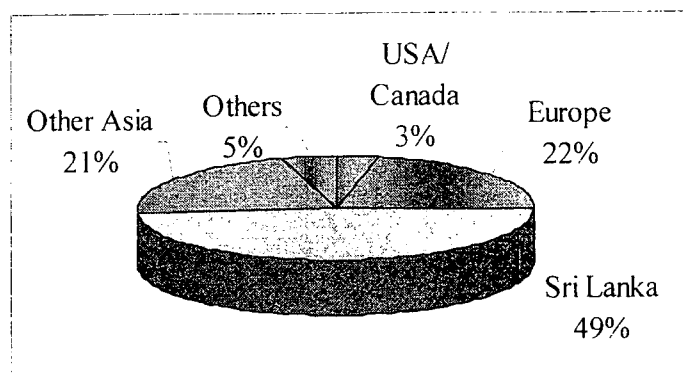
Project Status	No. of Projects		Investment (Rs.mn.)		Employment	
	Sec. 17	Sec. 16	Sec. 17	Sec. 16	Sec. 17	Sec. 16
Awaiting Agreement	75	-	42658	-	13917	-
Awaiting Construction	53	62	6788	1462	6284	4712
Under Construction	43	11	3846	171	5956	685
Commercial Operation	242	72	26397	3998	57812	7674
Total	413	145	79689	5631	83969	13071

* Projects as at December, 2001

- The total investment already committed exceeds Rs.34 bn.
- Total direct employment generation is nearly 65,000.

- The 242 projects operating under section 17 of BOI Law are located in 16 districts of which majority are in Gampaha District (77 projects) followed by Puttalam District (58 projects).
- 125 projects (51%) operating under section 17 of BOI Law have foreign equity participation (100 % foreign owned or joint ventures) (**Figure 2**).

Figure 2: Foreign Equity Participation in Agricultural Projects (operating under Sec. 17 of BOI Law)



- The BOI enterprises are engaged in diverse activities within the agriculture and agro-industrial sectors ranging from traditional crops (rubber, coconut, tea) & fisheries to in-vitro propagation of high value horticultural crops and from cultivation to value added industrial products ranging from processed food to rubber products, coconut products and wooden products (**Annex 1**). There are several supporting industries too engaged in manufacturing agricultural equipment, packaging materials and providing warehouse and cold room facilities.
- The highest number of enterprises (59) are engaged in the fisheries sector. The specific activities include prawn culture, deep-sea fishing as well as ornamental fish breeding.
- Highest aggregate investment has been channelled to the rubber products sub sector. These companies produce a wide array of rubber products ranging from tyres, tubes, hoses, belts, auto parts and mats to footwear, sports goods and dipped products.
- Tobacco sector generates the highest employment opportunities.
- Different types of value added coconut based industries such as coconut cream, fibre products, coir products, geo textile, floor mats etc are in operation in many parts of the country.
- Twenty-three (23) projects in the fruits and vegetables sub sector consist of cultivation as well as processing units.
- The six Agricultural Equipment and Machinery manufacturers are engaged in manufacturing tools and equipment used in the fisheries industry, such as fishing gear, fiber glass, fishing vessels etc.
- The 11 packaging materials manufacturers with an investment of Rs. 420 mn cater not only to the agriculture & agro industrial sector but also for other sectors as well.
- Some of the pipeline projects are expected to bring in substantial investment through the establishment of state-of-the-art processing facilities, particularly in the food processing industry (**Annex 2**).

Reasons for Investing in Sri Lanka's Agricultural Sector

The main attractions for private investment in the agricultural sector include; the pro-business environment, diverse agro-climatic zones, abundance of raw materials, wide scope for value addition, decades of industry experience, readily available labour force, country's geographical proximity to major markets, superior port facilities and a wide range of incentives and facilities granted to the agricultural sector.

Pro-Business Environment

Sri Lanka is regarded as one of the most attractive investment destinations in the region. Over the last two decades, successive governments have pursued a policy towards economic liberalization with the main emphasis on private sector investment. Today, Sri Lanka is ranked as the most liberalized economy in South Asia, which highlights the prevailing conducive environment for private sector investment. Sri Lanka has been ranked 1st in the SAARC (South Asian Association for Regional Co-operation) region with respect to competitiveness in "Economic Performance", "Policy Environment", "Human Resource Competitiveness" and "Investment competitiveness" (*LMD, 1999*).

Sri Lanka's pro-business policy environment includes;

- Total foreign ownership across almost all areas of the economy.
- A constitutional guarantee on the safety of foreign investment.
- Investment laws which are transparent and automatic.
- A sophisticated legal and regulatory framework covering areas such as intellectual property, settlement of disputes, etc.
- An open economic system permitting free transfer of fees, profits, capital earnings and foreign exchange transactions on current account payments.
- Double Taxation Relief Agreements with 29 countries and Investment Protection Agreements with 26 countries.
- Foreign investors are allowed to either purchase or lease land to set up business enterprises including agriculture.
- Generous fiscal incentives and concessions.

Access to Raw Materials

The country is blessed with diverse agro-climatic zones enabling growers to produce a wide range of crops. Similarly, Sri Lanka has the exclusive rights of nearly 500,000 square kilometers of sea. The agriculture, livestock and fisheries industry provides the agro-processing industry with abundant raw materials.

Sri Lanka has established a reputation as a reliable exporter of certain primary products and processed agricultural products such as tea, rubber, coconut, cut flowers, spices, confectioneries and herbal products. There is, in addition ample scope to add value to agricultural commodities, which are exported or consumed locally in raw or semi-processed form.

Access to World Markets

Sri Lanka is fast emerging as a service hub in the region. The country's geographical proximity to South Asia and the Middle East in particular provides access to large markets that are growing and rapidly upgrading dietary habits. The Colombo port is ranked as number one in South Asia and 26th in the world.

The regional trade agreements such as SAPTA (South Asian Preferential Trade Arrangement) and the bilateral free trade agreement with India provides Sri Lanka with tariff preferences in one of the world's largest markets for processed agricultural products. Proximity to the vast Indian market is a significant geographical consideration, with Sri Lanka positioning itself as a neutral player in the region. Under the Indo-Lanka Free trade Agreement (FTA), India has given either 90% (from 1st March, 2002) or 100% duty concessions for over 700 agricultural products. Since many of India's agro-industries are protected with high tariff rates, this is potentially a very significant trade preference.

The WTO (World Trade Organisation) members have made commitments to scale back agricultural price support measures and export subsidies. Accordingly, Sri Lanka will enjoy greater market access for its agro-industrial products in the developed market economies. The regional and bilateral trade agreements, combined with WTO reforms should increase both trade flows and competition.

Incentives and Concessions

To foster agriculture and agro-based industries in particular a number of attractive investment incentive schemes have been granted to both local and foreign investors both under the 'normal laws' and Section 17 of the "BOI Law" (See Table 9.2).

The Board of Investment (BOI) is structured to function as a central facilitation point for investors while granting very attractive incentives and various other facilities such as tax holidays or preferential tax rates, exemptions from customs duty and foreign exchange controls.

Table 9.2: Incentive Scheme Applicable for Agriculture & Agro – industry¹

Project Activity	Type of Incentives
<ul style="list-style-type: none"> • Agriculture • Food Processing • Industrial & Machine Tool Manufacture (eg: Agricultural tools) • Other Designated Enterprises (eg: Rubber products) • Investments in excess of Rs. 500 mn in specified agricultural services 	<ul style="list-style-type: none"> • Tax Rates <ul style="list-style-type: none"> – 1-3 years : 0% – 4 -5 years : 10% – 6th year onwards <ul style="list-style-type: none"> – Agriculture & Food Processing : 15% – Others : 20% • Duty free imports of capital goods • Duty free imports of raw materials (for export quantities) • State land on 30 – 50 yrs lease
<ul style="list-style-type: none"> • Pioneering Investments in designated areas including infrastructure projects 	<ul style="list-style-type: none"> • Tax Rates <ul style="list-style-type: none"> – 5 – 10 yrs : 0% (From the date of commencement of commercial operation) – After tax holiday : 15% • Duty free imports of capital goods • Duty free imports of raw materials (for export quantities)

¹ Selection criteria are yet to be gazetted based on the budget 2002

Major Constraints Hindering Private Investment in Agriculture

The poor performance of Sri Lanka's agricultural sector is largely attributed to various constraints and bottlenecks faced by the farmers and agro-industrialists. The major constraints faced by the private investors include, (a) inadequate supply of quality inputs such as planting material and packaging material, (b) limited access to productive land, (c) lack of basic infrastructure such as industrial sites, well managed market places, cold rooms and warehouses, (d) ineffective marketing system, (e) lack of supporting services such as packaging, testing and certification, (f) lack of a demand driven research and extension service, and (g) high transaction cost. These constraints will create investment opportunities in improving productivity, value-addition, strengthening the marketing system, developing the physical infrastructure and provision of support services.

Inadequate Supply of Quality Planting Material

Agro-industries require a continuous supply of high quality agricultural raw materials. Sri Lanka's small producers' ability to meet this demand depends on their access to appropriate seeds and planting materials. However, the lack of appropriate seeds and planting materials to produce high quality fruits, vegetables, oil seeds, tubers, grains, perennial crops and floricultural products is a major constraint to the development of domestic agro-industries.

The government's seed improvement efforts have been concentrated on rice. In the case of other commodities, there is a dearth of improved seeds and planting material. Meanwhile the restrictive quarantine laws and inspection practices have effectively made it impossible to import any improved plant genetic material of the highest quality.

Lack of Suitable Technology

The development of both agriculture and agro-industry is constrained due to the lack of suitable technology. For instance nearly 40% of the agricultural produce goes waste owing to lack of new and modern post harvest technology.

Uneconomic Land Size

Limited access to productive land is a serious impediment to commercial agriculture development. With the exception of the traditional plantations, the majority of the other agricultural lands are quite small in size and scattered throughout the country limiting operations for scale economies. Agro-industrialists desirous of setting up their own raw material base experience difficulties in obtaining access to large extents of suitable land owned by the state sector.

Lack of Readily Available Industrial Sites & Other Basic Infrastructure

Suitable industrial sites are lacking especially in the rural areas to set up value-added industries. Although the government has established few industrial estates and industrial parks, the agro-industries have been unable to take full advantage of these sites due to lack of specialised warehouses, cold storage and waste disposal facilities. Many of these sites lack access to other supporting infrastructure such as water, electricity, roads and telecommunication facilities.

The lack of properly designed and well-managed market places have an adverse effect on the overall investment in the agricultural sector. The major wholesale markets are highly congested.

¹ Sri Lankan agricultural sector is dominated by nearly 1.2 million small farm enterprises

The public domestic markets are inappropriately located, badly designed and poorly managed. Hence, distribution and marketing costs are very high in domestic agricultural trade.

Ineffective Marketing System

The high cost of marketing of agricultural goods raises the prices of raw materials to the agro-industries and raises the costs of finished products to both domestic and foreign consumers. Losses in the marketing system, for the perishable products are estimated to range between 20-40%. The irregular supply of raw materials due the poor marketing network is a key constraint for most agro-industries. The lack of cold storage facilitates too discourage farmers from producing high quality perishable products in particular.

Unlike the export-oriented agro-industries, which compete for a small share of the large world market, the domestic oriented agro-industries have to compete within the narrow confines of the domestic market. The lack of large scale leading enterprises, together with the dispersed nature of the domestic market oriented agro-industries, limit opportunities for vertical integration and intra-industry co-ordination and co-operation.

Lack of Demand Driven Research & Extension Service

Neither the public research nor extension service is adequately responsive to the needs of the more commercial oriented agro-enterprise sector. The majority of farmers grow crops based on their convenience and experience irrespective of the market demand. The agricultural research and extension effort is drawn more by the Government's notion of what should be produced rather than by the needs of the agro-industrial sector.

The bulk of agricultural research activity in Sri Lanka is in the public sector-specifically under the network of research institutes. Product developments with the direct participation of agro-industries (public-private partnerships) are relatively rare. In contrast, the private sector plays a considerably larger role in other countries, notably in developed countries in the areas of technologies 'embedded' in fertilizers and pesticides, farm machinery and equipment, seeds and other inputs. They are also involved in preservation and food processing.

The government funded agricultural extension service has weak village links and often concentrates more on subsidy administration rather than transfer of technology. There is no proper marketing extension system to advise the farmers on crop selection, time of planting, harvesting, identification of trading opportunities and obtaining the maximum possible price.

Lack of Packaging Materials

Packaging is an important element in pricing a product in both local and foreign markets. The limited capacity in the domestic market to produce high quality packaging material raises costs (due to high import tariffs) and hinder development of products suited to the different segments of the global market.

Lack of Testing/Certification Services

As traditional trade barriers fall, many countries are tightening health and quality standards on the import of agro-industrial products. For instance, the European Union (EU) has significantly tightened phytosanitary requirements on imports of fish and livestock products. Sri Lanka's agro-industries will need to adjust to increasingly stringent global market quality controls.

Many small and medium agro-enterprises are unable to afford health inspection costs. Accordingly, they cannot fully comply with strict food health certification standards. This has weakened the industrial ability to capture export markets that are tightening quality requirements.

According to the latest report of the Food & Agriculture Organization (FAO), developed nations are now emerging as major exporters of food and fruits to developing and Least Developed Countries (LDCs). In addition, with globalization and trade liberalization, most of these developed nations have already conformed to standards and regulations imposed by the WTO which most developing countries and LDCs are unaware of, or currently lagging behind.

High Transaction Costs

High transaction costs resulting from various regulatory impediments impact negatively on enterprise development in the agricultural sector. These regulatory impediments increase the cost of doing business in Sri Lanka and thereby discourage investments in agriculture.

eg. : **Procedural delays**

Procedural delays hinder timely availability of imported seeds/planting materials.

Land is often a major constraint to attract investments into the agricultural sector. Prospective investors face innumerable difficulties in acquiring suitable state land for setting up projects in the agricultural sector. Long procedural delays have also been witnessed in the transfer of state-owned land.

Tax Regulations

Protective agricultural trade policy raises cost of appropriate agro-inputs and adds to the lack of competitiveness in the market. For instance, high duties on packaging materials and limited domestic capacity to produce high quality packaging materials raise costs and hinder development of products suited to international markets.

Customs Regulations

Import licensing for commodities such as natural rubber, corn and wheat functions as a non-tariff barrier.

The Sri Lankan industrial sector could save nearly one third (1/3) of the estimated profits by removing various legal and regulatory impediments unhealthy for enterprise development and competition

(Source : A paper presented at the Deregulation Conference, February, 2002)

Investment Opportunities and Success Stories

Investment opportunities exist for private entrepreneurs in the following major sectors: ie. supply of inputs (eg. seeds, bio-fertilizer) transfer of technology (eg. controlled agriculture, value-addition), development of physical infrastructure (eg. market centers, industrial sites) and providing support services (eg. testing, certification) (see Figure 3).

Production of High Quality Seeds/Planting Materials

The demand for improved seed varieties has been increasing rapidly. Policy initiatives are in place to encourage the private sector to participate in commercial seed production (eg. hybrid seeds) and propagation of high quality planting material using techniques such as tissue culture and grafting.

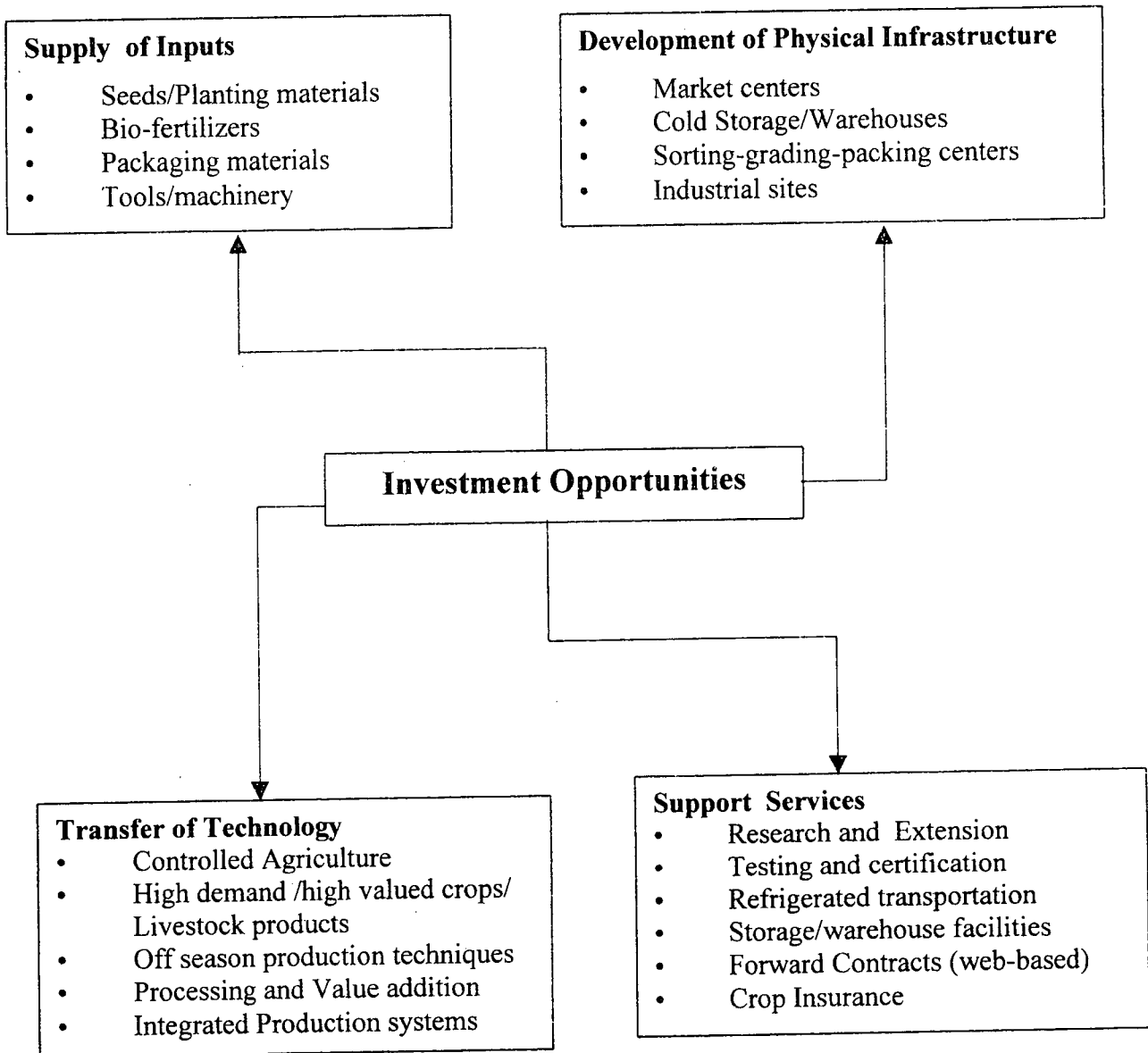
Advances in biological sciences have opened up new vistas for genetic engineering not only to create varieties with a higher yield potential, but also varieties which meet quality (colour, taste, shape etc.) specifications and resistance to specific pests and diseases. These techniques have created a growing market for good quality improved seed varieties.

Privatization of Government Farms
Management of two loss-making seed farms at Pelwehera and Hingurakkoda was handed over to CIC Fertilizers Ltd.

Packaging Materials

If Sri Lanka is to become a world class player in the food processing industry, it is essential to develop the packaging industry to attract consumers, to ensure safety standards and to prevent counterfeiting. The type of packaging material that would be in great demand may include bottles and cartons of different colours, shapes and sizes which are made of different materials such as glass, paper and plastic.

Figure 3 – A schematic representation of opportunities for private investment in Agriculture and Agro-industry.



Success stories

- *The biscuit industry achieved a 12% growth in 2000 in the domestic and international markets due to the introduction of new products, mini packs and improvements in packaging systems.*
- *The milk powder packaging industry grew by 8.8% in 2000.*
- *The processed and packeted tea industry has benefited from the increasing demand from EU, Russia, and West Asian countries.*
- *During the year 2000, some beer manufacturers improved bottling by introducing canned beer to the domestic market, which is well received by the consumer due to its easy disposability, storage and the elimination of risks of breaking and spilling.*
- *One of the strategies that the processed tobacco manufacturers implemented in promotional campaigns was the introduction of new brands with attractive designs in packaging.*

Top Indian firm to introduce cost-effective packaging technology for Sri Lanka's Dairy and food processing industries

A leading Indian packaging company, Nichrome India Limited, the biggest machinery supplier for Unilever and Nestle in India will soon introduce cost-effective packaging technology for Sri Lanka's dairy and food processing industries and make Sri Lanka the Stock Point for Nichrome machinery. This technology allows perishable liquids to keep for two to six weeks without refrigeration while retaining all its essential nutrients. As a result, such products will have an extended shelf life in an ambient temperature for this duration and is ideal for products such as milk, sterilized flavoured milk, lassi, mineral water and fruit juices.

Bio Fertilisers

A growing demand for organically produced food exists in the global market and hence there is a derived demand for bio fertilizers. The preparation of bio fertilizer is a feasible solution for disposal of solid waste, which is considered as environment friendly production process.

Five pipeline projects with an investment of over US\$ 75 to produce Bio Fertilisers.

Development of Physical Infrastructure

A massive investment is needed to build the necessary infrastructure required by the agro-industry to remove some of the bottlenecks faced by the industry and thereby to facilitate expansion activities. The type of investment opportunities available for the private sector includes; (a) properly designed and well managed market places in strategic locations with parking, water, electricity, toilets and access roads, (b) cold storage facilities, (c) pre-cooling facilities, (d) warehouses, (e) facilities for sorting, grading and packing, (f) refrigerated or air conditioned transport for horticultural and other perishable products and (g) industrial sites with specialized warehouses, cold storage and waste disposal facilities that the agro-industries require. In addition, creating basic infrastructure such as well-developed ports, airports, rail facilities and roads (especially between major production centers and transport centers or market yards) needs investment.

Much could be done to improve the dairy industry

Local production of milk meets only 20% of the market share, while the balance is met from imports. Thirty five per cent of the milk in the country remains unutilized due to inefficiencies in the production and collection systems. Many areas in the dry zone, where the greater proportion of cows and buffaloes are found, are hardly served by an organized milk collecting network.

Public-Private Research/extension Programs on Cost-sharing/Cost-recovery Basis

As the prevailing research and extension system in the agricultural sector cannot be considered as demand driven, private sector participation (investment) is essential to make it adequately responsive to the needs of the more commercial oriented agricultural sector.

Success Stories

- *CIC Agribiotech is a private company engaged in agricultural research in the areas of hybrid seed production (rice), adaptive trials, fertilizer blends etc.*
- *An extension services programme has already been set up on a 'pay for service' basis as a pilot project. Extension agencies provide technical guidance, supply inputs and pay losses due to technical failures. Farmers follow the recommendations of extension agents and pay a contracted service fee after the harvest.*
- ***Transfer of Technology : on a cost-recovery basis***

Since the Industrial Technology Institute (ITI) or the public sector does not have a strong market oriented extension wing, a private-public advisory service can effectively market the above technologies to prospective entrepreneurs on a cost-recovery basis.

 - *The ITI has formulated several value-added products from betel including betel toothpaste, betel mouthwash, betel shampoo, betel face cream, instant betel quid and betel pellets. The technologies for the products that have now been developed by the ITI are available for transfer to entrepreneurs.*
 - *The government is planning to provide technological assistance to producers of non-traditional export crops to add value to their products to meet international standards. These value added products are expensive drugs, food items and beverages extracted from goraka, gotukola, nelli, strawberry, passion fruit, iramusu, cinnamon, chilli, pepper, tamarind and several other underutilized crops. Technological support will be given by food technologists in the production, processing and packaging of these products.*

Cost recovery Based Testing and Certification

In most countries consumers are becoming increasingly quality conscious. Consumer demand is changing towards high quality food that is fresh, tasty, natural and nutritious. In Sri Lanka too, the number of farm shops selling fresh products are increasing due to changing food habits. Similarly, demand for convenience products is on the increase due to rapid urbanization and the increasing trend in women's participation in the labour force.

In the international arena, as the traditional trade barriers fall, many countries are tightening health and quality standards on imported agricultural products.

Hence, both the internal and external environment will create huge opportunities for private investment in various inspection, testing and certification services in the food and agricultural sector.

Launch of agro-testing Lab:

Intertek Testing Services Lanka (Pvt) Ltd. (ITS) will launch its state-of-the-art Agriculture laboratory which will test items such as tea, water, commodities and fertilizer. ITS is one of the oldest and largest companies in the inspection, testing and certification business and provides its services to all types of industries, from petroleum to tea leaves. The company also has in-house inspectors with large export houses to check on the quality of tea, blending and packaging, prior to exports.

Quick Tea – first tea company to receive HACCP Certification

Quick Tea (Pvt) Limited, a subsidiary of Akbar Brothers Limited, engaged in the production of tea bags is the first tea exporting company in Sri Lanka to be awarded the HACCP certification (Hazard Analysis and Critical Control Point) by the Sri Lanka Standards Institution. HACCP is an internationally recognised system based on FTO/WHO Codex Standards to manage Food Safety. Quick Tea (Pvt) Ltd. is the second largest tea bag exporting company in Sri Lanka.

Forward Contracts

Due to the greater instability of the prices of most agricultural produce between season and off-season, forward sales contract systems for agricultural produce would be one of the best solutions to guarantee an acceptable price for both the seller and the buyer in the market. A forward sale contract is a legally binding agreement, which is a tripartite arrangement between the farmer (seller), buyer and the bank. These contracts could provide good collateral for banks to lend money to both parties. Simple forward contracting systems could help farmers to earn stable and decent incomes with corresponding benefits to all stakeholders.

Central Bank initiated a forward contract mechanism called 'Govi Sahanaya Scheme in 1999.

Intensive Cultivation Under Controlled Conditions

The concept of protected agriculture is well suited to be adopted in most local conditions as it addresses some of the basic problems faced by the horticulture sector such as uneconomic land size, high cost of labour, shortage of water and exposure to pests and diseases. Plants grown in green houses and poly tunnels are environmentally friendly and provide products of high quality and free of pesticide residues. Such products are ideally suited for human consumption. High value crops such as bell pepper, strawberry etc. could be grown under intensive agriculture targeting niche markets.

To encourage investors to move into large scale modernized agriculture provision has been made to grant state land on a long term lease for cultivation under poly tunnels, drip irrigation and the use of advanced technology.

Agriworld brings advanced technology

Agriworld- in alliance with their foreign partner NETAFIM of Israel- has introduced drip irrigation systems and greenhouse agriculture to the local market. NETAFIM is a leading agri-technology company and pioneers in drip irrigation technology. The main aim of Agriworld is to introduce advanced technology to the local market in a bid to increase productivity.

CIC Agribio Tech Pvt. Ltd. – cultivation of bell pepper, carnation in 12 poly tunnels

Cultivation of High-value, High-demand Crops

Due to the diverse agro-ecological nature, the country has immense potential to grow a wide range of high value, high demand crops with huge export potential.

Suga Leaf: A high-value, high-demand crop

*A foreign investor is planning to set up a project with an investment of US\$10 mn. in Sri Lanka to grow 400 ha of suga leaf (**Sucre berttonni**) to extract a low calorie sweetener of 100% natural origin. The uses of the product are phenomenal for both the diabetic and dietetic market. Suga leaf is a perennial herbal plant propagated through seeds or vegetatively. The canopy architecture is very much similar to tea bushes. Suga leaf will grow ideally in a temperate climate approximately 3000 – 4000 ft above sea level. The climate and geography of hills and plains in and around the central highlands of Sri Lanka is considered to be most suited to grow this plant.*

Processing and Value Addition

The main strengths of the agro-industrial sector are its diversity and backward linkages to a ready supply of nutritious and diverse raw materials. Sri Lanka's varied agro-climatic zones and its untapped agricultural potential provide wide scope for adding value to what it is being consumed in unprocessed form. Meanwhile, the rapid urbanization, increased literacy, and rising per capita income have resulted in rapid growth and changes in the demand pattern leading to several new opportunities for exploiting the large latent market.

The fruit juice industry using locally available raw materials has a promising future in both domestic and export markets due to increasing health consciousness among consumers. There is an urgent need for establishing a properly co-ordinated fruit juice processing industry to make use of the surplus production of fresh fruits. Opportunities also exist in other food processing technologies such as canning and bottling of food (fresh fruits and vegetables, pulp, jam, sauces etc.), dehydration of fruits and vegetables, frozen fruits and vegetables to create a value added food processing industry².

Organically cultivated and processed spices have a rising share in the world market. There is a potential to export spices in value added forms such as powders, mixes, essential oils and oleoresins. Sri Lanka being the world's largest producer of cinnamon accounting for about two thirds of world production, has the potential to add more value to cinnamon by making powders

² The current rate of post harvest losses in fruits and vegetables is estimated to be 20-40% of the total harvest.

or tablets which has a high demand in South America and Europe. Sri Lankan pepper has a very high pungency and therefore commands a premium from industrialists.

There is also a considerable opportunity to expand capacities in chocolate, confectionery, meat and dairy products targeting the Indian market in particular. A considerable scope also exists for setting up milk processing units for manufacture of value added products including lactose, casein, weaning foods, baby food, butter, cheese etc.

Sri Lanka has the potential to develop the marine fishery sector which consists of the coastal, deep sea and off shore sub sectors. Breeding and export of ornamental fresh water fish is another potential area to be expanded. At present, deep-sea fishing, prawn and trout farming are in their infancy but growing rapidly. Fish processing (filleting and fish meal production) has a huge investment potential.

There is an immediate need to increase the production of cut flowers such as carnations, orchids and anthuriums and rooted cuttings as there is a demand for these products in the global market. In addition there is a growing demand for potted plants as well.

The following products have been tested and identified as potential areas for investment.

- **Value added products from Goraka & Gotukola**
Sri Lanka has already produced and exported two value-added products from goraka and gotukola. Goraka is used in the USA to produce an expensive "over the counter drug" which is taken to reduce body fat. The gotukola beverage which is used in many countries as a memory booster is another popular product in the international market. In Canada, 200ml of this beverage cost about 5.5 Canadian dollars.
- **Essential oils extracted from Cinnamon and Citronella oil**
There is a huge market for Sri Lanka's essential oils in Paris. The French perfume industry continues to source the bulk of its cinnamon bark oil and cardamom oil requirements from Sri Lanka, while USA remains the number one buyer of cinnamon leaf and citronella oil.
- **King coconut for export market**
The Coconut Research Institute (CRI) has developed a technology package to export king coconuts ('Thambili') which meets export quality.
- **Promoting rice as an industrial raw material**
Rice can be promoted as an industrial raw material in the form of rice bran, chaff etc.
- **Market Potential in Middle-East for dried lime**
There is a possibility for lime to be dehydrated (black dry lime) while retaining its flavour. The properly packed dried lime fruit has a fairly long storage time.

Papain Manufacturing – Joint Venture with Belgian company

A local company and a Belgian company are involved in a joint venture project with an investment of Rs55 mn. at Melsiripura, to manufacture papain for export. Papain is a powder that is manufactured after hardening and drying up the milk extracted from the papaw fruit. This can be used as an ingredient for cooking, softening meats, cooling beer, chewing gum, baby foods, pet foods and as a medicine for digestive disorders.

Herbal tooth pastes

Sri Lanka's traditional toothpaste market dominated by multinational brands is rapidly being threatened by a range of local herbal brands manufactured by some big and small indigenous producers. The prices of all local brands are well within the range of international brands but have a competitive edge even in the context of globalization and international marketing because of their low overheads as opposed to multinationals.

contd....

Mlsena Ceylon breaks into Iced Tea Market

Mlsena Ceylon Limited has made a breakthrough into the Iced Tea market with its latest innovation targeted at local and international markets. The packet is to be introduced to the local market in ready-to-drink, eye-catching tetra packs and will consist of four flavours of Peach-Apricot, Lemon, Soursap and Fine Orange Peckoe initially. The product would be a success locally and internationally as teenagers and children enjoy a drink with a difference. The new product has come into the market after two years of comprehensive research in labs in Singapore. A special formula has been developed with the assistance of Tetra Pak for the packing of the product to internationally accepted standards in maintaining the quality of the product. The company has plans to export this latest addition to the Maldives, Dubai, Greece and Russia.

Pro Foods 2002 to boost Lanka's image

Sri Lanka will be the venue for an international processed food exhibition from August 9 to 11, 2002 at the BMICH. The event – Pro Foods 2002 – will boost Sri Lanka's image and facilitate the country's role of the Chairmanship for the BIMST-EC (Bangladesh, India, Myanmar, Sri Lanka, Thailand Economic Co-operation) Forum 2002-2005.

This will be an ideal opportunity to exhibit Sri Lanka's capabilities in the food sector and to promote the country as the regional hub for processed food as well as one that adopts best practices and standards in the region. It will also lay the foundation for developing bilateral trade among processed food industries of BIMST-EC, while promoting intra-regional investment.

Sri Lanka will be the venue for an international processed food exhibition from August 9 to 11, 2002 at the BMICH. The event – Pro Foods 2002 - will boost

Integrated Production Systems with Stronger Backward & Forward Linkages

An effective integrated production system gives a firm the ability to manipulate the production, manufacturing, marketing and distribution system in a more efficient manner. These arrangements provide the means for lowering production costs, increasing production, reducing retail prices, controlling the quality standards, improving risk management and stabilizing inflow of raw material supplies.

CIC : Introducing high-tech agriculture to Sri Lanka

CIC Agri Businesses is a fully integrated company consisting of CIC Pohora, CIC Seeds, CIC Agri Biotech, CIC Agri-Technology and CIC Agro-Consultancy.

CIC Agribiotech is dedicated to agricultural research. CIC's research covers all types of crops and is not confined to a specific area. In addition, the company has acquired four large farms at Hingurakgoda, Pelwehera, Talawa and Ragala to act as production of seeds and research centres.

CIC initiated research at its own farms to produce high yielding quality seeds and initiated research into other propagation methods including tissue culture. In this regard, CIC has set up a dedicated, modern tissue culture laboratory at Nuwara Eliya. Grafting is another method of propagation which CIC has focused on at its farms, to utilize the considerable germplasm resources available at places like Pelwehera.

Many international agencies appoint CIC as their local agent in producing seeds and for sales. Recently, a renowned Dutch company granted CIC mother plants of carnation to be used for commercial production. CIC is also in the process of obtaining agencies from international suppliers for a variety of seeds such as tomatoes, chillies, etc. CIC is also the leader in establishing drip irrigation systems in Sri Lanka. Fertilizer could also be added to the system (fertigation) thereby cutting costs considerably.

Other innovation which CIC has focused on include; growing high value crops in controlled environments. Crops like bell pepper and tomatoes are grown to supply niche markets.

At present, CIC fertilizer is the only computer blended fertilizer available in the country. Among the company's latest products are crop specific fertilization mixtures, tissue cultured cavendish banana and Dutch carnation plants.

Gherkin cultivation : An outgrower system

Gherkins, which is one of the major items exported in semi-processed and processed form are grown on a commercial scale with a buy back arrangement with the exporter. The exporter provides the technical know how and inputs and credit to farmers and buys back the produce at a guaranteed price.

Colombo : A Regional Tea Hub

Plans are underway to create a regional tea hub in Sri Lanka in collaboration with India, where both countries account for nearly 40% of the world's tea production. This is a very positive move in the right direction as it would create harmony between growers, brokers, traders and exporters of both countries.

Forestry Plantations

Private investments are now being channelled to set up forestry plantations which give attractive long-term returns.

Touchwood Targets a Rs.22m market capitalization

Touchwood Investments Ltd., is a BOI approved quoted company marketing and managing investments in Mahogany Plantations in Sri Lanka. The money invested in "Mahogany trees" could be considered as the most attractive long term investment instrument currently available in the market. Growing Mahogany has a direct, positive impact on preserving the country's valuable rain forests and it is a better investment as a child plan or as a retirement plan for retail purposes or as a corporate investment package. The company provides its investors with quality saplings and undertakes the total management of the plantation, from initial planting to harvest at maturity including an insurance cover.

Conclusion

The agricultural sector is an important element of the growth agenda since the sector provides food security, a high value-added content and generates large-scale employment. Despite a formidable set of constraints, the agricultural sector in general and the agro-industrial sector in particular have significant scope for capacity expansion. Since the agro-industries are currently operating at near full capacity, further investment is required to accelerate the growth process. A significant amount of private investment is therefore needed into the agricultural sector to stimulate the growth of this sector. Meanwhile, the government has to create an enabling environment for private sector to earn a reasonable return on its investment.

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Annex 1

Sectoral Distribution of BOI Approved Agricultural Projects in Commercial Operation*

Sub Sector	No. of Projects.	Estimated Investment (Rs. Mn)			Employment
		Foreign	Local	Total	
Cultivation & Agro Processing					
Fisheries	59	1558	1857	3416	5373
Rubber Products	45	3856	4768	8624	13277
Coconut Products	34	354	1088	1442	5359
Fruits & Vegetables	23	693	355	1047	1927
Wooden Products /Veneer Products	21	447	277	723	3876
Cutflowers / Foliage	19	208	212	420	2242
Value -added Tea	17	610	2013	2623	3126
Animal Husbandry	10	1017	2105	3122	1989
Spices /Herbal Products	6	11	252	263	3075
Tobacco	3	217	93	309	16746
Cereals based Products	2	5	568	573	376
Others	3	687	3147	3834	446
Sub Total	242	9662	16735	26397	57812
Supporting Industries					
Agric. Equipment/ Machinery	6	96	188	290	954
Packing Materials	11	263	147	420	599
Coldroom /Ware House	1	0	5	6	25
Sub Total	18	358	339	716	1578
Total	260	10020	17075	27355	59390

*Approved under Sec. 17 of BOI Law

Annex 2

Sectoral Distribution of BOI Approved Agricultural Projects in the Pipe Line *

Sub Sector	Projects in pipe line (Total)				
	No. of Projects.	Estimated invest. (Rs mn.)			Emp
		Foreign	Local	Total	
Cultivation & Agro Processing					
Cereals based Products	6	10458	4665	15123	1239
Fruits & Vegetables	34	6300	6389	12688	6330
Rubber Products	12	2123	1443	3566	2055
Wooden Products /Veneer Products	6	2213	767	2979	867
Fisheries	32	1500	518	2018	2034
Value -added Tea	15	462	1453	1915	5102
Spices /Herbal Products	11	902	519	1420	1565
Coconut Products	14	199	764	963	2612
Animal Husbandry	15	30	329	358	1013
Confectionery/ Bakery Products	1	10	310	320	390
Forestry	2	76	44	120	165
Cut flowers / Foliage	4	20	36	55	191
Tobacco	1	0	1	1	138
Others	6	1731	1863	3594	1141
Sub Total	159	26022	19098	45120	24842
Supporting Industries					
Agric. Equipment/ Machinery	1	7	42	49	49
Packing Materials	6	193	889	1082	675
Coldroom /Ware House	0	0	0	0	0
Fertilizer	5	5179	1862	7042	591
Sub Total	12	5379	2793	8172	1315
Total	171	31401	21891	53292	26157

* Approved under Sec. 17 of BOI Law as at Dec, 2001

Discussion

Discussants' Comments

Wicky Wickramatunga

Dr. Nihal Samarappuli made an excellent presentation about 'Investment Opportunities and Constraints' and, success stories in this sector. But, from my point of view, I have been in the private sector in Agriculture in Sri Lanka for the last 12 years, and then another 6-7 years in the government sector. My feeling is, that you know, we have not made a concerted effort to provide opportunities for agricultural investment in this country, and I think, what Dr. Samarappuli missed is this, that you know, the availability of proper technology. This is one of the key factors, although he mentioned about the planting materials. That is also one of the most important and key factors which is prohibiting and which is decreasing the investment in Sri Lanka. But, more than that, I think the agricultural technology - appropriate technology has not come into the country due to some reason or other. I am not going to elaborate on that because of the time constraint. But, basically, what I have noticed is that, compared to the other countries in the region, as well as in the developed countries, and the developing countries, the technology adopted with agriculture sector in Sri Lanka is totally outdated. And in some cases, I think you know, we have seen in certain instances, where the totally outdated technologies have been used, even in the BOI approved companies. I have been to several of them, and some of those farms are adopting technologies which are so primitive, and you know compared to the adjoining farmers fields. The BOI approved companies are using totally outdated technology. So, this is one of the biggest constraints in this country. I think, if we don't introduce proper technology - appropriate technology with the growth in the world, I think we are lagging behind.

The Cost of production of all the agricultural crops - agricultural produce is very high, compared to the other countries in the region. One of the key reasons for this, is the non-availability of proper planting materials. And this has to be addressed as a very crucial constraint for development of agriculture in Sri Lanka.

I think, Dr. Samarappuli very clearly mentioned that the bottlenecks and the constraints the people will have to go through. I have brought in investors to this country, and who are asking for 3-4 hundred hectares or maybe thousand hectares. And I am sorry to say that we were unable to find this kind of land. Of course, land is available. It doesn't mean that land is not available, lands are available. But, the so-called red tapes and everything are ineffective to attract investors. I don't think any investor will come and stay 6 months to get 200 hectares of land in Sri Lanka. So, this is one of the major problems.

Further, I would like to mentioned some of specific comments and observations in constraints and opportunities in private sector investment in Sri Lanka, which are as follows:

- The Government intervention in providing an environment conducive to attract investments in agriculture is essential. Governments of many countries, which have entered the competitive global agricultural commodity markets have facilitated incentive schemes/packages, export rebates, infra-structural facilities etc. until the private sector was well established to look after their own affairs;
- Infusion of advance technologies to the field of agriculture in Sri Lanka is at a very low ebb. This has brought about a situation, where the productivity is so low and hence the Cost of Production (COP) is higher than in any other country in the region;

- Selection process of projects to grant BOI approval has not been effective. There are several cases of BOI approved companies, who are engaged in traditional agriculture, which sometimes utilises lower standard technology than the ordinary farmers in those areas; and
- In many occasions, committed amounts are not invested in BOI approved projects.

Reasons for Investing in Sri Lanka's Agriculture Sector

- Although the paper attempts to show a beautiful picture as to why investors should invest their capital in agriculture sector in Sri Lanka, very few have kept trust and faith in the country due to issues in political and economic stability.
- Major policy changes are required if we are to attract FDI's in agriculture sector to the country. It is observed that there are more constraints for investments than attractions.

Major Constraints

- Non-availability of suitable high quality planting materials is one of the most serious problems. This cannot be overcome, unless and until the authorities looked at commercial agriculture instead of subsistence agriculture. Although the 1924 Plant Protection Act was revised in 1999, corresponding regulations are yet to be published in the gazette. Therefore, it is of no use and even these regulations do not permit an environment conducive for investors.
- It is well known that Sri Lanka's landholdings do not permit commercial scale agriculture due to their small size. However, even the available large land blocks are either not accessible to investors due to bureaucratic barriers or they are to be divided into ½ hectare blocks and given away to a number of voters to gain political advantages, thus eliminating any possibility of establishment of commercially oriented agricultural ventures in such lands. Strict regulations should be brought up against fragmentising of large blocks of agricultural properties.
- State agencies delivering extension services lack knowledge in modern agriculture.
- If the agriculture sector in Sri Lanka to be competitive with the rest of Asia or rest of the world, Government intervention at the initial stage to give a kick-start to this sector is essential. This has been the key to success in many developed countries. Agriculture should be treated as an industry not as a subsistence level backyard operation.
- Export subsidies should be made available to circumvent the exorbitantly high freight costs at the initial stages. No airline would like to send special carriers to take a meagre volume. But the volumes will not increase unless there is sufficient cargo space. This is a vicious circle and therefore, the Government should intervene at the initial stage.

S.N. Samarasinghe

- **Private Sector Investment in Agriculture:**

I would like to mention 3 examples for private sector investment in market integration in the Sri Lankan agriculture, which are as follows:

- a). **MA's Tropical Products**- Based in Dambulla, close to the raw material is an example of an entrepreneur taking advantage of his proximity to the main raw material.
- b). **H.J.S. Condiments** - A Haley's subsidiary exporting value added gerkins, is an example of a company which has a mission to add value to locally produced agricultural products.

c). **Prema Abeyasundere** - A land owner with a coconut estate in Kurunagala who breeds tropical fish for the export market this is an example of a land owner who has utilized his spare land for a more valuable product.

- **Government Policy and Intervention**

a). Vietnam fought 2 major wars with France and the United States. The war ended in 1975 and it had a devastating impact on agriculture. Over 2.2 million hectares of forest and farmland was lost due to bombing and the use of de-foliants.

The government stated a policy of reforestation and increasing agricultural output. The result is that in 27 years the country is one of the top five exporters of rice, coffee and pepper.

b). The European Union was established in 1957 by the Treaty of Rome. One of the key pieces of legislation was the Common Agricultural Policy whose whole aim was to protect the farmers in the EU from cheaper imports of food stuffs. Even though the E.U countries are now industrialized the protection given to the farmers exist to this day.

c). In Sri Lanka in 1994 the Government reduced the price of bread (a direct substitute to rice) to Rs.3.50, this brought the price of rice to below Rs.12/Kg, at a time when the country had a surplus of rice.

d). In Sri Lanka in 1996 the Finance Ministry removed the existing 35% duty on imported chillies with result imported chillies from India flooded the market at Rs.50/Kg. The C.W.E. had purchased the entire crop of chillies in the second half of 1996 at Rs.105/Kg. The loss to the C.W.E. was Rs.350 million.

- **Food Security**

Manioc and sweet potato saved Sri Lanka from starvation during the second world war. This was a product which was consumed by the rural population but has now been replaced by bread. This has prevented the farmer or the private sector from investing in these products.

The private sector is willing to invest in Sri Lankan agriculture whether it is an entrepreneur, corporate entity or a landowner. The success of agriculture as a export earner and a provider of food security is very dependant on the policies of the Government with regard to promoting locally produced food stuffs and the level of protection afforded to the producer with appropriate tariffs.

As Wicky mentioned, it was a very good presentation, and the BOI has given everything possible to invest - has given an attractive investment environment in this country. As I mentioned earlier, an investor should be looked as an entrepreneur. If you consider investments on agriculture, everybody knows MA's products, which has a good brand name in the super market chain in Colombo and other Middle Eastern Markets on spice-based products. The processing complex of MA's was situated in a particular area of Dambulla, which is closer to high potential spice growing districts. Also company like Hayleys, has exported value-added gherkins to Japan. Therefore, state should formulate specific incentive packages with a 'export drive' to expand export-led growth with attracting global capital and technologies with private sector interventions.

Other Discussions

Chairman: I fully agree with what Dr. Samarappuli, Wicky and Samarasinghe about their views on constraints and opportunities in private sector investments in agriculture. Basically, there are two aspects; one is lack of planting material and the other is lack of good varieties. Though, a lot of planting materials are produced, low quality and low quantity are the main issues. So, there must be a proper breeding programme with new technologies to produce high quality planting materials. Now, a very good example is cashew, which has a lot of potential for expansion. But then, the extent under cashew is only about 20 thousand hectares. The total demand for cashew is around 6 hundred thousand metric tons, in the world. So, there is no problem in selling cashew, only thing is the quality. Now, we have not produced good quality cashew varieties.

Then the other point is, some of these varieties specially chillies are affected by some virus diseases. I think, there is not enough effective plant varieties. So, these are some of the limitations, which have to be addressed by the Department of Agriculture. I think the BOI and the EDB should collaborate with them. BOI is trying to get people invested, get them interested in investing in agriculture. But then, there are other related factors as you said, people want to invest, if they don't have enough planting materials. So, BOI should act as an accelerator in getting these other organizations – BOI. The Export Development Board should act as an accelerator in getting these other activities promoted.

Little Space for Maneuvering: Agrarian Structure, Land Tenure Regimes and Agrarian Development in Sri Lanka

*Dhanawardana Gamage**

Introduction

The rural population in Sri Lanka has grown by over 250 percent within a century resulting in increased pressure on land with an ever-dwindling land-person ratio. Thus, with nearly 72 percent the population located in the rural areas and an inconsequential growth in the secondary and tertiary sectors in the rural economy, agricultural sector appears to have held out against the increasing population pressure. For instance, by employing about 40 percent of the labour force, it contributes 20 percent to the gross domestic product (GDP). Burgeoning population pressure on land has meant compelling the rural inhabitants that to depend on agriculture to adopt complex tenure systems that narrow the possibilities for diversification of production and productivity improvements.

Agriculture is a complex and multi-dimensional enterprise. Its development depends on various factors like agro-climatic conditions, technology, access to inputs, system of land tenure and socio-economic conditions of the farmers. In the past, the government has implemented various policies and programs to boost the smallholder farming sector development. Such interventions included

1. Opening up new lands for irrigated agriculture
2. Introduction of productivity improving technologies that include high yielding varieties, modern agricultural implements and farm machinery.
3. Assistance for crop diversification, increasing cropping intensity and improved pest management systems
4. Improving input supply systems and marketing facilities for agricultural produces.

In spite of the fact that in the past the government has tried out a range of interventions, both in terms of intensive and extensive margins of production, the existing experience suggests that the achievement of such efforts have been far from satisfactory. For instance, both the productivity and profitability of smallholder-farming sector have been low while poverty; unemployment and underemployment have become the critical problems in the rural cum agrarian sector. This poses problems for sustainability of smallholder farming systems, especially under free trade policies that encourage the importation of cheap food products. On the other hand, smallholder-farming sector has not been able to reap the opportunities provided in the globalisation process.

Pervasive impact of on-going globalisation process on smallholder agriculture production and marketing necessitate having a closer look at the existing agrarian structure and look for opportunities for improvements. For instance, the 1982 Census of Agriculture being the most recent census of agriculture has estimated that over 64 percent of the land operators cultivated

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less than 0.8 hectares of land. Though a great majority of them is operating land as owner farmers, there is a significant incidence of tenant farming and various forms of share cropping arrangements. Thus, it appears that existing agrarian structure and land tenure regimes explains to a significant extent the existing impasse in the smallholdings sector to a significant extent. Yet, the agricultural policies in the country seem to focus mainly on import protection and provision of subsidies to the sector.

This paper attempts to situate the agrarian problem in the country in its agrarian structure and existing land tenure regimes. In other words, an attempt is made in this paper to examine the possible relation the agrarian problems in the country has with that of the prevailing agrarian structure and land tenure regimes. The paper starts with examining the emerging agrarian scenario and attempts to relate it to rural cum agrarian poverty. In the next section, prevalent agrarian structure and land tenure systems are briefly viewed to comprehend the possible relation these have with conditions in the smallholding sector. Fourth section in this paper examines the land policies implemented by the Sri Lankan government to address the land issues in the rural sector and its impacts. Section five is devoted for examining major policy alternatives with the implications they entail for smallholder sector development.

Emerging Scenario in the Smallholding Sector and Agrarian Poverty

Sri Lanka adopts a two-fold classification of the agricultural sector as plantation and non-plantation or smallholder farming sector. Operational holdings less than 50 acres in extent (25 acres in the case of paddy) are defined to be the smallholding sector. In spite of the definition, the great majority of farmers in the smallholding sector operate uneconomic holdings.

Within the smallholding sector, there are many farming systems or sub-sectors. The most predominant farming system is paddy farming under irrigated conditions using water stored in major or minor tanks. Irrigated paddy covers about 730,000 ha of the cultivated extent. Paddy is also cultivated under non-irrigated conditions depending on rainwater. The latter practice is limited to major rainy season and only a small area are cultivated in this manner. Other food crops are also cultivated on about ... ha mainly under rainfed conditions. Similarly, tea, rubber and coconuts are also cultivated as smallholdings and it has been revealed that productivity on tea smallholdings are higher than on plantation estates. Other sub-sectors considered as small farming include home gardening, market gardening of vegetables and small-scale animal husbandry farming.

Some of the attributes of the emerging scenario in the smallholdings sector can be listed as follows:

1. Agricultural productivity is stagnant if not in decline.
2. Productivity growth in the paddy sector has declined after the 1980s, though there has been a growth in productivity in the latter part of 1990s
3. Farm incomes in real terms are declining
4. Abandonment of agricultural land is on the increase
5. The area cultivated with other food crops (OFCs) continues to decline.
6. Returns to land and management fluctuate widely between seasons, different crops and agro-ecological zones
7. The percentage of the labour force participating in agriculture is declining though the absolute numbers are increasing.

According to a recent World Bank study (1996), growth in the nonplantation sector of agriculture in Sri Lanka remains stagnant.¹ This study suggests that the primary source of growth in this

¹ This report is based on the output of two workshops in Sri Lanka, four background papers written by local consultants and the findings of a mission to Sri Lanka in November-December 1994.

sector in the last two decades has been in the other food crops (OFCs) sub sector. According to the report, OFC output has been growing in intensity, as the total area under these crops has not grown. Similarly, the World Bank study also postulates that a significant proportion of farm family income comes from non-farm sources. This implies that for most of the small farmers the income generated from farming is insufficient to maintain their lives.

The World Bank study in 1996 highlights a number of important features of the sector.

1. Despite its low returns per acre relative to OFCs and government support for more diversified farmland use, low-valued paddy remains the dominant crop cultivated by the farmers. Little explanation for this phenomenon is provided by farm input and output markets and technology transfer. Similarly, price and trade policies, and rural credit markets are also not found responsible.
2. Land and labour markets are seen as major determinants of farmers' behaviour.
3. That the access to the off-farm market was far more important than land size operated for creating equity in income-earning opportunities.

On the other hand, many other factors influence the present situation of the smallholdings sector.² Some of these factors are listed below.

1. Size of land holdings operated by the farmers.
2. Land tenure
3. Agro-physical context of farming or local ecosystems in which farming is undertaken
4. Availability of irrigation water
5. Input prices
6. Access to inputs and their proper use
7. Government policies influencing technology adoption
8. Land productivity.
9. Farm gate prices
10. Government's food imports policy
11. Rural-urban terms of trade

Agrarian Poverty

It appears that a major problem emanating from the existing situation in the smallholder sector is low incomes associated with farming or agrarian poverty.

The available data indicate that about a fifth of the Sri Lankan population lives below poverty line³ while rural people accounts for about 80 percent of the poor. Existing information indicate that a significant proportion of the rural poor are indeed agrarian poor. For example, Edirisinghe (1990:16) noted that,

"The occupational category with the largest share in the total poverty groups, viz. agricultural and animal husbandry workers, consist of labourers who work in various crops and livestock farms as well as those who work as farm machinery operators. About 38% percent of these households in which those workers are the main income earners are in poverty and constitute 18 percent of all households"

Similarly, referring to poverty during the 1985-1990 period, Datt and Gunewardena (1997) observes:

"For the poor agriculture accounts for about 47 percent for those employed; the share of agriculture is around 44 percent for the ultra poor, and around 42 percent for the non-poor".

² See for example, Ranaweera, N.F.C 1998; Nakamura H.P etc 1997)

³ About 22% of Sri Lankans were poor between 1999/91 and 1995/96. According to estimates derived from the analysis of 1996/97 Consumer Finance Survey data, 19% of the population was in poverty.

Increasing evidence has been presented in the recent past also that a significant proportion of the rural poor in Sri Lanka in fact is agrarian poor. For instance, an Asian Development Bank (2000) study suggests that about 42 percent of the poor are small farmers. Thus, it is safe to assume that agrarian poverty in Sri Lanka explains to a significant extent the rural poverty. Therefore, in accordance with the objective of this paper, land policies in Sri Lanka will be examined with a view to understand the possible relationship between agrarian structure, land tenure and agrarian poverty and implications these have for agrarian policies.

Major Features of Agrarian Structure and Related Issues

The agrarian structure is viewed in the following section to identify structural impediments to the development of the smallholdings sector in the country. However, it should be noted that this task is greatly limited by lack of data showing recent trends. Therefore, it is necessary to draw data from the 1982 Agricultural Census to understand the agrarian situation in the country.

To understand the issues related to the agrarian structure in the country, one has to start by examining the pressure of burgeoning population on land. At present Sri Lanka has a population of 19.3 million persons. In terms of the population density, Sri Lanka is one of the most densely populated countries in South East Asia. For instance, in 1998 the population density in the country was 291 persons per square kilometer.

Burgeoning population has meant the ponderous pressure brought on land. For instance, from 1979-81 to 1995-97, arable land per person dwindled from 0.06 to 0.05. This was in spite of the fact that irrigated land percent of cropland was increased from 28.3 to 30.7 (World Bank 2000).⁴ Besides the high density, uneven distribution of population is a major factor affecting the land uses in Sri Lanka. Wet zone region constitutes about one third of the land area while it contains about two thirds of the population of the country. Therefore, most complex systems of tenure arrangements on freehold lands also prevail in this region.

Land Ownership and the Size of Land Operated in the Smallholding Sector

Another important feature of the land tenure structure and tenure relations in Sri Lanka is the State ownership of a large proportion of land in the country. Land resources under the State custody include forests and forest reserves, land reserved for infrastructure development, lands that have been granted on long leases to private persons and firms for cultivation, and the agricultural properties taken over by the State under the Land Reform Laws of 1972 and 1975. Currently, the State owns and controls, directly or indirectly, about 84 percent of the total landmass in the country and about 63 percent of the agricultural land. Patterns of land ownership between the State and the private sector are in Table 10.1.

⁴ Arable land as a percent of land area in the country was 13.4 in 1997 (World Bank 2000).

Table 10.1: Land Distribution Between the State and the Private Sector in Sri Lanka

<i>Category</i>	<i>Area (million/ha)</i>	<i>% Share</i>
Total Area	6.57	100
State Owned Land	5.50	84
Of which		
Large inland waters	1.20	18
Forests and forest reserves	2.18	33
Agricultural land	1.72	27
of which		
Leases under LDO	0.82	13
Under Land Reform Commission	0.41	6
Tree crops plantations (tea, rubber, coconuts)	0.25	4
Under Mahaweli Project	0.14	2
Under Mahaweli Project	0.10	2
Swarnabhoomi grants	0.40	2
Other		
Privately Owned Land	1.07	16
Memo Item		
Urban Areas	0.21	3
of which privately owned	0.17	2.5

Source: Agricultural Census 1982

Land granted by the State under various forms of "protected tenure" results in restrictions on their use and transfer. For instance, provisions made in the Land Development Ordinance (LDO) Act of 1935 govern the use, access, succession and leases of such land grants. These lands cannot be accepted as collateral for mortgage except by Co-operative Societies, while the seizure or foreclosure for debt repayment is disallowed under the above law. Lands granted under *Swarnabhoomi* (or recently *Jayabhoomi*) are provided with permanent titles but transfers require prior permission and title registration in a bid to prevent fragmentation and subdivision. Therefore, neither LDO leases, nor *Swarnabhoomi* or *Jayabhoomi* land grants are accepted as collateral by the commercial banks. Recently the Government has taken steps to grant such lands the free holding status, but the transferring process has been very slow.

A glimpse of the structure of the smallholder-farming sector can be obtained from the 1982 Agricultural Census. The number of land operators by type of land operated is in Table 10.2.

Table 10.2: Number of Operators and Area in Acres by the Type of Land Owned in 1982

<i>Category</i>	<i>Number</i>	<i>%</i>	<i>Area in acres</i>	<i>%</i>
Not owning any land	200,740	11.1	0	0.0
Owning homegardens only	694,760	38.5	416,650	14.2
Owning homegardens and other land	561,130	31.1	1,625,450	55.3
Owning other land only	346,400	19.2	899,410	30.6
Unspecified	310	0.0	-	-
TOTAL	1,803,340	100	2,941,510	100.0

Source: Agricultural Census 1982

Data in the Table 10.2 shows that 11 percent of farm operators are landless. Another 38.5 percent own homegardens only. These own around 14 percent of the total land area. Thus, nearly half of the smallholder agricultural population in the country is not in control of enough land to enable them to produce a marketable surplus.

The land size operated and land size distributions are among the other major structural factors affecting agricultural productivity. However, the smallholdings sector in Sri Lanka is the characterized by farmers operating non-economic and micro-holdings. Only a few of the farmers in this sector have sufficient flexibility to take advantage of liberalization of the economy for intensification and diversification of production. Distribution of operators owning land and area owned by size is classified in Table 10.3.

Table 10.3: Distribution of Operators Owning Land by Size Class and Area Owned

<i>Category</i>	<i>Number</i>	<i>%</i>	<i>Area owned</i>	<i>%</i>	<i>Average size</i>
Less than 1 acre	686,460	42.8	277,030	9.4	0.40
1 to < 2 acres	336,880	21.0	400,530	13.6	1.19
2 to < 4 acres	354,690	22.1	866,180	29.4	2.44
4 < 7 acres	156,270	9.8	701,670	23.9	4.49
7 < 10 acres	36,400	2.3	260,940	8.9	7.17
10 acres and above	31,900	2.0	435,160	14.8	13.64
Total	1,602,600	100.0	2,941,510	100.0	1.84

Source: Agricultural Census 1982.

Data in Table 10.3 shows that 63 percent of the holdings are under 2 acres (0.8 ha). It should be noted that seeking a subsistence out of 2 acres of land by the farmers in Sri Lanka depends on a number of factors like cropping systems, technology adopted and availability of assured irrigation water. On the other hand, there is evidence to suggest that the smaller the land size, the stronger is the reluctance to adopt new technologies. Under growing demand for land, those fortunate to have inherited land have in turn often found themselves compelled to sub-divide their property in order to guarantee that all beneficiaries to the specific holding have equal access to it. As regards relatively large farm holdings with the potential for market-oriented agriculture, farms of 7 acres or more represent fewer than 5 percent of the holdings. However, these large holdings account for 23.7 percent of the land area (700,000 acres) showing a skewed land distribution within the smallholdings sector. This concentration might have declined over the year, to accommodate more persons on land due to population pressure and lack of growth in other avenues of employment in the rural areas.

Land Tenure

Some 17 percent of the land located within the smallholding sector in Sri Lanka are operated under indirect tenure arrangements such as share cropping or renting (see, Table 10.4). Of the total paddy area, a significant proportion is cultivated under various share cropping and tenure arrangements. Population pressure on land, especially in the wet-zone areas has resulted in fragmentation of existing lands and complex share cropping arrangements. As World Bank (1996:32) noted that:

"Wet zone land being largely private owned land suffers from far more fragmentation and greater title disputes."

Table 10.4: Number of Operational Holdings and Area by Land Category and Ownership.

<i>Category</i>	<i>Number</i>	<i>Area in Acres</i>	<i>% area</i>	<i>Average Area</i>
Homegardens	1,333,070	882,720	25.3	0.66
Other highlands owned by operators	621,180	1,133,560	32.5	1.82
Other highlands owned by others	155,730	282,600	8.1	1.81
Paddy land owned by operators	534,130	873,520	25.0	1.64
Paddy lands owned by others	265,150	319,010	9.1	1.20
Unspecified	5,290	1,750	0.1	0.33
Total	2,914,550	3,493,160	100.0	1.20

Source: Census of Agriculture 1982

Cultivation of land on "*ande*" or ("share cropping") is a strategy adopted by the rural people in Sri Lanka to access land, for cultivation. *Ande* cultivation is predominant in the paddy sector. Tenant farming in Sri Lanka appears to take place in a closely knit environment in which the tenant is a close "relative" of the landlord, or a friend (Leach, 1961:267; Yalman, 1967:39-46). Rent, however has been the major means of extracting surplus from the tenant farmer. Shares apportioned to the tenant vary from 25 to 75 percent of the crop (Obeysekera, 1967:214-16).

Plot rotation (*Kattimaru*) and operator rotation (*Thattumaru*) are two of the institutional arrangements adopted by the rural inhabitants to guarantee access to scarce land. The operator rotation system attempts to guarantee that all heirs to a specific plot gain access to it by rotation in cultivation. One may get one's turn in every few years (Thiesenhusen, 1991). In extreme situations, the waiting period for his/her turn could be long as 11 years. Under the operator rotation system, several co-owners cultivate a number of land parcels, rotating them amongst themselves so that each has equal access to all the plots. Both systems are useful for preventing further fragmentation of land in the process of burgeoning growth of population.

Government Policies for Development of the Smallholdings sector

Land policy

Under the LDO of 1935, the Government has granted a substantial area of land for cultivation. As Madduma Bandara (1989:72) observed, the largest national investment in Sri Lanka since independence was on the development of Sri Lanka's land and water resources and related land settlement schemes. Land distributed under different schemes are shown in Table 10.5.

Dry-zone resettlement or the dry-zone colonization programme is most prominent among the land alienation programme of the Government. Starting from mid 1930s, the programme continued to mid 1980s along with the implementation of the Accelerated Mahaweli Development Program (AMDP). The dry-zone colonization programme had the following objectives:

- (a) To transfer excess population from the wet-zone to the dry-zone
- (b) To increase agricultural production
- (c) To solve growing rural unemployment in the wet-zone
- (d) To preserve peasant farmers as a class.
- (e) To establish new settlements as dynamic growth centers

In the first stage, most landless families under the dry-zone settlement programme received five acres of paddy land and two acres of highland. By the time, the AMDP began a norm of two acres of paddy and half an acre of upland per family had been established. With the completion of the Mahaweli programme, 300,000 ha had been provided with irrigation facilities under the major land settlement schemes with over 211,285 landless families settled. As Wanigaratne (1995:1) suggests, the total population accommodated in major settlement schemes, including the second and the third generation should be around 1.8 million persons.

Table 10.5. Extent of Land Distributed by Government Between 1935 and 1985

<i>Type of Scheme</i>	<i>Hectares</i>	<i>Acres</i>
Dry zone colonization schemes	175,941.31	434,751
Village expansion schemes	357,238.76	882,737
Highland settlement schemes	13,564.95	33,519
Youth settlement schemes	7,963.98	19,679
Regularization of encroachments	205,762.03	508,438
Middle class allotments	55,018.62	135,951
Land Grants (special provisions)	9,979.77	24,660
Rainfed farming settlement schemes	5,363	13,252
Total	830,832.43	2,052,987

Source: Compiled by author using various sources.

In evaluating the dry-zone land settlement policy, it appears that Government use of a large extent of land and financial resources has been instrumental in keeping pace with increasing population pressures on land. The dry zone land settlements in particular have been instrumental in curtailing pressure on wet-zone land. How the Government's land-grant schemes have been instrumental in maintaining a balance between the wet-zone and dry-zone population is shown in Table 10.6. Employment, both direct and indirect, on farm and off-farm, on irrigated land settlement schemes has been significant. In this sense, the land settlement schemes might have functioned to curtail rural unrest associated with landlessness and to increase rural quiescence and political stability. The policy was also instrumental in curtailing rural unplanned migration to urban areas in search of employment.

Table 10.6: Changes in the Proportion of Population in the Dry-zone and Wet-zone Regions

<i>Year</i>	<i>Wet Zone</i>	<i>Dry Zone</i>
1871	58.0%	42.0%
1946	66.3	33.7%
1971	60.5	39.5%
1981	57.25	42.75%
1993	57.25	42.75%

Source: Adapted from various sources by the author.

The rate of growth of paddy output on irrigated settlement projects has accelerated from 4.1 percent per year between 1970 and 1977, to 8.8 percent year between 1977 and 1982. These projects accounted for about 65 percent of the annual national growth in paddy production between 1974 to 1982. By mid 1990s, 45 percent of the domestic paddy production came from irrigated land settlements (Wanigaratne 1995:1).

On the other hand, there are many problems with the policy. In terms of solving rural poverty and sustained economic growth and social development in the rural areas, performance of policy was much to be desired. Increasing landlessness and unemployment among second and third generations of settlers in land-settlement schemes has become unavoidable. This is due to a lack of growth in the off farm sector within the schemes and slow growth in the nonagricultural sector in the economy. Off farm sector trade has dominated development within the irrigated schemes. Surplus generated within the schemes are transferred substantially to urban areas through commercial banking systems resulting in draining of capital that could have been reinvested locally (Wanigaratne, 1995).

Village Expansion Schemes

The Village Expansion Scheme (VES) is the other major programme established by the Government to relieve landlessness in the wet zone areas under the Land Development Ordinance of 1935. The majority of allotments granted under the VES comprise existing marginal land in the localities in which the settlers originate. Certain lands distributed in this manner have been acquired under the provision of Land Acquisition Act No 9 of 1950. By 1970, more than a quarter of all Sri Lankan householders resided on plots distributed under the VES (Moore and Perera, 1978:4). By 1985, the total land area granted under the VES was 357,238 hectares (or 882,737 acres).

Most allotments that have been granted under the VES are small and hardly constitute economically viable units for productive agriculture. Infrastructure where such schemes are located is generally poor. Therefore, most of the land alienated under the scheme are used for homegardens or housing. Due to the absence of economically viable units for agriculture, on farm employment opportunities in the VES are limited. Therefore, the settlers are often compelled to work as hired labour while others take to petty trade. Employment problems in these schemes are aggravated by the lack of off-farm work. Therefore, seasonal migration to irrigated land settlements in search of agricultural work opportunities is common among the settlers.

Regularisation of Encroachments

The tendency in Sri Lanka is for landless people to occupy, on their own account, land belonging to the State. The lands occupied in this manner include forest reserves and some 10,640 persons had encroached upon 178,741 acres by the end of 1977 (Peiris and Nilaweera, 1985). Moore (1993b: 334), reports that according to a survey conducted in 1978-1979, some 327,000 hectares were being illegally occupied by 605,000 persons or households. Almost one third of the encroached land was in eight dry-zone districts. According to the 1987 Land Commission Report (1987:X), the central province reported the highest rate of encroachments. This affirms the acuteness of the problem of landlessness in former Kandyan areas. In October 1989, the Government declared encroachments illegal, though little has been achieved in terms of the implementation of this decision.

Of all the land granted by the State to the landless, regularized encroachments account for a significant proportion. About 508,438 ha of the illegally settled lands by the people have been regularized in the 1980s by the Government. Most of the spontaneous settlers are landless people from the wet-zone. Surplus populations from irrigated land settlements also occupy state lands

adjacent to such schemes. This latter type of spontaneous settlers consists of various groups as outlined below.

1. Second and third generation settlers from irrigated settlements, who decide to settle on nearby Government reserves to access land and water for cultivation.
2. Those who have migrated to the irrigated areas temporarily for work and settle later.
3. Those that have migrated to the area for shifting cultivation and have decided to settle later.

Casual observations suggest that certain lands that have been transferred under the regularization schemes are being transformed from shifting cultivation to swidden forms of agriculture. Others are fairly neglected or underutilized. This situation results from a number of factors as summarized below.

1. In comparison to the beneficiaries of the irrigated land settlement schemes, spontaneous settlers lack infrastructure and irrigation water for cultivation.
2. Being the rural poor, the majority of such settlers lack the necessary capital for land development.
3. Lands occupied by them are marginal or small for efficient production.

Land Reform Policy

The motives behind land reforms are many. An appropriate reason for its introduction in 1972 in Sri Lanka has been attributed to the youth uprising under the Janatha Vimukthi Peramuna (People's Liberation Front) in 1971 (Sanadaratna, 1972:8). Other factors motivating land reforms in Sri Lanka include egalitarianism, employment creation, reducing pressure on the balance of payments, and increasing output by improving, intensifying, and diversifying existing land (Peiris and Nilaweera, 1985:31).

Estimates of the total area acquired under the two Acts vary. According to estimates prepared by Shanmugarathnam (1981), 987,368 acres, or an area equivalent to 24 percent of the total cultivated land in the country was vested with the State under the Land Reform law. Approximately 43 percent of this land were acquired under the Law of 1975. Of the land acquired under the Law of 1975, 53 percent belonged to foreign owners. Tea accounted for 42 percent of the agricultural land acquired by the State. Some 18 percent of the total area acquired under the land-reform law are considered to be undeveloped or abandoned land (Shanmugarathnam, 1980:69). There are a number of problems associated with land reform in Sri Lanka. According to Moore (1992:352), land reform ignored the existence of an agricultural proletariat or landless peasantry in the country. Of the total land acquired under land reform, only 135,00 acres, or less than 14 percent (mostly marginal land) was redistributed. Of the total area under tea, some 597,691 acres (63 %) was vested with the State agencies for management (Shanmugarathnam, 1980:69). One of the claims justifying this course of action was that the plantations were economically important to the country (Peiris and Nilaweera, 1985:32). Thus, the land reform in Sri Lanka has left the productive tea plantations intact. Recently the plantation estates that were acquired under the land reform laws have been handed over to the Private Sector for management.

Land Tenure Reforms

A general belief influencing tenure reform has been that high rent and tenure insecurities inhibit the application of improved land-management techniques and the adoption of new technologies. Such beliefs provided economic justification for tenure reform in the country. The Government

⁵ Another 20 % of lands are under rubber and 13 % are under coffee. Only 1.9 % of land so acquired was paddy land.

established two tenure reform programmes in 1953 and 1958. The 1953 reform has had little impact. The Paddy Lands Act of 1958 attempted to guarantee tenure security to the tenant cultivator and to limit the rent paid to the property owner to 25 percent of the yield. It also aimed at ensuring proper cultivation of all cultivable land.⁶

The ultimate outcome of this law is not very clear. Sri Lankan studies addressing the relationship between land tenure and productivity are few. However, the existing evidence does not show that land tenure as it prevailed before the introduction of the Paddy Lands Act of 1958 was detrimental to productivity (Wanigaratne, 1995). As Peiris (1976:50) noted,

.... "the data available on paddy cultivation in Sri Lanka sustains neither the assumption that high rents and insecurity of tenure are features universally inherent to unregulated share tenancy nor the assumption that they make unregulated share tenancy an intrinsically inefficient system of land tenure."

The Law of 1958 was enforced until 1963 in only a few of the districts. The lag in implementation in the rest of the districts meant that many property owners took steps to evict their tenants before they were forced to lower their rents (Herring, 1979:49). Almost 43,000 evictions were reported between 1958 and 1972 contributing to poverty among the landless (Peiris and Nilaweera, 1985). It has also been argued that provisions relating to tenant security in the 1958 Act was ineffective in certain areas (Pieris, 1976).

Considerations for Policies

The present distress in the smallholding sector exists in spite of a range of policies and programmes implemented by the Government after independence in 1948 to revive it. Major policies in the past included the significant expansion of the cultivated area, introduction of improved technology, free extension advice, guaranteed price schemes and Government subsidies for such inputs as fertilizer and credit. Therefore, it appears that the time is ripe for reconsideration of existing policies in the light of the globalization process.

Agrarian structure and land tenure relations in Sri Lanka could explain to a significant extent the problematic situation in the smallholder-farming sector. For example, the size of the operational holdings and complex tenure arrangements determines not only the level of incomes that can be generated from agriculture but also the land management practices adopted by the land operators. Similarly, the miniature holdings operated by the farmers apparently are associated with the subsistence outlook they have. Thus, instead of attempting to increase productivity by better application of technology or crop diversification, the farmers seem to maximize household income by engaging in non-farm economic activities. In other words, relatively high off-farm income reduces the need for subsistence agricultural producers to move out of agriculture. Income transfers from many different sources such as from Government subsidies, remittances from those employed abroad and the armed forces enable small farmers sticking to their land. Possibly, another factor influencing the farmer behaviour is the availability of wide range of production subsidies such as subsidized fertilizer and irrigation water (estimated at costing about 5 percent of the GDP). Apparently, these factors influence the casual attitude the farmers have for agriculture and yet remain as farmers.

Other factors also contribute to keep the smallholder land operators stick to land. Land tenure problems, for example constrain the sale of unproductive smallholdings so that the marginal farmers cannot exit agriculture. Most of the poor agricultural land operators have access to certain productive assets such as land and equipment and they use these to make a subsistence living. The skills of the poorer farmers are confined to land based activities and, therefore they

6 Some of the provisions granting protection to the tenants were reversed by the Agricultural Services Act of 1979 (Thiesenhusen, 1990:11).

do not have skills needed for formal sector employment. In other words, the poorer farmers lack skills in non-land-based activities, managerial capabilities and risk taking capacity for self-employment. Thus, a multitude of factors explains the relationship between rural poverty and smallholder land operators remaining in agriculture.

Besides the land tenure issues that constraints productivity, there are many other dimensions to the land related agrarian issues in Sri Lanka. First, there are areas with relatively dense population resulting in micro holdings yet with high agricultural land productivity, relatively established markets and high agricultural income. An illustrative example in this regard is market garden systems in the hill region. In such areas, the lack of adequate land for cultivation means poverty amongst the landless. Their poverty cannot be adequately tackled through agriculture or land-based interventions. On the other hand, in such areas economic diversification to provide the basis for a rich variety and intensity of non-farm activities/employment have been limited. These conditions apply in many parts of densely populated wet zone areas too. Thus, any intervention to relieve conditions in such areas should originate from non-agricultural pursuits.

A second set of agrarian/economic conditions in which widespread poverty occurs is in resource poor areas of dry zone. In such areas not only one season could be cultivated but also land productivity is low. On the other hand, needed production infrastructure such as roads and services are lacking in these areas. These areas of low production, low incomes, low diversification and poor communications also have low incidences of non-farm activities/employment. This is because the economic conditions for the generation and expansion of non-farm activities are largely lacking in such areas. Some of these conditions include adequate population densities, higher levels of agricultural production and incomes, strong enough production and consumption linkages to stimulate non-farm enterprises, and communications such as roads and transport. In addition, as the World Bank study in 1996 has pointed out, almost all the crops that are grown in Sri Lanka on a smallholder basis lack comparative advantage.

In terms of a broad policy framework in which present problems can be addressed, it appears that industrialization and urbanization are very important to relieve the grip the land operators have on miniature holdings for a meager living. Besides reducing the pressure on land, increased urbanization and industrialization could also help smallholder producers by increasing the demand for their products. In other words, if the share of the urban population in total is increasing and urban per capita incomes are on the rise, the demand for food can be sustained without a decline in farm prices.

As already noted, subsistence orientation by smallholder farmers in Sri Lanka can mainly be attributed to miniature land holdings on which they have to depend for making a living. Leasing out land results in economically viable holdings, especially in areas where commercial orientation of farming is increasing. This shows the potential for open land markets. However, selling privately held land is complicated due to ownership problems, lack of titles and prolonged procedures involving clearing titles. Land transactions have also become costly due to costs of surveying, cumbersome legal procedures involved and Government taxes. All these need policy makers' attention.

However, the State aided facilitation of land markets should be approached cautiously. This is mainly because that the industrial and service sectors in the country have not grown sufficiently thus far to absorb the surplus agricultural population. Therefore, in the short run more employment and income opportunities have to be created within the smallholdings sector itself to alleviate poverty. On the other hand, nature and causes of agrarian poverty dictate the need for land based poverty alleviation programmes. Thus, in the short run the Government may implement land market policies in a manner that facilitates the poor gaining land assets than loosing them. One way to do this is through a land bank system to help the poor to purchase land.

Another area of policy of option that is available is voluntary collectivization of smallholder farmers so that they can address issues with purchasing inputs and marketing outputs. Sri Lanka has little experience in farmer companies that handle crop production, purchase of inputs and marketing of the produces. However, the little experience available shows that certain benefits attached to economies of scale can be obtained by organizing farmer based or commercially oriented farmer companies. Establishing farmer companies can serve many purposes. These include purchasing of such inputs as seed and fertilizers in bulk, controlling production to reap the marketing advantages, increasing the bargaining power of farmers at the time of marketing and linking sales with wholesalers so that the market control by the middlemen is reduced.

Expansion in the cultivated area by the Government has been accompanied by increasing the number of families that depend on agriculture for a living rather than increasing the number of economically viable holdings available for production. Therefore, a functioning land market is very important to facilitate land consolidation for commercial agriculture. In this regard, the lands alienated under the land settlement schemes should be paid attention. These now are not available for sale due to restrictions imposed by the government on their sale. On the other hand, a system of hidden land arrangements has meant that the original land grant beneficiaries do not operate them. Available evidence suggests that about 55 percent of the agricultural lands operated by the smallholders are Government owned and affected by restricted transfer rights. However, even in areas where land tenure is not a barrier for sale, availability of land for sale is limited. Land is held as a secure asset or as a token of social prestige. Therefore, even if the lands are underutilized, people tend to stick to them. Thus, programmes designed to help marginal farmers using uneconomic holdings for production are critically important as are programmes designed for land markets to aid actual or potential commercial farmers.

Experience in Sri Lanka about contract farming or out-grower schemes to increase production and quality and to control price fluctuations at the time of the harvest has been limited. The major advantage of contract farming is that the farmer receives a payment for the product at a pre-determined price in terms of quality and quantity of the product. Experience with growing gherkins for exports under contract farming is little encouraging. In spite of much negative publicity attached to the experience with gherkin cultivation, there are a number of successful experiences that shows the prospects of contract farming. One is tobacco cultivation. Ceylon Tobacco Company used to produce its entire output in Sri Lanka on a smallholder basis under a comprehensive contract farming system. The company organized credit, seeds and extension services for the producers and purchased the output. Similarly, large companies produce chicken on an outgrown basis. In spite of the vast potential, contract farming is a method underutilized by many food processing and canning industries in Sri Lanka.

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Discussion

Discussants' Comments

I.R. Perera

Dr. Gamage's paper includes information on tenancy, land fragmentation, social institutional mechanisms related to agriculture, such as crop rotational systems, operator rotational systems, etc. I am not going to highlight any of the information presented in this paper, rather, I try to highlight some logical scenarios that was sequenced in the paper in conceptualising the issues discussed in the paper.

To me, there are three logical scenarios in the paper. One scenario is 'to understand poverty', and another is 'to understand farming in Sri Lanka'. And the third one, is 'to understand social and institutional mechanisms of farming'. In analysing poverty, the author presents three scenarios. He says, the majority of the rural community is poor. Then scenario two, the rural community is mainly composed of subsistent farmers. Then scenario three, therefore, he defines the poverty that we observe in the rural sector is agrarian poverty.

Now, the logical conclusion of this whole argument is to alleviate poverty, 'look at agriculture, do something for it', that's what he says. Now, then all the talks about another set of scenarios related to farming. But he says many of the profitable farming are priced, the crop and the land. When the price is given or when the farmer has no power to change it, it is decided by market mechanism or international trade.

Then the author presents some interesting information about farmland sizes. He says, 43% of the total farming population owns less than one acre. The average land size is 0.4 - less than half an acre - 43% of the total farming population. He says only 2% of the farming population owns more than 10 acres and their average landing own size is 13 acres - closer to the limit. Then he says 63% of the farming population owns less than 2 acres, and 17% of the farming population under some kind of tenancy arrangement. The author says, most of the lands that we are talking about were given by the government under the Land Development Ordinance and the lands were under the custody of the government. No one can sell that land and therefore, no commercial value for the land. Even if the land operator is an inefficient man, he is compelled to cultivate the land given. He is compelled by laws and regulations and simply be on the land, even if he doesn't like to be. Therefore, existing land regulations directly discourage the accumulation of lands, which is the supportive condition for commercial farming. But, encourage land fragmentation, which leads to agrarian poverty.

The politicians, the policy-makers of the past in this country have conceptualized our agricultural economy in a different perspective. They have visualised about prosperous farm households that depend on two or three acres of the land given by the government. They have visualized about self-sufficient farmers rather than commercial farmers. They have visualized about the non-competitive farmers rather than competitive farmers. They have visualized about an everlasting rice culture, rather than a culture of diversified crops. Nothing wrong with any of these visualisations or conceptualisations - all of them are correct, valid and meaningful for the past. But unfortunately, not for the present. The world is rapidly changing and we are compelled to be changed. Therefore, social and institutional arrangements that have been made previously, for domestic agriculture in this country, are to be re-examined for better future. The country may need to think about changing the prevailing institutional set-up for commercialisation, globalisation and on efficiency of farming.

Prof. T. Jogaratnam

I would like to make following comments and observations on land tenure and institutional and social constraints:

- ❖ The problems identified are: small, fragmented and non-viable holdings, and tenancy, which appears to be of regional significance, and many others not coming under the purview of this paper. The dominance of the state sector is highlighted.
- ❖ Past policies by way of land development and settlement of the dry zone, village expansion schemes, regularization of encroachments, land and land tenure reforms do not appear to have had much impact on agricultural production and productivity. Low incomes and poverty still remain major developmental issues.
- ❖ Solutions suggested include industrialisation and urbanization, liberalization of the land market and some form of joint farming in the nature of farmer companies.
- ❖ These are in line with the perceived wisdom as of now, and of a long-term nature. Shorter term palliatives too need attention.
- ❖ One must however safeguard against overgeneralizations, which cloud the issues affecting the smallholder sector. One such overgeneralization, not attributed to this paper, is that Sri Lanka does not possess comparative advantage in many of the field crops. There are many areas in which farming is profitable. Hopefully the macro picture presented here will set the stage for more indepth studies which will serve to identify problem areas and help target policies which, again hopefully, would help alleviate problems of low incomes and poverty.

Dr. Panabokke

Just to make a small clarification during Dr. Gamage's presentation. I think he made an incorrect statement which, I don't think we can agree upon. He said that, participation of the labour force is not a problem in Sri Lanka. I think it is a big problem in Sri Lanka, specially when you take rubber and coconut. We cannot find people to work in those areas now. People are getting away from rubber tapping, and maybe, due to some social aspects as well as the income. So, I think it is a very important point that he missed during his presentation.

Responses:

Dr. Gamage: Our people have various sources of out-farming incomes, which consists of major part of the household income of the smallholder farmers in this scenario. And also, we have welfare, also we have other transfers, and in such a way, also, we have, some people who are educated. Certain categories of jobs, like, rubber tapping, coconut plucking, and similar many

other jobs also affected. Even in the state sector we are going to have this problem. I think that's correct. I think as Mr. Ranasinghe said, we have to look in from a holistic comprehensive point of view where these things lead. I agree with him, and also this is the situation that have been created through imperfections in policies and also our system. Even if your son is 35 years, still consider him, as your son and young, and all that until he finds a job. So you keep that social kind of safety nets. So, these problems are there.

Other Discussions

Dr. Somaratne: I can add to what Dr Gamage said. I see the problem as the mobility of labour. Because, in the plantation sector, labour is scarce. But, in the non-plantation sector labour is abundant. So, the matter here is, the factor mobility or the labour mobility between non-plantation and plantation sectors. How far is it attractive for them to shift from non-plantation to plantation. As well as within the plantation, there are imperfections in the labour mobility due to political economy. So, I think that is the main cause for scarcity of labour within agriculture.

Dr. C.R. Panabokke: I thought, one of the main trust the government should have is, promoting more non-farm income. You know, with logically, what you said, we do not even have enough land. Three decades ago, there was enough land. Now, the land site is sinking, and I don't believe these land markets and all these World Bank recipies are going to work. I think the main trust is, promoting non-farm income.

Now, I have been studying these small tank cascades in the village settlement in the dry zone. Now that quality of living is quite high there. Lot of the income comes from the other sources such as armed services, government factories, middle-east income. If you take the aggregate income in the small tank cascade village, more than 50% comes from these non-farm activities, and there is no - you can't improve these small farming activities. So, I think I am strongly of view, that there should be some strategies and policies outlined for generating non-farm income for farming community.

Dr. Gamage: You know actually from my data. I was showing what kind of farmers. If you take census, people say, I am a farmer, but he might only operate his home garden, and then you might be a tenant farmer who gets only a portion of what you produce. Then, also you might cultivate a very small proportion of land, also you might cultivate paddy land in the wet zone - where you can't get a good crop. And also, sometimes this wet zone land could be boggy land - marshy land. You cannot cultivate anything else. But these people also were conscious of prestigious social status that farming have. They say that we are farmers. So actually, many of these people can be in the off-farm or non-farm sectors. So, when you are thinking of getting very high yields or something like by that type of farmers, this farming population is different. In terms of land tenure, types of land cultivated and type of resources they have - they differ. So, we cannot depend only on farm, because in terms of the social structure that they have to operate, but they are poor.

You take the whole wet zone rice culture. They are all part-time farmers. But you go to their houses and see their standards of living, they have enough off-farm employment opportunities. They are generating 90% of the paddy cultivation in the wet zone. Even in part time farming the return to labour day is so good. It is economically attractive for them to do that part time farming. But, in the wet zone there are enough opportunities.

I.R. Perera: I think everything is interrelated. We can't separate agriculture from non-farm activities. That is true. When we talk about non-farm sector, that is not agriculture, directly not agriculture. No one can argue that non-farm income should be decreased. everyone is supporting

them. But, it doesn't provide the proper grounding for maintaining inefficient farm plots - inefficient farming. So that is a separate issue.

Dr. Somaratane: Dr. Gamage, you mentioned various constraints about these land markets. So, my question is, 'what sort of policy directions can you suggest to overcome these issues - either at the micro or the macro level?

Dr. Gamage: We have land tenure system, that you own your parent's land and about 10 persons in the family. So, land fragmentation is severe. If you have a court case or something like that, it takes longer period to be settled. And another side, if you take Mahaweli, you cannot sell land. But, there is a hidden land tenure. That means, that is not the person who has got the land under the Mahaweli to operate it. That is the mudalali. So this problem is also there. So, what I thought in certain, what we have to do is, we have to let the people to have clear titles, I agree. Because that also could results in a lot of killings. I think we should go for this, providing clear land titles. Some discourage this, because if you provide legal titles, people will sell them.

I was very careful because, reading from all kind of sources you find it's a very complex situation. So you just can't say this is the right thing, and you should correct it like this. I think it is very difficult for me to say that, looking at the implications from all sides, its very difficult. But, if you are going to have land markets, there should be some institutional form where the poor people should be able to get land from landlords. Those are called land banks. The government can buy lands, and you know, but it doesn't happen in our kind of political culture. You know that you try to provide everybody a small piece of land. We have been giving lands, lot of lands, but we have given them some areas where there is no water where it is marginal or small estates.

Institutional Infrastructure Needs in Sri Lankan Agricultural Development

*C.R. Panabokke**

Mr. Chairman, Ladies and Gentlemen,

I selected today's talk on "Institutional Infrastructure" because we have lost sight of the fact that the agricultural development in any country is directly related to the structure of the institutions.

During the period of 1975-1985 the institutional infrastructure was well positioned and I was fortunate to be appointed as the Director of Agriculture from 1979 to 1983. Even though I accepted this position with reluctance, since the supporting institutions were well placed, it was possible to deliver the goods with least effort.

The first phase of agriculture was the green revolution and this was when the scientific community was of the view that counting on loans will enable them to generate the next level of production. During the second phase of the green revolution, between 1965-1970, the Minister of Agriculture was Mr. M.D. Banda who took a close look at the infrastructure with regard to agriculture. He believed that unless the supporting institutions are built up the full benefits of agricultural development cannot be derived. In addition, during this period we had a very strong upper echelon of bureaucracy, and intelligent, very well educated and motivated people who could think with clarity and objectivity and not allow their judgements to be clouded by ministerial dogmas.

In addition, during this period Dr. Rannan Weitz completed his thesis on the relationship between development and progression of Agriculture in a country in proportion to the strength of its supporting institutions. Dr. A. T. Mosher, who was in Sri Lanka under the agriculture development council, articulated on Dr. Weitz thesis and published a series of documents which specified the importance of the supporting institutions for the efficiency of agricultural operations.

The Agriculture Development Council vested this hypothesis in a few Asian countries and Mr. M.D. Banda allowed this hypothesis to be tested in our country and from that came the agriculture development proposals of 1969/1975. There was a key publication by ARTI during this period authored by Mr. Mahinda Silva and Dr. E.F.L. Abeyratne. This document, then gave prominence to research and extension and the initiative was accepted by successive governments because of its strength and logic. Prior to this, during the 1950's, extension was treated as a poor relative, but during this period it came up as a very definite science.

By mid 1975 with grants and assistance from USAID the key players; Farm Schools, In-service Training Institutions, Seed Suppliers and Services and Marketing and Credit; were set in place and the growth in agriculture was sustained and linkages between institutions were well established. Hence, during 1975 and 1985 the full effects of these institutions were derived and

* Note: The author is a Consultant, International Water Management Institute, Colombo.

even adaptive research and development, and field research were beginning. The strength was that Extension was headed by the people who were active in Research, so that they had the benefit of both the Cultures; Research and Extension.

This was a time in history where appropriate people came into place, and every thing fell into place and hence, Sri Lanka was held up as one of the best models. Of course we had a very dynamic Secretary of Agriculture, Mr. Ranjan Wijeratne who had a good grasp and understanding of the direction which agriculture should take. The three key players who made things fall into position were Messers Ranjan Wijeratne and Mahinda Silva, and Dr. Ernest Abeyratne. This was referred to as the Golden Period of Agriculture because a sound State Policy and Institutions with good leadership were in place.

In 1958, under the agricultural plan of Mr. Philip Gunawardena, there were very definite guidelines for the focus of the priority areas. In 1960 Dr. Gamani Corea produced a ten year plan which was the result of the fusion of minds of the key players, where a lot of discussions with the Agriculture sector and the Planning Ministry and the key people took place. In essence this was not a top down approach since it took into consideration the views of all the levels of involved individuals.

Unfortunately from 1985, there was a breakdown in the general administration and a decline in the integrity and effectiveness in National and Provincial Administration. Up to this period we had been focusing equally at the mid stream, down stream and the upstream.

From 1985 because of this administrative chaos, we concentrated more on upstream decision making, and completely ignored the other two levels and hence the result was institutional default.

We ignored the setting up of institutions, monitoring them, support systems and linkages. The District Agricultural Committee (DAC), which was one of the strongest institutions that had evolved at that time and the linkage between the DAC headed by the Government Agent and the Department of Agriculture (DOA), broke up completely. The structure and the operations with regard to the institutions that were set up collapsed.

After 1985, there was complete destabilization and some very inappropriate decisions were made. Suddenly the KVS's were made Grama Sevakas and Ministers concentrated decision making at the upper levels of the bureaucracy. Mao Tse Tung had said: "Administrators are in Heaven." Heaven is a place where everything is neatly organized and in proper order and we had a heavenly system. Since 1987, several ad-hoc attempts were made without any significance and the linkages between DOA and the DACs were seriously disrupted.

Because of the bureaucracy, the Ministry of Agriculture was not able to properly diagnose and analyse problems. Unless the top level bureaucrats/administrators diagnose and analyse the problems it is not possible to get agriculture going. 'The *Kattadiya* approach of scientific agriculture was adapted' Even though it is a harsh comment to make, may I add that I grew up with a system of working and I saw decline and deterioration and everyone was helpless and no one attempted to put it back in place.

I might have done some merit in my previous birth, to have been in the agriculture of a certain phase. Now when I see Globalisation and opportunities for agriculture which were presented by Dr. W.G. Somaratne, I feel that we have sailed on calm seas and now we are sailing on troubled and rough seas. So we are at present in a more difficult position. In considering the paper on Policy matters by Dr. Nihal Atapattu, we have to carefully examine the present status of each key supporting institution, diagnose their main constraints, strengths, their base and have a system of close monitoring, otherwise we won't be able to revitalize the institutions.

I would also like to comment that research needs be given more prominence. We have to have a Director of Research, which should be a key position in the Agriculture Department. We also have to know the nature of the linkages and probably look into the golden rule that Dr. Mahindapala set; that the term of the director should only be for so many years - a principle adopted by western scientists. In some institutions higher positions continue forever, I feel that something is radically wrong with the system. Anyway I have just given a few of my experiences. Finally I want to stress, that we are in a stage where we are concentrating mainly on the up stream and this in my opinion is the main problem. A good analogy I would like to state is the irrigation/water management. Unless we manage the main channel/distribution channel/field channels, all three together the tail end person will not get the water in his field. Similarly, here I think, we have to move away from the mode of concentrating exclusively on the upstream activities and neglecting the down and the mid stream.

Discussion

Discussants' Comments

Dr. M.C.N. Jayasuriya

Thank you Mr. Chairman, I am going to deviate from the type of parallel discussion that you all had in the last few sessions. I am not going to review Dr. Panabokke's presentation, but instead, I want to create as Dr. Panabokke said - as his last sentence - to create a discussion. The reason for this is two-fold. One is that I think, this kind of presentation needs detailed discussion. Secondly, from NASTEC's point of view, you have a little hidden agenda here. Because we want to get a lot of information from you, in relation to the infrastructure needs of the country - in relation to science and technology in infrastructure needs of the country. As you know that, the National Science and Technology Commission, who is the collaborator in this workshop, has a mandate to hold a biennial conference of all the scientists, all the key players. I would like to call this the national research system. We had our first meeting in August, 2000, where we produced - where we had a - under the theme of Science and Technology for National Development. There were 140 participants of all types - scientists, managers, bureaucrats, public sector, private sector participants, bankers, all kinds of people, University Lecturers, Vice Chancellors and so on. And we worked on six sub-teams: agriculture, industry, IT, health, education and environment. The papers were presented on these six sub-teams. They made recommendations, and as usual, we came up with a publication. But we went one step further. We produced what is called an 'Agenda'. We call it STAND - The Science and Technology Agenda for National Development. Now, for whatever reasons, is, even though the documents were handed over to the Ministry in May, 2001, which had to be presented to the 'Her Excellency, The President', according to the Act, it never went to her. I mean, this is politics and I don't want to go into details. We are trying very hard even to pass it on to the present government. We haven't had much success yet. But we will press hard. But at the meantime we have to go on without work. We have the next biennial conference coming up in September, this year, because it's a biennial conference and it's a mandated activity - you cant avoid it. Its by ACT. And the theme for this conference is Science and Technology in Infrastructure for National Development. That is why I said that we have hidden agenda here. We would like to discuss details or your views about science and technology and the infrastructure development in this country for promoting science and technology in the country.

So, to me Dr. Panabokke's presentation is an eye-opener. And in fact, is a good paper for discussion. He has brought in some ideas, and lets discuss these. Because we would like to have your information which we can take up at the next biennial conference.

Now, one little thing is that the term 'infrastructure' is very difficult to understand. For most of us, infrastructure means, buses, trains, roads and so on. But 'infrastructure' has much more meaning. One of the things that we did at the NASTEC is, to find out what does 'infrastructure' really mean. We did some surfing and searching and we came up with some ideas, and using these definitions that are found in the international scenario, we developed our own to apply to the Sri Lankan situation. We have a number of definitions here. But, one of the definitions says, it refers to the foundation or underlined framework of basic services, facilities and institutions upon which the growth and development of an area community or system depend. Then, there is a definition, something defined in 1999. It says, it represents the basic facilities in equipment and installations needed to provide the utility products and services crucial for the growth and functioning of an economy, and community of the organisations. The third definition says, it's a large-scale technological system, consisting of immovable physical facilities and delivering essential public or private services through the storage, conversion and or transportation of certain commodities. The infrastructure includes those parts and subsistence necessary for fulfilling the primary storage, transportation and so on and so forth. Now this comes from actually from an institution, which is called the 'Designing Management of Infrastructure Research Centre in the Netherlands'. Looking at all these pertinent definitions, we have come up with a simpler definition, which incorporates all these, which means: infrastructure refers to the basic framework of services, facilities and institutions, upon which the growth, functioning and development of a country depends. So, keeping that definition in mind, I would like to see that we discuss the need for infrastructure development in this country, specially keeping in mind the science and technology, etc.

I don't want to go to more details, but as we always say, Green Revolution should follow Gene-revolution. I think we have to define our infrastructure right, if we are to get into that system. As Dr. Panabokke said, our institutions have not been functioning properly for various reasons. Maybe infrastructure is one of the basic things that has been lacking, or that have been deteriorating for the past so many years. So, I will leave there for the time and perhaps, Dr. Mahindapala might have something more to add to my discussion here. So that we can come up with - Actually, I am coming up with your ideas, because, we, as a scientific community have to work together. We don't want to just come up and say, 'this is what we want'. Therefore, it is important that you come up with your ideas and then we will consider for future policy formulation.

Dr. Ranjith Mahindapala

I would like to throw up some further points on what Dr. Panabokke very correctly brought out which needs attention. I am somewhat disappointed that he has been saying things for the last decade or so, but they only confined themselves to the words only, there is no action. And, I do hope at least, this event today will bring out some positive contribution towards this.

One of the important things, which Dr. Panabokke brought out, was the failure or even lack of institutional linkages and institutional structure. Now, this is very evident. I don't know, this is the basic fundamental flaw in the system and resulting what it is today. Now, for example, there was a classic example yesterday in the adjoining building in the SLAS, where there was a question of oil palm cultivation was debated, whether we should have additional area on oil palm or whether rubber should be converted to oil palm. Dr. Samarappuli was there and some of you also may have been there. Now, that brings out very clearly our confusion and the problems. Oil palm has been there for a long time - 30 years. We are suddenly finding it necessary to expand the oil palm. Now, in institutions involved, instead of talking to themselves, have been debating publicly. It's a very simple question of two institutions, the Coconut Research and the Rubber Research, who are both under the Ministry of Plantation Industries. They should have discussed this two years ago and come to an agreement on what should be done. And what ought to be

done scientifically was very clearly and very visibly pointed out in presentation by Dr. Panabokke. Now, this kind of institutions - lack of institutional mechanisms is, I think the root cause of our problems.

Now, similarly, if you look at the 70s and the 80s - 70s particularly, where there was rapid expansion of agricultural extension and activities in the country to which Dr. Panabokke make reference to. We set up under the Dept. of Agriculture, for example, we set up little units of research and development (R&D) all over the country for a very specific purpose - to look at specific problems in those localities and to address the issues and to provide solutions. Now, these institutions are there even today - 30 years after they were set up. To me, they have outlived the purpose for which they have been built and there should be subjected to a very critical examination whether such institutions should continue to be there today. They were definitely very useful at the time they were built and when I was in the Council we made a detailed study. We pointed out that the government is wasting money on these institutions, which are no longer serving any useful purpose. But that report remains unseen. Now, this is the kind of problems that we have, and the need for institutional examinations and restructuring what Dr. Panabokke said. And such things are needed from time to time. Times change. There is 'Globalisation', as Dr. Somaratne's paper says, the times have changed from 70s to 80s to 90s. And we need to occasionally look at inwards, look at ourselves and see what needs to be done. Now, for example, the Council for Agricultural Research policy made external reviews on almost all the Crop Research Institutions in the Country including HARTI. I like you to reflect upon - I don't know how many of you have seen those reports. And how many of those recommendations have been seriously looked at. In some institutions there have been 100 different recommendations. They may be very small, they may be large, but nevertheless what remains to be done is to look at them again, the people in authority to ensure that either they are reviewed, implemented or looked at. I mean, there's no point in re-doing things unless there is a commitment by people in authority to see that the changes that are necessary are being done. Now these are the problems, which are effecting the agricultural development. Now, this also brings out an important issue of the governance - or rather the lack of governance in a number of institutions. Over the last 10-15 years, there has been an alarming decline in the standards of governance in the Ministries, the Departments and the Boards. And one good example is, this particular institution which allowed a political authority to be set up. That's not right. Because it was, at least at that point in time and it was an internationally well-known institution. A research institution will be able to provide guidance on agrarian matters and when you have systems of that nature. This is not only for HARTI, but it happens - it happened almost in most other institutions and it is still happening. Lack of governance, quality of governance and of course, complete disregard to ethics, scientific ethics, administrative ethics and so on. And this is very evident even today. Unfortunately but, I do hope something can be done to rectify matter.

One last comment on 'support services'. I think support services are very important. I think this was brought out either in the discussions, particularly when Dr. Samarappuli made his excellent presentation of. There are BOI projects. There are investors who are anxious and interested in investing, and definitely there are benefits to the country. Now, if the support services are not geared to accommodate what is needed to provide for that additionally, then of course, we are missing something. Mr. Wickramatunga, in his presentation made a remark that he was a member of the committee which looked at the Plant Quarantine Review, and the new Act which was passed in 1999 is yet not operational, because the regulations under that, had not been defined as yet. I am not sure whether it's the position, but if it is the case, I think the regulations are still being drafted. But what he didn't say was that the revision itself took six years. Now, that's far too long, and in fact the revision started when I was in the council because I had an interest in that, because the private sector made representations to the council on the needs of certain modifications to 1924 Act. But this is a 1981 revision of the Plant Quarantine Act. And similarly, we have the land use policy. Now, the land use policy has been in hibernation for the last 15 or 20 years. There was a draft in yesterday's paper. I think this kind of thing should not take that long. These are essential support services, say for example, determining land use,

which is what Dr. Samarappuli brought up, you cant get 200-300 hectares of land because, either land is being mis-used or there is no authority, there is no clear-cut guidelines on how to alienate lands. Now, these are support services which require examination and I think there has to be a concerted and committed effort by the government to provide these services if you need to develop agriculture, under which service is no longer what you require.

For example, just one point in relation to the capacity building which actually relates to this issue - the capacity building in the research sector undertaken under the Agriculture Research Project. Several hundred people were trained. I think people should look at where they are now and what are they doing. Are they doing what they were expected to do? Are they doing what they expected to do in the areas where they were expected to do? I mean that kind of key questions, and whether they are being looked after by the professional way. I am not using the word incentives, but people who are in difficult places should be looked after. CARP made a very strong representation to the government on 'how researchers in difficult areas should be looked at'. In fact, their investments - these are investments of the government, and you train a person for three years, spending nearly a million or million and a half, sending to Maha-Illuppallama, and then the government has a right. The government has obligation to look after such people. So, what I see in this is, for crop production, the demand-based approach, where we have tissue culture plants and water and fertilizer. We started the subsidy, with the Agricultural Development Authority for strengthening the delivery mechanisms. Anyhow, we are moving out. So, at this opportunity, I would like to state some institution must take over this business of commercialised demand-based supply of inputs/management of inputs, and a sector should be there to look into the small farmers. Because, at the moment, farmers are coming behind us, bringing money, the subsidy money, their equity money, asking for micro-irrigation units, small units we give for half an acre, because they have realised that they are coming out of the problem even in a small way through this system.

Session 2

Looking Ahead

Group Discussions

Two sessions of group discussions were held on 4th and 5th April 2002 to express views and responses from participants and resource persons on various existing problems and likely effects on policy devices applied in the Sri Lankan agriculture. Further, the suggestions were made by participants to promote the Sri Lankan agriculture as a sustainable sector in the economy with a futuristic view.

The following timely pertinent questions were posed to each group of participants. The questions raised were based on current issues in line with the dynamism in the international and national economic, agricultural and environmental policy environment and the long-term vision of the Sri Lankan agriculture.

The questions raised and major responses made by participants were as follows:

Session – One: 4th April, 2002

Question 1: What are the major challenges we have to face in agricultural development in Sri Lanka, considering the processes of globalization, regionalization and liberalization?

Responses: Major Challenges Identified:

- i. Increasing competitiveness with the international market by producing at a low cost (ie. comparative advantage and competitive advantage) with acceptable standards;
- ii. Maintaining a consistent agricultural policy environment with a long term vision for the agricultural sector;
- iii. Assuring profitability at farm level by improving efficiency in the whole process;
- iv. Operating small-scale farming sector by protecting interests of domestic producers;
- v. Advancing appropriate and new agro-technologies (eg. green houses, micro-irrigation etc.);
- vi. Acquiring and maintaining information flow on technology, market, and products;
- vii. Removing the imperfections in the land market for easy factor mobility;
- viii. Balancing efficiency and equity in the production process;
- ix. Avoiding politicization of agriculture;
- x. Meeting the international standards – sanitary and phyto-sanitary measures determined by each member country of WTO;
- xi. Acquiring certification of ISO and 'green' standards for future integration;
- xii. Facing dynamic international policy environment (ie. globalization and regionalization).

Question 2: What are the Opportunities you can identify in line with above processes?

Responses: Opportunities Suggested

- i. Possibilities for gaining international competitiveness through market expansion or integration;
- ii. Creating new markets for agro-based and 'green or organic' exportable products;
- iii. Acquiring and transferring new agro-technologies (ie. green houses; poly tunnels; and micro irrigation systems – drip and sprinkler irrigation) for targeted investors;
- iv. Possibilities of attracting investment on tradable agro-products;
- v. Availability of well educated and easily trainable work force;
- vi. Enormous environmental potential for investment in high-tech agriculture;
- vii. Possibility of promoting regionalization, Sri Lanka being the neutral player in the South Asian region;

Question 3: What policy measures and strategies you can propose to shift the subsistence level agriculture into commercial agriculture?

Responses: Policy Measures, Reforms and Strategies Suggested:

- i. Implementation of an 'Agricultural Export Drive - AED' for next five years, with a target of 5% sectoral growth per annum;
- ii. Avoiding policy failures through formulating a National Agricultural Policy (NAP) with a long term vision by changing farmer orientation to industry orientation within a dynamic international and national policy environment;
- iii. Establishing 'Export Promotion Villages' - EPVs and 'Agricultural Productivity Promotion Village'- APIVs programmes with the proposed strategies of 'Export Drive' and 'Regional Specialization' to cater to national and international niche markets;
- iv. Formulation of attractive incentive packages for improving targeted and export-oriented commercial farming sector [eg. Investment Tax Allowance (ITA); tax holidays, and targeted micro finance for integration – agro-based products, value addition, and organic products];
- v. Establishing an effective institutional mechanism for formulating incentive packages for targeted exports, identifying market potential through policy analysis and evaluating short, medium and long term likely impacts of policy devices used and proposed;
- vi. Creation of a liberalized land market for land consolidation and attracting investment for land based development and agricultural market integration through maintaining land mobility;
- vii. Designing trade policy reform programmes with a long term vision (eg. phasing out removal of tariff protection in the non-plantation agriculture) to gain sustainable development by reducing land degradation and agro-induced externalities and to strengthen competitiveness in the sector;
- viii. Building private-state partnerships for strengthening integration of agricultural research and development (R&D) and extension;
- ix. Introducing infrastructural development projects and programmes with private sector participation -- provision of marketing infrastructure and marketing information net works, improvement in packing and packaging, establishing cold storage facilities, and provision of refrigerated trucks to reduce post-harvest losses;
- x. Reforming R&D in changing supply driven research into demand driven targeted agricultural research with private sector participation;
- xi. Integration of R&D and extension to improve farming community (eg, green houses, drip and sprinkler irrigation, and input management (fertilizer and pesticides);
- xii. Planning for future needs of food to maintain food security and food safety;
- xiii. Implementation of customer oriented/ demand driven/ market oriented mechanisms for agro-based integration in agriculture.
- xiv. Availability and delivery of quality inputs should be increased jointly with private sector investments (eg. seeds/seedlings, planting materials, fertilizer, agro-chemicals).
- xv. Commencing contract farming or out grower schemes or buy-back systems 'in line with the export drive' through private sector exporters, processors, and investors;
- xvi. Strengthening the existing agricultural insurance scheme by covering the losses and damages in crops, livestock, and agro-machineries – tractors, sprayers, threshing machines etc..
- xvii. Strengthening private-state participation in improving knowledge, investment, extension, and insurance,
- xviii. Provision of facilities through state organizations for testing and certification and facilitating to get ISO and 'green' standards for export products;
- xix. Deregulation of custom and other administrative procedures in line with dynamic role of the state;
- xx. Removing the imperfections in the credit market to lead to gain a competitive market for micro-finances rather than micro-credit;
- xxi. Creation of a package for flexible quarantine certification to strengthen the competitiveness in agro-products trade;

- xxii. A paradigm shift (ie. export drive) should be initiated by changing domestic subsistence agriculture into commercial agriculture linking with domestic and international niche markets;
- xxiii. Strengthening abilities of planners to analyze the impact of proposed changes in dynamic policies relevant to agriculture;
- xxiv. Initiating targeted, demand-driven, advanced R&D and Extension programmes (eg. tissue culture, green houses, poly- tunnels and micro irrigation);

Session – Two: 5th April, 2002

Question 1: What are the constraints and Opportunities in private sector investment in agricultural development, and what policy reforms you would suggest to encourage private sector to invest in agriculture and market integration in Sri Lanka.

Responses: Constraints in Private Sector Investment

- i. Inconsistent agricultural policy framework for integration and attracting investment and technology into agriculture;
- ii. Paucity of conducive land policy for investment in agriculture;
- iii. Inefficient institutional mechanisms for implementation of agricultural policy devices at the micro level;
- iv. Provision of infrastructural facilities in targeted rural areas for attracting investments (ie. road networks, market centres, developed lands for integration, and facilities on information technology - telephone);
- v. Bureaucratic procedures are not investor friendly and flexible (eg. implementation of land policy, plant quarantine mechanisms; sanitary and phyto-sanitary procedures; licensing and procedural delays);
- vi. Provision of supporting services (ie. investment extension, market information – potential; technology; market; prices and market operations – packing, forwarding, and shipping) are poor for facilitating private sector investment;
- vii. Existing inflexible labour laws, regulations and procedures: (eg. too many holidays; inability to use collective bargaining power to determine the salary packages and fringe benefits);
- viii. Inadequate integration of demand driven R&D and extension;
- ix. Lack of entrepreneurial skills of farmers to build joint ventures or contract farming enterprises with private sector;

Responses: Opportunities in Private Sector Investment in Agricultural Development

- i. Investment opportunities can be promoted through Bi-lateral, multi-lateral, and pluri-lateral agreements with the global investors for targeted international trade and using environmental potential for agricultural integration;
- ii. Sri Lanka as a tropical country is situated within a strategic location in the Indian ocean for promotion of global investment into agriculture;
- iii. Ability to produce tropical food products with emerging demand through ‘consumerism’ – ‘organic or green products’, and bio-diversity products through ‘bio-prospecting’;
- iv. Designing incentive packages under BOI for attracting investments into agriculture – (eg. for provision of refrigerated trucks and cold storage facilities; demand driven R&D; technological advancements in green products, micro irrigation, and off-season products)
- v. Ability to use diverse agro-ecological conditions and tap the environmental potential in tropics;
- vi. Flexible labour-force for improvement of skills – training;
- vii. Availability of domestic and international financial sources (ie. domestic and international financial institutions, efficient leasing and financial services and venture capital through share market);

- viii. Accessibility of investment opportunities within private sector;
- ix. Possibilities of expansion in product integration – processing and value addition.

Question 2: What institutional and social constraints hampering the agricultural development and what measures you would suggest to overcome these problems

Responses: Institutional and Social Constraints

Institutional Constraints:

- i. Accountability of investments in state institutions on R&D, extension and implementation of agro-enterprise development projects;
- ii. Difficulties in maintaining good governance;
- iii. Deficiency in performance evaluation mechanisms of institutions and personnel involved;
- iv. Resistance to dynamic changes in policies, mechanisms, and programmes;
- v. Deregulation of labour acts and other regulations in line with needs and aspirations of present generations.
- vi. Lack of inter and intra institutional linkages.
- vii. Non targeted and supply-driven research are carrying out by the R&D institutions of the state;
- viii. Inadequate linkages and co-ordination among research institutes to contribute to the national agricultural development;
- ix. Deficiency in crop insurance and agricultural extension institutions;
- x. Inadequate dissemination of technology and information;
- xi. Existing bureaucracy/ red tapes negatively influence the sectoral growth;
- xii. Present administrative and financial regulations are outdated in considering the dynamic environment in management

Social Constraints:

- i. Difficulties in risk aversion in the process;
- ii. Farmers' negative attitudes to change and applying modern and improved technologies;
- iii. Lack of managerial skills to improve the management in small farm enterprises;
- iv. Cultural barriers for entering farm level small-scale enterprises (eg. Fisheries).
- v. Lack of farmer or user representation in micro level decision making on development issues;
- vi. Sustainability of community participatory approaches is depended upon social interaction within the nature of public goods;

Question 3: What are the Institutional Development and Infrastructural Policy Reform Measures you would suggest to Overcome the Problems?

Responses: Institutional and Infrastructural Development Policy Reforms:

- i. Establishing a new institutional framework for co-ordination of agricultural policy formulation, implementation and impact evaluation of agro-environmental policy issues;
- ii. Designing of incentive packages to improve the level of productivity by motivating workforce involved in the process is necessary;
- iii. Initiating a point-based performance evaluation scheme for each official who is involved in the process of policy formulation, implementation, and evaluation;
- iv. Establishing a system for identifying the best employee of the year to present a reward in each institute through the same evaluation scheme suggested;
- v. Assigning specialized one subject to one ministry to have a better formulating policies and coordination of tasks;
- vi. Formulating a consistent agricultural policy framework with a long term vision and implementation through establishing an efficient institutional mechanism, by identifying specific task for each institute; and
- vii. Policy reform packages should be introduced in land market, water market, tariff policy, and market for micro-finance;

Question 4: What are the Institutional Infrastructure Needs for Agricultural Development?

Responses: Needs of Institutional Infrastructural Development

- i. Accepting Science & Technology (S&T) as a key to national development;
- ii. Building partnerships between industry and institutes to identify the demand driven R&D in agriculture;
- iii. Initiating performance based rewarding or incentive schemes for scientists;
- iv. Establishment of a new umbrella institution for all agricultural R&D in the country for prioritization of research; better coordination and allocation of resources (ie. funds, human capital, and physical infrastructure) for R&D, and carrying out demand driven research;
- v. Demand driven R&D can be carried out by building partner-ship with state and private sectors;
- vi. Demand driven, fee-based extension schemes can be set up not only for production but also for extension of agro-based products and agro-enterprises;
- vii. Contract farming with community participation can be organized to reduce price and market risk and building farm level institutional mechanisms for collective actions;

Question 5: What is the Dynamic Role of the State in Agricultural Development within the Scenario of Globalization?

Responses: Dynamic Role of the State in Agricultural Development

- i. Change the role of the state from provider to facilitator in all aspects of the production and marketing processes;
- ii. Strengthen the mechanisms used for maintaining accountability in state sector institutions involved in agricultural development;
- iii. Provision of new technologies (eg. green houses, micro-irrigation - drip and sprinkler; tissue-cultured planting materials and hybrid seed) to the targeted, commercial scale clients to improve agricultural productivity;
- iv. Give adequate thoughts to local scenario before endorsing the global agreements – “think globally and act locally”;
- v. Need for establishing a database and Information Network for stakeholders in agricultural development, including private sector and international organizations.
- vi. Market orientation would be the strategy to promote private sector-led growth;
- vii. Breaking red tapes and bureaucratic structures is necessary to promote conducive environment for attracting investment.
- viii. Initiate demand driven research and extension programmes by putting private sector as partners in the process.
- ix. Building effective institutional linkages to set up net works for state sector organizations to work closely with private sector organizations;
- x. State should go ahead with building regional trade agreements to encourage market integration to attract foreign direct investments, and technology;
- xi. Harmonized standards should be introduced to maintain quality of food;
- xii. Financial assistance for integration of research and extension should be allocated even to private sector by the government;
- xiii. Consistent and conducive agro-environmental policies should be formulated to attract private sector investments;
- xiv. Promotion of private and public partnerships to improve the over all growth in the economy;

Concluding Remarks

Prof. M.O.A. de Zoysa

Director

HARTI

For last two days, we deliberated on the theme '**Sri Lankan Agriculture for the Next Decade: Challenges and Opportunities**'. At the very outset, I thank all of you for spending your valuable time in this national endeavor. As you may know, HARTI is emerging from doldrums, once again to take centre stage in facilitating to formulate national agricultural policy by carrying out research studies and training programmes and providing information and guidelines necessary for policy formulation in agriculture. And I am proud to say that, I am ably supported by my research staff in this hardest task.

Let me conclude the workshop with a couple of observations that are highly relevant to our discussions of the past two days and then with a few remarks for the future directions of HARTI to contribute the national efforts of agricultural development.

This is a tiny step that we have taken, but, I want to assure you that, till our task is completed, our mission will continue. This theme was decided by my research staff as the most pertinent to conduct a workshop, under the 100-Days Programme, launched by the present government. I am happy that it had come to a successful completion. We had been able to focus our attention and throw light on many dark areas that could be useful in formulating clear-cut national agricultural policy and mechanisms in this country.

I know that the papers presented were subject to regular discussion, and emerging ideas were adequately classified. I hope to prepare a memorandum, based on the outcome of this workshop, and present it to Mr. S.B. Dissanayake, Honourable Minister of Agriculture, Livestock and Samurdhi for his consideration. In fact, yesterday, before he left this workshop, he asked me to send all the proceedings to him, and, I am sure he will take all these ideas into consideration in the future policy formulation with regard to the agricultural development in this country.

As a prominent socio-economic research and training institute, HARTI should make strong prescriptions for challenges, problems and issues in the Sri Lankan agriculture and identify possibilities for agricultural integration within the dynamic national and international policy environment. But we must be confident that our facts are right and the analytical devices are correct. We can prescribe policy and institutional reforms to face future challenges in the sector, but if we do not have clear-cut policies and the institutional mechanisms to implement such policies, we can not walk very far. So we should be crystal clear that what are the broader policy framework and the implementation mechanisms we should prescribe to achieve sectoral targets.

My next observation relates to sustainable development. There is no question that sectoral growth in agriculture should not be improved. But, at the same time we have to reduce the agro-environmental degradation and its induced externalities to maintain the sustainability and equitable development in the sector.

A couple of points that have been made frequently during this workshop, are that a necessity of a National Agricultural Policy (NAP) and an institutional mechanism for agricultural integration. In my opinion, development of a NAP framework is a must to formulate policies and strategies for targeted domestic agriculture and export agriculture. The domestic agriculture is to maintain food security and food safety and targeted export agriculture is with a 'export drive' for attracting new investment and technology through private sector for integration.

In this context, within the Ministry of Agriculture and Livestock, I strongly suggest that there should be an effective institutional mechanism for policy analysis identifying potential for integration, and analyze likely effects of proposed agricultural policies. Further, it has to function as a **"One-Stop House"** to facilitate infrastructural needs, particularly lands and to device and popularize incentive packages for attracting foreign direct investment (FDI) and technology through private sector for targeted exportable agricultural products. The possible exportable products would be organic vegetables and spice products; tropical fruits (watermelon, cantaloupe melon, avocado, pine apples, and mangoes); cut flowers and foliage products; medicinal plants, cashew, *'kitul'*, and gherkin.

Within the neo-liberal policy framework, we can encourage countries to gain advantages of 'win-win' opportunities for improving macroeconomic balances and the environment through adopting sound economywide policies namely price reforms, subsidy reforms and liberalizing targeted markets. We do recognize that such effective liberalized policy and institutional frameworks can be used to avoid policy and institutional failures.

Finally, we intend to continue this dialogue further with academics, policy-makers, administrators, field-level officials, as well as farming community, till we achieve our final objective.

Once again, I wish to express my sincere thanks for Friedrich Ebert Foundation (FES) and the National Science and Technology Commission (NASTEC) for their whole-hearted support, and for my research staff, who took painstaking effort to organize this workshop successfully and finally, I wish you a happy and pleasant evening. Thank you very much.

Vote of Thanks

Dr. W.G. Somaratne

Head/Agricultural and Environmental Resource Management Division

HARTI

Mr. Chairman, Director/HARTI, Distinguished Guests and all Participants and Colleagues.

I am happy to say that we did something positive. We invited representatives from all state and private sector and the international organizations to actively participate, express their views and stimulate discussions with open mind to make an environment for facilitating sound policies and strategies in the agricultural development process in Sri Lanka.

So, first of all, on behalf of the Director/HARTI, I must thank the Honourable Minister, Mr. S.B. Dissanayake, Minister of Agriculture, Livestock and Samurdhi for accepting our invitation and delivering the key not address at this workshop. We are very grateful to the Resident Representative, Mr. Dietmar Knutschel, and Mr. S.H.A. Mohamed, Programme Officer of the Friedrich Ebert Stiftung and Dr. R.O.B. Wijesekera, Chairman, and Dr. M.C.N. Jayasuriya, Executive Director of the National Science and Technology Commission (NASTEC) for their generous financial support to conduct this timely pertinent workshop.

I gratefully acknowledge all the resource persons who have presented papers on important subject areas, discussant panelists and all other participants from state, private and international organizations for their valuable contributions rendered to conduct a successful workshop.

Also, I must thank, Prof. Zoysa, Director/HARTI, for his guidance and encouragement given to organize this important workshop. Further, all the staff members of the Agricultural and Environmental Resource management Division of HARTI, and other Staff Members of the Printing, Technical and Publication Units of HARTI, for their valuable contribution extended to hold this workshop. Without their fullest cooperation and support, we would not have been in a position to organize this workshop.

Finally, on behalf of the Director of HARTI, I thank you all once again, and I expect your fullest cooperation in future activities of HARTI. Thank you very much.

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