WTO AND ITS IMPLICATIONS FOR INDIAN AGRICULTURE *

Research Team**

Indian agriculture policy and development strategy during the last fifty years have mainly focused on achieving food self-sufficiency and food security. The State's proactive intervention policies played a crucial role in abolition of land intermediaries, major and medium irrigation development, rural electrification, research and extension, incentive price policy, public procurement and distribution, targeted credit program and fertilizers subsidy, all of which laid the foundation for green revolution. Two decades of green revolution enabled the country to overcome food crisis and achieve self -sufficiency in food and also sustain it. Starting from a large deficit in domestic production of food grains, the scenario changed to such an extent that India was able to build up sizeable stocks of food grains and stop imports totally, thereby erasing the "begging bowl" image of India.

Notwithstanding the above success story, agriculture growth achieved by India remained at a low average annual rate of two to three per cent only, just to keep pace with domestic demand. This compares poorly with agriculture growth rates achieved by other Asian countries during the same period. China, Malaysia, Thailand, Vietnam and Burma, each achieved four to five per cent annual growth. The diversification to high value added agricultural products was completely ignored and as a result, India could not take advantage of growing world market. India being a vast country with diverse agro-ecological zones has potential and comparative advantage to produce a variety of tradable agricultural products. Whatever tradable agricultural commodities produced were for domestic consumption, without much value added. This also contributed to poor linkages with industry and tertiary sectors. Consequently, population depending on agriculture, which is expected to decline significantly with economic development, declined only marginally from 70 per cent in 1970s to 67 per cent in 1990s.

Agricultural exports continued to remain confined to traditional plantation crops such as coffee, tea, cocoa, spices, cotton and tobacco. Before independence, India was a major exporter of these commodities and not now. Though India is a very large producer of agricultural products, it is now only a marginal player in the world trade. India produced around 10 per cent of the world agricultural output, but her share in world trade in agricultural commodities is only around 0.8 per cent. India's share in traditional agricultural exports such as coffee, tea, spices etc. in the world exports also declined significantly. China and East Asian neighbours, who were far behind in the 1950s, on the other hand, more than doubled their share in the world trade.

Thus, the strategies and policies adopted so far, though enabled the country to achieve self-sufficiency in food, neither led the rural sector into economic prosperity nor reduced the rural poverty significantly. In recent years, Indian agriculture witnessed deceleration in growth.

* Summery of the Research Report Sponsored by The Indian Institute of Banking and Finance, Mumbai

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Green revolution started showing signs of greying. India now really needs another green revolution for diversification and trade-led agricultural development.

The successful conclusion of the Uruguay round of negotiations and the setting up of the World Trade Organization (WTO) are major landmarks in the development of world agriculture in general and Indian agriculture in particular. Agricultural sector was for the first time brought into the fold of the multilateral agency Agreements. This is likely to change the future setting of the world agriculture, having significant implications for both the developed and developing countries including India. Agriculture being the most important sector, it is essential for India to assess the likely implications of such global changes on its agricultural sector and accordingly plan its strategies in order to maximize its gains from the new opportunities opened by world trade under the WTO Agreements.

Against this background several questions arise. Where does Indian agriculture stand vis-à-vis the commitments under WTO Accord? What will be the impact of WTO Agreements and their conditionalties on Indian agriculture? Do they pose a threat to Indian agriculture? Would it be in India's interest to bypass the WTO Agreements or will India gain from its compliance? Is Indian agriculture competitive in the global market to gain from the WTO Agreements? What are their implications for future policies and strategies for agricultural development? All these issues call for detailed research and deliberations.

Since all these have far reaching financial implications and the financial sector has a crucial and catalytic role to play in this regard, The Indian Institute of Bankers (IIB) as a premier institute, in its Platinum Jubilee Year-2002, has taken initiative *inter alia* to sponsor a comprehensive research on "WTO and its implications for Indian agriculture".

With India's commitment to the WTO Accord, comprehensive research studies on WTO and its implications on agricultural sector need hardly any justification. So far, enough research work has not been carried out on the subject in spite of its critical importance. In the absence of such studies, confusions, conflicting views and misunderstanding exist at present not only among academicians and policy makers, but also among stakeholders including farmers' organisations and Bankers.

Objectives of the Study:

The study broadly aimed at examining the implications of opening up of the Indian agriculture to the global market under the WTO regime and emerging issues for future policy and strategy for development of agriculture and rural sector. The study was conducted during the year 2002-2003. Specific objectives focused in the study were as under:

1. To review critically the WTO Agreement on Agriculture (AOA) and other relevant Agreements and their provisions relating to Indian agriculture and identify constraints and problems in complying with them.
2. To analyse in depth, positive and negative impacts and future implications on fulfilling the provisions of the WTO Agreements.
3. To examine the present state of Indian agriculture and agricultural trade policies, progress achieved in fulfilling the conditionalities of the WTO Agreements and pending agenda.
4. To examine the competitiveness of Indian agriculture and strategies required for maximising gains from the WTO Agreements.
5. To appraise critically food security concerns particularly with reference to public distribution system
6. Examine the fear of corporatisation of agriculture and marginalisation of small farmers in the post-WTO regime.

7. Based on the findings, to recommend policies and strategies required for India to take full advantage of the WTO Agreements.
8. To bring out financial implications and the role of the banking sector in financing agricultural sector in the post-WTO era.

Main Features of WTO Agreement on Agriculture:

The Uruguay round (UR), after protracted multilateral trade negotiations, reached the final agreement on April 15, 1994 at Marrakesh, Morocco to set up a formal international trade organization called, The World Trade Organization (WTO). The objective of WTO was to provide common international institutional framework for the conduct of trade relations among its members in matters related to GATT Agreements. The Final Act was signed by 77 out of 125 member-countries including India, who became founding members of the WTO. Now its membership has increased to 146. Following the signing of the Final Act, the WTO was established in Geneva, Swizerland on January1, 1995. The WTO is thus the highest international body for setting policy and rules for international trade and overseeing its implementation through negotiations and its dispute settlement mechanism.

The Final Act contained 25 Agreements and prominent among them are Agreements on Agriculture, Sanitary and Phyto-sanitary Measures, Trade Related Aspects of Investment Measures (TRIMS), Trade Related Aspects of Intellectual Property Rights (TRIPS), Trade in Services, Textiles and Clothing, Labour, Anti-Dumping and Dispute Settlement. The Agreement On Agriculture (AOA) is a milestone in the history of world agricultural trade as agriculture was hitherto exempt from the multilateral trade discipline. Agriculture was considered to be the last bastion of protectionism. Governments, both in developed and developing countries, have massively intervened in agriculture and protected their farmers to shield them from the market forces. Remunerative prices, subsidies, tariff, non-tariff barriers and quantitative restrictions on trade were order of the day and distorted the trade in agricultural products in the world market. The opening up of agriculture by the developed countries and removal of trade barriers by developing countries are expected to improve the market access of both worlds for mutual benefits. The AOA is thus a radical and fundamental departure from the way agriculture as treated previously under GATT.

The Agreement on Agriculture (AOA) contains 21 Articles and five Annexes. Articles contain in detail provisions for reform agenda, modalities to be adopted and the commitments. The individual member country commitments are included in the national schedules. The Agreement also provides for review of the implementation of the Agreement, which will be done by the Committee on Agriculture. The review process will provide an opportunity for members to raise any matter relevant to the implementation. Recognising that the reform in agricultural sector is an on-going process, the AOA provides for further negotiations one year before the end of implementation period.

Besides AOA, the provisions of other two Agreements, negotiated under UR, have direct bearing on the agricultural sector. They are: Agreement on Sanitary and Phyto-sanitary (SPS) and Trade Related intellectual Property Rights (TRIPS). Other Agreements such as Agreement on Technical Barriers to trade, Agreement on Trade Related Investment Measures, Agreement on Anti-Dumping and Agreement on Textiles and Clothing have also some indirect implications on the agricultural sector.

The broad objective of the AOA as stated in its preamble is "to establish a fair and market oriented agricultural trading system". It provides an agenda and a regulatory framework for long-term reforms of agriculture trade and domestic policies. It includes broad nature of commitments and thrust areas for domestic policy reforms. It makes a decisive move towards the dismantling of the barriers to trade and opening up of agriculture to world market. It commits all WTO members for the reduction of domestic supports and multilateral discipline for liberalisation and fair competition of agricultural trade in the global market.

The commitments under the AOA falls broadly under three areas: i) market access ii) domestic support and iii) Export competition. Sanitary and Phyto-sanitary measures and extension of Intellectual Property Rights (IPR) are also other two areas linked to agricultural sector. The salient features of the commitments in these five areas under the WTO Agreements are summarised below:

Market Access:

The market access provisions contained in the AOA have the following three key elements:

1. Removal of all quantitative restrictions and non-tariff barriers and convert them to tariffs.
2. Reduction of tariff to the agreed level under a time bound program as under:

   Developed countries:

   36 per cent average reduction of tariffs after tariffication of NTBs in a 6 year period with minimum reduction rate of 15 per cent for each tariff line.

   Developing countries:

   24 per cent average reduction of tariffs after tariffication of NTBs in a period of 10 years with minimum reduction of 10 per cent for each tariff line.

   Least developed countries:

   Exempted from the tariffication and tariff reduction commitments.

3. Provide minimum access of 3 per cent of domestic consumption of agricultural products in the base period of 1986-88, which gradually to be increased to 5 per cent through tariff rate quotas.

With a view to improving market access opportunities, the AOA envisages tariffication, tariff reduction and binding commitments for all agricultural tariffs. The tariffication process involves replacement of all quantitative and non-tariff barriers with tariffs and reduce the tariffs to the acceptable level within a stipulated period. The non-tariff barriers (NTBs) include quotas, variable levies, minimum import prices, discriminatory licensing, state trading measures, voluntary restraint Agreements and other discriminatory border measures.

The AOA also contains provisions to maintain current access opportunities and to establish a minimum access tariff quota. The minimum access Tariff Rate Quotas (TRQs) has to be established for those basic products where imports was less than 3 per cent of domestic consumption in the base period 1986-88. Minimum import has to be gradually increased to 5 per cent of the base period consumption by 2001 for developed countries and 2005 for developing countries. Tariff quotas have to be established for each tariff line on a most favoured nations (MFN) basis to facilitate access opportunities. The TRQs are expected to provide a "tunnel through the tariff wall" to provide effective market access to agricultural commodities in a world where countries were in the past protecting their domestic markets.

The developing countries facing balance of payment problems are allowed to continue quantitative restrictions under the Agreement subject to fixing their tariff rates as per the Agreement till such time the BOP improves. Tariff reduction commitments by member countries are set out in their national schedules of commitments, which are annexed to Marrakesh Protocol and governed by the protocol itself.

Domestic Support:

One of the objectives of the AOA is the reduction of market distortions in the agricultural trade through minimisation of domestic support by way of subsidy. The AOA deal with the reduction of domestic support of agriculture quantified through the Aggregate Measure of Support (AMS). The AMS includes both product specific (price/income support) and non-product specific (input subsidies) supports. The AMS also takes into consideration budgetary outlays and revenue foregone by the Government and its agents for subsidy to farmers. It is computed on a product-by-product basis using the difference between the average external reference price for a product and its administered price multiplied by the quantity of production. To this is added the total non-product specific domestic subsidies to derive the AMS.

The AOA categorises domestic support measures into three groups; namely amber box, blue box and green box for reduction commitments. Amber box support measures are of trade distorting in nature and therefore considered for reduction commitments. The blue box support measures are temporary and less trade distorting type and therefore exempted but made conditionally actionable. The green box support measures on the other hand are considered trade promoting in nature and therefore fully exempted. The specific domestic support measures included in the different boxes are as under:

Amber Box:

1) Market price support measures include difference between government support prices and market prices and measures adopted to sustain support prices which include tariffs, import quotas and non-tariff barriers.

2) Budgetary support include product-specific support such as deficiency payments, insurance, disaster payments and payment for compensation for reductions in market prices and subsidies on farm inputs such as fertilizers, irrigation, electricity and farm credit.

Blue Box:

Direct payments under production limiting programmes, certain government assistance measures to encourage agricultural and rural development in developing countries, decoupled income support, structural adjustment assistance provided through producer retirement programmes, payment under environmental, regional assistance programmes and other support measures which are within the limit of 5 per cent in the case of developed and 10 per cent in the case of developing countries of the value of individual production or in the case of non-product-specific support, the total value of agricultural production.

Green Box:

Government expenditure on support for agricultural research, control of pests and diseases, training, extension and advisory services, public stock for food security for targeted groups, farm income insurance, disaster management, income safety nets programmes, marketing and infrastructure services and investment subsidies and input services to resource poor farmers.

The amber box subsidies are subjected to reduction commitments and the AOA prescribed minimum levels of AMS as under:

Developed Countries:

5 per cent of the total value of agricultural products and if AMS exceed the minimum levels prescribed, reduction of domestic support by 20 per cent over a period of six years (1995-2000).

Developing countries:

10 per cent of the total value of agricultural products and if AMS exceed the minimum levels prescribed, reduction of domestic support by 13.3 per cent over a period of 10 years (1995-2004).

Least developed countries:
Exempted from AMS reduction commitments.

The blue box subsidies particularly deficiency payments, which are exempted from reduction commitments, are at present most prominently used by the EU and USA. The deficiency payments are made to producers under production-limiting programs based on fixed area, fixed crop yields and fixed heads of livestock and whenever there is instability in agricultural prices due to overproduction. These measures have been generally considered as temporary arrangements to minimise market distortions.

The green-box measures are, on the other hand, fully excluded from AMS calculations. Two criteria have been, however, laid down for identifying measures eligible for inclusion in the green box. First criterion is that they should have " no or have at the most minimal trade distorting effects or effect on production". The second criteria stipulates that the support should be provided through a publicly funded government program (including government revenue foregone) and not involving transfers from consumers and also not have the effect of providing price support to producers.

Food security concern in the AOA appears only in the form of an exemption from AMS calculation, expenditure made on public stock holding of food grains. The public expenditure or revenue foregone for accumulation and holding of stock of production would be exempt from AMS only if these activities form an integral part of a food security program for the targeted poor people. This includes government aid to private storage of products as a part of such a program.

The stockholding of food grains for food security is however subjected to several conditions. According to the Agreement, member countries are allowed to use public stockholding of food grains for food security purposes "provided the difference between the acquisition price and the external reference price (i.e. the ruling international price) is accounted for in the AMS". Another important provision is that the beneficiaries have to be targeted. Countries have been given freedom to give food aid to poor, but the poor have to be identified on the basis of "clearly defined criteria related to nutritional objectives" This proviso implies that the criteria adopted for identifying poor must be approved by the WTO.

Export Competition:
The AOA envisages reduction in export subsidies. The export subsidy commitment is either in the form of budgetary outlay reduction for direct subsidies or in the form of export quantity reduction. The AOA prescribed the export subsidy reduction commitments as under:

Developed countries:
Reduction of direct subsidies by 36 per cent below the 1986-90 levels and quantity of subsidised exports by 21 per cent over a period of 6 years.

Developing countries:
Reduction of direct subsidies by 24 per cent below the 1986-90 levels and quantity of subsidised exports by 14 per cent over a period of 10 years.

Least developed countries:
Exempted from any reduction commitments.

The measurement of subsidy reductions has to be carried out on a commodity-by-commodity basis, with each country notifying to the WTO through the country schedules. The AOA also contains a provision that countries not using any subsidies in the base period are prohibited from using export subsidies under new dispensation.

Sanitary and Phyto-sanitary Measures:
AOA refers to the WTO Agreement on the Application of Sanitary and Phyto-sanitary (SPS) Measures. The SPS Agreement seeks to introduce

harmonised international standards in respect of regulations for the protection of human, animal and plant life or health. The harmonisation adopted in the Agreement is based on the following three international standards:

For food safety:
Standards, guidelines and recommendations established by the Codex Alimentarius Commission.

For animal health:
Standards, guidelines and recommendations of the International Office of Epizootics.

For plant health:
Standards, guidelines and recommendations developed by the Secretariat of the International Plant protection Convention.

In setting these standards, the Agreement recognises the right of the country to restrict the trade whenever necessary, to protect human, animals and plant life or health. However, these measures should not be applied to discriminate unjustifiably between countries with same conditions or not applied as a disguised restriction on international trade. The SPS Agreement also recognises that the developing countries may encounter problems in complying with the SPS measures of importing countries and as a consequence, an access to the markets. The special needs of the developing countries are taken into account while complying with the provisions. The Committee on Sanitary and Phyto-sanitary Measures set up to ensure effective implementation of the Agreement has been empowered to grant developing countries, upon request, exemptions to specified time limit, in whole or part from any obligations under the Agreement.

Intellectual Property Rights:
The Agreement on Trade Related Intellectual Property Rights (TRIPS) proposes harmonization of the norms and standards of protection of intellectual property rights (IPRs) in member countries. It requires patents in all areas of technology and patenting of all life forms viz. animals, plant varieties, seeds and other forms of propagatory material. The Agreement, however, allows exclusion of plants and animals other than microorganisms from patenting, if the member countries "provide for the protection by patents or by an effective '*sui genres*' system or by any combination thereof".

The Agreement on TRIPS has for the first time brought agricultural sector under IPR regime. It has widened the scope of the IPR regime to include plant variety protection and plant breeders' rights (PBRs) as recommended by the International Union for the Protection of New Varieties of Plants commonly known as the UPOV convention. PBRs provide recognition and incentive to the plant breeders engaged in developing new plant varieties. PBRs are subject to two exemptions- farmers exemption for traditional varieties and the research exemption. Farmers have the right to retain the farm produce for growing subsequent crops on his land or exchange except sale of seeds with a brand name. For patented seeds, farmers have to pay royalty. Farmers can re-use the patented seeds provided the "legitimate interest of the breeder" is taken care of. Similarly researchers have their privilege to use any variety including protected, to breed new variety without any specific permission of the original breeder.

According to the TRIPS Agreement, the member countries are free to evolve their own PBRs system that confers on the plant breeder exclusive commercial marketing rights. The member countries are also free to cover the system with a number of reasonable species and genera and expand them progressively to cover all species and genera over a period of time. With respect to implementation, the Agreement envisages transition period of one year for developed countries, five years for developing and 11 years for least developed countries to bring their legislation and practices into conformity.

The AOA is criticized on the ground that it is formulated largely within the framework of agricultural policies of the developed countries. As a result, it has focused mainly trade concerns and not development and livelihood concerns. The developing countries are faced with the problems of growth, food security and poverty. They are interested in trade as a mechanism to drive economic development. The development and livelihood concerns have not been given any importance in the AOA. Moreover, the reduction commitments in respect of tariffs, domestic support and subsidy are not equitable and not based on level playing among developed and developing countries in spite of differential treatment. Consequently, the agricultural protection in developed countries will continue to remain high and may not lead to major expansion in market access and resultant welfare gain to developing countries.

Since agriculture has been brought under the new rules of global trading system for the first time, it was expected that there would be problems and operational difficulties in the implementation of AOA. To take care of this the AOA has incorporated a major review of progress in implementation and provision for review in the year 2000

Implications for Indian Agriculture:

The agricultural package of the WTO would introduce multilateral discipline for liberalisation of agricultural trade and globalisation of agricultural production, processing and trade. It commits all WTO members-countries for dismantling of the barriers to trade, the reduction of domestic protection, opening up of agriculture to world market and multilateral discipline for liberalisation and fair competition of agriculture trade in the global market. The global market forces are therefore expected to play dynamic role in determining product-mix, value added, investment, price structure, quality and pattern of international trade. The WTO Agreement on agriculture is thus expected to contribute significantly towards the process of globalisation of agricultural production and trade.

India is a founder member of the WTO and signed the GATT Agreements in 1994. With the signing of the GATT Agreements, Indian agriculture was brought under the WTO framework and multilateral discipline. India has no choice but to fulfil the commitments made under the Agreements and bring its domestic policies in conformity with the WTO requirements. The WTO commitments in the area of agriculture fall under mainly five categories, namely, market access, domestic support, export competition, sanitary and phyto-sanitary measures and intellectual property rights. There is a need to understand where Indian agriculture stands vis-à-vis the commitments in each one of these areas and their likely impact.

The economic reforms in mid-90s involved wide ranging trade policy reforms. However, the initial focus was more on industrial and service sectors. The WTO commitments in 1994 and the obligations to comply with the WTO norms gave a momentum to liberalisation in agricultural trade. Most of the reforms in the agricultural trade were carried out during the last five years. First, the canalisation of agricultural trade flows has been abandoned. All agricultural imports other than cereals, oilseeds and edible oils have been de-canalised. Similarly, all agricultural exports except onions and oil seeds have been de-canalised. Second, quantitative restrictions on agricultural trade flows have been dismantled. At present, there is no quantitative restriction on agricultural imports.

Export restrictions such as registration and packaging requirements were removed on butter, pulses, wheat and wheat products, groundnut oil, cashew and coarse grains. Export ban of all cultivated varieties of seed, except jute, and onion were also removed. Only essential agricultural commodities are subjected to either licensing or some quantitative restrictions. The EXIM policy-2001-02 also emphasised the creation of Agri Export Zones for promotion of specified agricultural exports. All these policy reforms in the agricultural trade came into existence in the post-GATT era and are more or less in tune with the requirements of the WTO Agreement.

Market Access:

Under market access commitments, India is required to: (1) replace all types of non-tariff barriers especially quantitative restrictions (QR) on imports (i.e. quotas, import restrictions through ban, permits, import licensing etc.), which were in existence before the Agreement came into operation, with tariffs (tariffication process) and (2) reduce the levels of tariffs under a time bound programme. The tariff levels are to be reduced by 24 per cent of the base levels. The period during which these reductions are to be implemented is stipulated at 10 years from the date of signing the Agreement (1994-2004). In addition to these commitments, this measure also calls for maintaining current access opportunities and the establishment of minimum access tariff quota. This minimum access tariff quota is to be established at reduced tariff rates for those basic products where current market access is less than three per cent of domestic consumption. During the implementation period, this minimum access tariff quota has to be increased to 5 per cent of the domestic consumption. The commitments have come into operation in 1995.

Removal of QR:

In India, imports of various agricultural commodities were subjected to mainly quantitative restrictions for balance of payment purposes. Under the WTO commitments, India committed to phase out QRs on all commodities except for around 632 commodities for reasons related to security, religion, etc. However, India wanted to maintain QRs on import of around 1482 commodities. India justified the maintenance of QRs on import of more commodities under the provisions of Article 18-B of the AOA, which allows temporary deviations from the provisions of the Agreement on the ground of balance of payment difficulties. As per this provision, India was expected to announce publicly a time frame for removal of QRs. India accordingly proposed a nine-year phase out beginning in 1997. The announcement of the nine-year phase out period by India was, however, contested by the developed countries including USA. The matter was referred to the WTO Dispute Settlement Panel and subsequently to te Appellate Body, which ruled that India has no justification for maintaining the QRs, since its BOP position has improved and is quite sound. India as asked to dismantle all QRs by the end of 2001 as per the WTO Agreement.

India has thus no option but to remove all QRs on imports of agricultural commodities. Since 1999, India has been phasing out the quantitative restrictions on agricultural commodities as per the WTO rules. The Exim policy 2001-02 removed all quota and licensing restrictions. At present, there are no quantitative restrictions on agricultural imports. The existing trade policy has only a negative list of commodities, which cannot be imported under open general licence (OGL) or freely. The negative list basically consists of three main categories: (1) prohibited, (2) restricted and (3) canalised. The prohibited are tallow, fat, ore, oil of animal origin, wild animal and ivory etc. With a view to minimising the likely adverse impact of liberalisation of imports, Ministry of Commerce has established a system of tracking imports of sensitive essential agricultural commodities.

India, thus meets the WTO requirement of removing quantitative restrictions on imports of agricultural commodities except some restricted or canalised consumer goods for health and hygiene or food security reasons as allowed in the

WTO. Their import is allowed against a licence. India in fact already offered, unilaterally, trade concessions to members of the South Asian Association of Regional Co-operation (SAARC) by withdrawing QRs on all commodities.

The removal of QRs, however, raises several issues pertaining to increase in agricultural imports, impact on BOP, competitiveness of domestic agriculture, ability to ensure domestic food security and sustainability of Indian agriculture. The analysis of last three years' import data, however, clearly shows that removal of QRs has so far not had any significant impact on agricultural imports. With the present improved BOP and the expected increase in agricultural exports as a result of the WTO Agreement, the removal of QRs will not have significant adverse effect on BOP. However, there is a need for being vigilant to keep track of imports of agricultural commodities to minimise any adverse impact. India can use the tariff instruments within the bound level to curb such imports. If the imports exceed the limit, India can resort to anti-dumping provisions.

Tariff Bindings:

With the elimination of the QRs, all agricultural commodities would be brought under tariff regime. As per the WTO commitments, India should bring down the tariff levels on agricultural imports by 24 per cent from base period within a decade subjecting each tariff line to a minimum reduction of 10 per cent. India adopted a three-tiered approach to tariff bindings with a few exceptions. The primary products were bound at 100 per cent, processed cereals were bound at 150 per cent, and edible oils were bound at 300 per cent. As many as 119 tariff lines were bound historically at lower level of 45 per cent, which include skimmed milk powder, spelt wheat, corn, paddy, coarse grains and soybean and mustard oils. Silk and cotton are unbound. Almost 100 per cent of agricultural product tariff lines have been bound in India.

The analysis of the present Indian import policy reveals that India, leaving aside some restricted tariff lines, has reduced the tariff barriers much below the bound rates of duty under the UR Agreement. The main agricultural commodities like rice and milk (skimmed milk powder) are already committed at zero import duty. For wheat, barley, oats and rye, the bound rate of duty is 100 per cent, but roller flourmills are allowed to import at zero import duty. Similarly for pulses, the bound rate is 100 per cent, but allowed to be imported under OGL at zero import duty. Edible oils, most of which are bound at 300 per cent import duty, are open for imports at 15 per cent duty. The 2003-04 Budget in fact reduced the maximum custom duty from 30 per cent to 25 per cent.

A comparison of the present tariff rates and the UR bound rates shows that the present levels of India's tariff rates are significantly lower than that of final bound rates for all agricultural commodities. The difference was more than 50 per cent and above for majority (80 per cent) of the agricultural commodities. India's present tariff rates exceed UR bound rates only in the case of eight tariff lines, most of which belong to the beverage group. These rates have to be brought in line with UR bound rates by March 2004. The average tariff for all agricultural commodities has declined from 137 per cent in 1986 to a low level of 38 per cent in 2002. Now it is 25 per cent. This clearly shows that India has no problem in fulfilling the WTO tariff reduction commitments for agricultural commodities.

Minimum Market Access Quota:

As per the WTO accord, India has to import agricultural commodities up to 3 per cent, which should to be increased to 5 per cent of its total domestic consumption requirements over a period of six years. What it implies is that India should open its domestic market for importation of agricultural commodities from other countries to the extent of three per cent of its total requirements at binding tariff rates. Till 1990s, India's trade policy was influenced by inward looking strategy and balance of payment position. Except for edible oils, importation of agricultural commodities were banned or subjected to quantitative restrictions. In the triennium ending 1988-89 (base period), imports of edible oils constituted 28.66 per cent of domestic consumption. Imports of other commodities were less than three per cent of the total domestic consumption. For example, imports of rice, wheat and cotton-three major commodities were 0.38 per cent, 1.47 per cent and 0.92 per cent of the India's total domestic consumption during the base period.

India is thus importing less than three per cent of agricultural commodities except edible oils and fulfilment of this obligation will result in marginal increase in agricultural imports. However, providing access to domestic market does not mean that there will be a danger of a flood of imports because (1) the level import stipulated is only marginal, (2) the prices of agricultural products in the domestic markets are generally below their international prices and (3) there is a provision for imposing additional tariff barriers in the case of dumping.

India being one of the largest producer of agricultural commodities and has vast potential for export, India stands to gain in the long term with the improved market access. India has no problem in fulfilling the WTO commitments on market access. India being a marginal importer of agricultural commodities, there is no justification for India maintaining the present high level of tariff binding rates. The main concern of India is whether developed world have met their obligations, which would be beneficial to the interests of the country. India should therefore strive hard to eliminate the system of tariff quotas and other non-tariff barriers fully by the developed countries as they are inimical to India's export interests and do not ensure easier market access. India need to pursue this agenda in the review meetings as the developed world, most notably countries of the EU and East Asia are still resisting access to agricultural exports of the developing world. Though, they have committed, they have not yet gone for full tariffication of agricultural products. Most of these countries have opted for tariff quota system for several commodities, which is restricting the market access and the potential gains to the developing countries including India.

Domestic Support:

The central thrust of the domestic support provisions of the AOA is outward looking - to move agricultural policies of member countries away from trade distorting support measures. The WTO discipline on domestic support has been made operational through the concept of AMS. India has basically two types of support operations for agriculture: First is the market price support to agricultural products. This is in the form of minimum support prices announced by the government for different commodities, based on the recommendations of the Commission for Agricultural Costs and Prices (CACP). Second is the support in the form of input subsidies, which are provided mainly for inputs like fertilizers, irrigation, electricity, credit and seeds. India does not provide the third type of domestic support included in the Agreement namely, direct income payment to farmers.

As per the Agreement, if the product specific and non-product specific AMS does not exceed 10 per cent of the total value of agricultural product, India is not subject to any domestic support reduction commitments. If, on the other hand, the AMS exceeds the *de-minimis* level, India is required to reduce domestic support by 13.3 per cent by the end of 2004. The AOA also allows for exemption of investment and input subsidies given to "low income or resource poor producers" The Agreement, however, does not define who is low income and resource poor producer. It is estimated that on an average, it would require in

India a minimum of two to three hectares to enable an average farm family to make just both ends meet. Based on this definition, more than two-third of Indian farming community are low income and resource poor producers. In that case, more than two-third of the input subsidies would be exempt from AMS calculations.

In spite of the high level of non-product subsidies, the total AMS –both product specific and non-product specific adding together- works out to be negative. The recent estimates of AMS reveal that for almost all commodities, in the last ten years, the product specific support to Indian agriculture is negative-to the extent of 38 per cent. The product-wise support ranges widely from about –10 per cent to –70 per cent of value of production. The non-product specific support also varies from 1 to 10 per cent of the total agriculture production value. The resultant total AMS varies from –23 to –65 per cent. The Trade Policy Review of India by the WTO also shows India's product-specific AMS in 1995-96 at –38.47 and non-product-specific AMS at 7.52 of the total value of agricultural production. With the recent fall in the international prices of farm products and the steep rise in the minimum support prices for wheat and rice in the country, it is possible that the rate of disprotection would now be much lower than the above estimates. Since the budgetary non-product support is being gradually reduced, the total AMS will remain still much below the stipulated minimum level of 10 per cent of total agricultural production value. Therefore, India is under no obligation to reduce domestic support currently extended to the agricultural sector.

India's position that negative product specific support should be allowed to offset positive non-product specific support is, however, being challenged by several member countries advocating separate treatment for product specific and non-product specific supports. Since the Agreement allows the AMS computation on aggregate of both, India's position has become an issue for future negotiations.

The future thrust of Indian agricultural policy under the WTO regime should be to minimise the trade distorting subsidies included in the amber box and maximise the domestic support measures included in the green box. In fact India's investment in the agricultural research is about 0.5 per cent of the agricultural GDP. The green box expenditure as the percentage of agricultural GDP works out to hardly 2 per cent whereas USA and Japan spend 33 per cent and EU 13 per cent. Public investment in rural infrastructure is declining in the recent years. The rural infrastructure is extremely in poor condition. The private sector is kept away from the agricultural research and rural infrastructure development. These are the major areas of concerns for agricultural development in India today. The green box measures should, therefore, form the major thrust areas of domestic support in the coming years.

There is also good scope for India to increase domestic support by way of investment and input subsidies by targeting the same to low income and resource poor farmers under the WTO regime. Similarly, India could take advantage of the exemption for domestic support reduction commitments available for food security stock and food aid. Another area, which is exempted from AMS is the payments under the regional assistance programmes. This provision can be extended to all producers of dry land and rain-fed agricultural zones.

The major implication of the AOA for Indian agriculture also arises from the continuing reluctance of the developed countries to scale down their support to domestic agriculture. Almost all developed countries still maintained their high level of protection to their farmers. The recent OECD estimates show that EU subsidies in 2002 amount to $46 billion per annum or half the EU budget. In the case of USA, the support to farming community is still 26 per cent and in the case of Japan, it is as high as 72 per cent. Japan has not made any fundamental changes in its support policy. Some countries only shifted the support from one box to another. EU and USA are disguising trade distorting domestic support under the Blue Box canopy. The shifting support from non-exempted categories to exempted categories provides advantage to the produce of developed countries over the produce of developing countries.

According to the latest monitoring and evaluation report, the level of support to the farmers in EU has not changed since 1995. In fact, it has gone up in absolute terms. The EU has, however recently decided that after 2005, the EU will no longer subsidise farm production but will protect farm incomes. The continuation of the high level of protection resulted in maintaining over production leading to lower international prices. All these have eluded the developing countries including India so far the expected gain under the WTO regime.

Export Competition:

Indian exporters of agricultural commodities do not get any direct export subsidy. The only subsidies provided to exporters of agricultural commodities are in the form of: (i) exemption of profits from export sales from the income tax, and (ii) subsidies on costs of freight on export shipments of certain products like fruits, vegetables and floricultural products. These payments are exempt from the reduction commitments. Thus the export reduction commitments under the WTO regime do not have adverse impact on Indian agricultural exports. There is an important provision under the Agreement that countries not using any subsidies in base period are prohibited from using export subsidies in future. Hence India, which has not been using any form of export subsidy during the period 1986-88, is prevented from using export subsidies as an instrument for export promotion under the WTO regime. However, India is free to provide certain subsidies, such as subsidising of export marketing costs, internal and international transport, and freight charges.

Most of the developed countries, on the other hand, operate export subsidy programs by way of incentives to enhance their exports. According to the GATT estimate, export subsidies of developed countries amounted to $16.4 billion during the base period. Although, by and large, all developed countries have complied with their overall reduction commitments at the aggregate level, the actual use of subsidies in terms of both budgetary outlays and volume has increased for commodities such as wheat, coarse grains, oilseeds, vegetable oil, sugar, dairy products and fruits and vegetables. These are the commodities of export interest to many developing countries.

Export subsidies provided by EU countries constituted over 50 per cent of the export price earned by them for butter and butter oil and over 20 per cent in the case of skim milk powder. In the case of USA, export subsidies for butter and skim milk powder form 50 per cent of export price. Several developed countries also carry forward unused subsidy allowances from previous years to allow subsidised exports in excess of the annual limits. This also minimises the impact of export subsidy reduction commitments.

The reduction of export subsidies and subsidised exports by these countries under the WTO regime will have greater implications for comparative advantage of developing country exports. Countries like India would benefit not only from improved market access, but also from reduction of subsidised exports and trade distorting production incentives in developed countries. It is India's interest to negotiate for complete abolition of export subsidy and bring the agriculture on par with the other sectors in the WTO framework.

Sanitary and Phyto-sanitary Measures:

The objectives of the Agreements on Application of Sanitary and Phyto-sanitary measures are laudable. India should be as much interested in maintaining scientific standards of food safety and quality as developed countries. These standards are necessary for protection of human, animal or plant life or health and therefore required to be harmonised. However, it will be difficult for a country like India to comply with the stipulated international health and sanitary standards as well as the technical standards for branding and packaging of products during the implementation period. This has serious implications for export of agricultural products.

It should be noted that at present, the health and sanitary standards including the level of residual chemicals in India do not lie within the tolerance limits prescribed by the developed countries. There are serious problems of maintenance of hygiene and quality standards at the primary production, procurement and processing stages of agricultural produce. India, in fact, lacks SPS control systems, lacks awareness and understanding of standards and lacks technical abilities to implement standards, besides lacking organisational structures geared for such standard setting. Moreover, standard conformity processes are not uniform and differ across countries. This implies that even if Indian agricultural products are competitive, there is no guarantee of the market access of developed countries on the ground of non-compliance with the health and safety standards.

The developed countries could use these standards as disguised non-tariff barriers to restrict their imports from developing countries. This is already happening to Indian agricultural exports. In 1997, Indian fish products were banned by EU and were put on automatic detention by USA on the ground of lack of SPS standards. UAE banned meat imports from 10 Indian companies due to health and hygiene reasons. Similarly, groundnut exports have been rejected due to aflatoxin contamination. Indian spice exports have also suffered due to primary stage contamination.

India has therefore no choice but to keep in touch with the health and sanitary standards of developed countries and gear its exports to meet those standards under the WTO regime. Under the WTO Agreement, India was expected to comply with the SPS provisions by the end of 1997. India along with other developing countries could take up the issue in the WTO negotiations to allow the developing countries more time to comply with the SPS provisions. Assistance from developed countries is also needed to the countries like India to adjust their institutions and standards to food safety and sanitary requirements.

Intellectual Property Rights:

The provisions of TRIPS, which have implications for Indian agriculture, are mainly those related to patents. The Agreement on TRIPS requires patents in all areas of technology and patenting of all life forms including plant varieties, seeds and other forms of propagatory materials. Once patented, they can be owned as private property. Article 27(3) of the Agreement requires member countries to provide for protection of plant varieties either by a patent or by an effective sui generis system or by combination of both. Patent laws are national in jurisdiction and the member countries are required to have their own legislation on patenting. The GATT Agreement does not compel any country to patent seeds. On the contrary, it allows each country to adopt its own system of plant protection.

In the past, India did not allow patents on seeds or plants and had no system of protection for plant varieties. India along with other developing countries adhered to the policy of "common heritage of mankind" i.e. that agricultural resources are to be freely used and shared by all. The WTO framework does not view plants and seeds as free resources but as any other commodities that can have proprietary rights. In this changed scenario, the Indian Parliament passed the Plant Variety Protection and Farmers Rights Bill in August 2001. India opted for sui generis system since it is flexible as compared to the patent system, which is rigid. The Bill addresses two important issues: First, it establishes a system of Plant Breeders' Rights that confers on the holder an exclusive right of ownership of a plant variety for a specified period of time. Second, the Bill introduces the concept of Farmers' Rights to counter balance Breeders' Rights and address the issue of farmers' proprietary claims to plant varieties.

The salient features of the Bill are as under:

1). Breeders or farmers can claim IPR for their varieties provided that it meets the criteria of novelty, distinctness, uniformity and stability.
2). IPR comes in the form of plant breeder's rights (PBRs) defined as the "exclusive right to produce, sell, market, distribute, import or export the variety".
3). The PBRs are limited to 18 years for trees and vines, and 15 years for others. The Bill allows other plant breeders to use the variety for conducting research.
4). Farmers' Rights: Farmers can save, use, exchange, share or sell his farm produce including seeds of the protected variety in the same manner as before except branded seed that is seed in a package or container and labelled as a protected variety.
5). The Bill recognises the farmer not just as a cultivator but also as a conserver of the agricultural gene pool and a breeder who has bred several successful varieties. The Bill makes provisions for such farmers' varieties to be registered so that they are protected against being scavenged by the commercial breeders.
6). The Bill includes a provision for rewarding the tribal and other communities traditionally involved with the conservation of plant species.
7). Seed manufacturers should not overcharge or restrict the availability of seeds through unfair means. If the company holding plant breeders rights fails to produce sufficient quantity of seeds, then the licence could be invoked and given to another company to produce with the permission of the original breeder.

IPRs give the patent holder the monopoly rights to prevent others from making, using or selling seeds without his permission. This will result in narrowing the genetic base, which will increase the vulnerability of the crop to single gene. The dependence on a single gene and the genetic uniformity may endanger food security and sustainable agricultural growth. Further, breeding activity depends on the availability of novel germplasm, and the economic value imparted to germplasm by the plant breeders' rights may act as a dampener on the free exchange of protected material and thus jeopardise further research.

Seed patenting is a very recent phenomenon and so it is very early to predict its impact on seed breeding research in India. The most important implication of this would be the emergence of MNCs in the seed market. MNCs defend their demands to patents, on the grounds of the large investments they make on the development of the biotechnological products by using genetic material. Until very recently, in India, private sector breeding activity was officially discouraged. In the developed countries, more than 80 per cent of breeding research activity took place in the private sector. Consequently, most of the patented hybrid seeds are now owned and traded by MNCs.

The strategy of MNCs is to develop and market breeders' seeds they developed with the patent protection. According to the opponents of IPRs, these seeds can be used for only one crop and consequently majority of farmers have to depend on the MNCs for supply of seeds every year. Moreover, since the majority of farmers are small and marginal, they cannot afford to use these seeds on payment. Indian farmers, by tradition, save and replant their stock in the following season. The patented high yielding seeds may replace traditional seeds, endangering the Indian biodiversity. This has serious implications on food security and sustainable development of agriculture. This is also contrary to the basic principle that in the case of life supporting food, patent monopoly should not be allowed. The recently passed Bill has, however, a provision to take care of this fear through licensing.

However, Swaminathan, a well-known agricultural scientist argues that the above fears are unfounded. According to him, the skills of Indian breeders are formidable with which they can not only face up to the competition from the MNCs but also capture significant share of the world market themselves. "If we do not have a system of plant protection, others will be able to use the work of Indian breeders free, while we will have to pay for the work of foreign breeders". Thus TRIPS is a major opportunity and not a threat. Dr. Swaminathan also points out that TRIPS is not an issue putting rich country breeders against poor country farmers. It is a farmer-versus-breeder issue affecting both developed and developing countries. What India needs is to take advantage of TRIPS rather than running away from it.

The Global Biodiversity Convention, which became operational in 1993, reaffirmed that each country has sovereign rights over their own biological resources and states are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner. India is a signatory to this international Agreement. India has to conserve its biodiversity and also progress in biotechnology in order to sustain its production growth. Care therefore should be taken not to grant IPRs, overly to transnational biotechnology companies. While developing countries are providers of the genetic resources and germplasm to these transnational biotechnology companies, they have to compete for rights and access to the same genetic resources and germplasm for development of their own research and development. FAO in 1987 passed a resolution recognising germ plasm as a common heritage of humanity and adopted a bill of "farmers rights". India needs to take necessary safeguards to conserve its biodiversity in the spirit of the FAO Bill.

The AOA does not have any substantive provision on "food and livelihood security". Trade concerns have been put ahead of the development and food security concerns. The Agreement does, however recognise food security as a legitimate non-trade concern in the preamble of the AOA and made provision in the form of an exemption from AMS calculation, expenditure incurred on public stock holding of food grains. The public expenditure incurred or revenue foregone for stock holding would be exempted from AMS provided they are solely for the purpose of food security programme. Member countries are also allowed to provide food aid to the poor section of population subject to the clearly defined eligibility criteria related to nutritional objectives for the selection of the targeted population. Food aid shall be in the form of direct provision of food or the provision of means to allow eligible recipients to buy food either at market prices or at subsidised prices. However, considering the critical importance of sustained agricultural development and food security for the developing countries, there is a need to address these concerns in future negotiations.

There is also fear in some quarters that the WTO free trade regime and opening up of agricultural trade will lead to corporatisation of agriculture and marginalisation of small farmers in rural areas. The competition from imported products will increase the vulnerability of the domestic producers particularly small producers. The introduction of IPRs regime to agriculture will privatise agricultural research and in future farmers have to pay for the research results, which were hitherto made available to them at free of costs by the government. TRIPS will also facilitate entry of transnational agribusiness corporations in the field of agriculture to the detriment of interest of small farmers.

The empirical studies done evidently shows that agribusiness firms are not interested in entering agricultural production directly. They find profitable to operate production through the vertically integrated contract system and limit their operation at secondary and tertiary level to processing and marketing. This would ensure smooth flow of private capital to agriculture, credit delivery to small farmers, proper input delivery and its end use, technical guidance and technological update, quality of products and guaranteed market for farm produce. The forward and backward linkage between farmers and agribusiness firms is for mutual benefits of both. By this process, small farmers would be able to diversify towards high value added tradable agricultural products and benefit from higher income.

Challenges and Opportunities:

The primary objective of the WTO Agreements is to remove trade barriers and facilitate the process of agricultural trade liberalization. This would result in openness of the world economy and improved market access to agricultural products of developing countries. With 146 member countries treating each other as most favoured nations without any discrimination and opening up of their domestic market would definitely provide challenging opportunities for augmenting agricultural trade for a country like India. The reduction in domestic support and protection in developed countries is also expected to raise prices of agricultural commodities and volume of agricultural trade in the world market.

India has already fulfilled almost all the WTO obligations under the AOA. The WTO Agreement on agriculture has definitely brought a wind of change to Indian agriculture. In the past, the problem of Indian agriculture was scarcity; today it is surplus. India has buffer stock of over 60 million tons. The transformation from scarcity to surplus makes India potentially a great agricultural exporter. Though the goal of self-sufficiency for domestic market is important, it alone cannot drive the Indian agriculture to higher growth path. It has to aim beyond domestic market and exploit international market opportunities. Immense agro-climatic diversity enables India to grow a large variety of tradable agricultural commodities. The commodity-wise empirical study shows that India has dynamic comparative advantage and a vast potential in export of varieties of tradable agricultural commodities. Being already one of the largest producers of tradable agricultural products, it can be a big beneficiary and become a major player in the global market.

India cannot therefore remain insulated from the world market, nor would it be in its interest to bypass WTO commitments. By joining the WTO, India gets MFN status from 146 countries. By staying out of the WTO, it implies forgoing the same. Its strategy now should be to negotiate for genuine reforms, more liberal trade environment and opening up of agricultural trade by developed countries. With China, another largest agro based economy joining the WTO; India is in a stronger position to take up the implementation issues with the developed countries in the review negotiations. What is required is that India should define its negotiating position positively by taking into account: (i) domestic realities of food security and rural development, (ii) the benefits the country gets if the WTO commitments are implemented fully by all members and (iii) the future commitments required to progressively establish "a fair and market oriented agricultural trading system" without jeopardising the basic goal of food security and poverty alleviation.

In international trade and economic relations, time has come for India to recognise the global realities and adopt pragmatic policies in extending reciprocity. Both developed and developing countries need markets in each other's countries for mutual benefits. Seeking market access calls for the offering of market access. In the new order of international trade, it means equal terms of giving opportunities and seizing opportunities in trade. There is hardly any scope for a developing country like India to ask for any concessions and special treatment outside the WTO arrangements.

Strategies and Policy Recommendations:

The road map to the global market, however, may not be smooth. To benefit from globalisation, Indian agriculture has to be efficient and globally competitive. Agricultural sector has to operate in more openness and competition. Future policies and strategies for agriculture development in India have to recognise these new trends and develop the required domestic capacity to meet the challenges.

India's future negotiating strategy and agenda on the AOA should focus on the following issues:

1. Abolition of all quotas including tariff quotas and QRs on imports and exports around the world except for those countries that have acute BOP problems.
2. Negotiation for ceiling on tariff bindings for any agricultural product at not higher than 50 per cent for any country.
3. Abolition of Blue box support measures and their inclusion to be in the Amber box for reduction commitments.
4. Abolition of all direct export-subsidies and bringing all agricultural commodities at par with the manufactured products.
5. Consolidation of food security and rural development concerns on line with trade concerns and their inclusion as support measures in Green box.
6. Updating of Green box measures to include poverty alleviation and rural development supports measures.

With the removal of QRs and opening up of agricultural trade, there is a likely danger of large importation of agricultural commodities into the country, which may adversely affect the competitiveness of India's products. Therefore there is a need for institutionalising the vigilance mechanism to keep track of imported agricultural commodities and take timely measures to arrest heavy import of certain commodities to minimise the adverse impact within the existing WTO tariff bindings. Though the Exim Policy-2001-02 envisages setting up of an institutional framework, this requires a high-level capability and skill.

A conducive and enabling macro economic environment is a must to gain from agricultural trade in the global market. This requires India to eliminate all policy-induced distortions and trade restrictions. Under the economic reforms, during the last ten years, India has succeeded in achieving macro economic stability and creating an enabling environment for economic development. With the liberalisation of exchange rates and opening up of the economy, the terms of trade for agriculture have shown a significant improvement. In the wake of the WTO Agreement, the Government has already initiated a number of policy reforms to move away from restrictive agricultural trade policy.

Notwithstanding these reforms, the agricultural policy at macro level requires further fundamental change to make Indian agriculture globally competitive. India's agricultural policy has been oriented towards providing incentives to farmers by way of support prices and input subsidies. The AOA disciplines on domestic support and market access, on the other hand, do not support both. Though the AOA does not come in the way of the government's support price policy, the domestic support-reduction commitment includes product-specific support as the difference between world market price and government support price. If the government support prices are more than market prices, which has already happened in the case of rice and wheat recently, these have serious implications on AMS. Similarly, the AOA is against input subsidies except for resource poor - farmers. The AOA policy framework thus emphasises shift away from trade distorting policy to trade promoting policy; shift from Amber box support measures to Green box support measures.

There still exist many policy-induced distortions in India, particularly food and input subsidies, which are fiscally unsustainable and have no justification in the context of the WTO commitments. Instead of price support and input subsidies, the agricultural policy should now emphasise protection of income of farmers by way of crop insurance and other targeted income compensatory measures and public investment on rural infrastructure such as irrigation, land development, rural electrification, regional development programmes, rural communications and rural road networks. This requires complete recasting of the present subsidy regime, if not abandoning it. The investment and input subsidies should be targeted to only the resource poor farmers and resource poor regions on line with the WTO commitments. With a view to promote agricultural exports, the government may also consider subsidising transport and freight charges.

At micro level, the Indian agriculture is plagued by a number of problems such as small farmers dominance and subsistence production, low productivity, lack of product diversification, low value addition, poor rural infrastructure and inadequate financial support. There are also other infrastructure bottlenecks, which need to be attended to expeditiously. These include quality roads, uninterrupted power supply and efficient procurement and grading facilities, cold storage, processing facilities, quality control, and global market link. The absence of all these facilities would adversely affect competitiveness of Indian agricultural products. In a competitive global market, considerations of cost, quality, timeliness and reliability will ultimately determine India's competitiveness. This requires heavy investment both by private and public sectors.

The micro level strategy should comprise the following elements:

1. Identification of products and producing areas in different agro-ecological zones based on agronomic potential and comparative advantage. Future focus should be on product specialisation in each zone, based on market demand and comparative advantage.
2. Vertical integration of producers with appropriate secondary and tertiary organisations such as processing industries, marketing intermediaries and exporting agencies. A vertically integrated strategy linking production with value added processing and export marketing would ensure the flow of private capital to agriculture, credit delivery to small farmers, proper input delivery, technical and extension guidance, quality control, guaranteed market to farm produce, reliable and timely delivery of products.
3. Promotion of commercially oriented village institutions or NGOs to augment the production capacity of small farmers, train them, provide technical and business advisory services and build supply sources of identified tradable agricultural commodities.
4. Expansion of infrastructure support starting from irrigation, roads, power supply, communications, storage facilities and port/air freight handling facilities. These require both public and private investment including FDI in the agricultural sector.
5. Promotion of demand-driven and product-oriented agricultural research and technological support. Along with the government, the private sector participation in agricultural research should be promoted to improve productivity, quality and viability.
6. Creation of institutional arrangements at central, state and district levels to systematically compile information and data on market intelligence, both domestic and global, quality and SPS standards, market prospects and relevant developments and disseminate the information to farmers, market intermediaries, processors and exporters.
7. Extension of financial assistance to producers, processors and exporters. Finance is a vital requirement from production to export.
8. Formation of product specific Agri-Export Zones (AEZs) for end-to-end vertical integration, effective transfer of technology and provision of

infrastructure facilities and incentives to promote exports in geographically contiguous area in all the states. The government should speed up the process of establishment of AEZs.

Financial intermediation is key to the successful integration of the Indian agriculture to the global market. Financial assistance is needed at every stage of commodity chain; production, procurement, processing, storage and export marketing. Financial assistance is also needed for establishing storage facilities, cooling and cold storage, grading and processing facilities, transportation and warehousing. Globalisation and liberalisation of agricultural trade under the WTO regime thus opened new opportunities and challenges to the Indian banking sector.

The banks should recognise the changes taking place in the agricultural sector in the wake of the WTO commitments. The liberalisation and globalisation of the agricultural sector will open up potentially viable opportunities for their financial operations in the years to come. What is required is the change in approach. The banks can no longer undertake agricultural finance on fragmented and farmer basis in isolation. Domestic agricultural production has to be integrated with the global market. They are required to develop new products for financing on end-to-end basis for each tradable agricultural commodity. The emerging models of contract farming, area approach, AEZs, value addition, corporate sector entry in processing and exporting, flow of FDI through the entry of MNCs, privatisation of agricultural research on commercial basis under IPR regime, farmers' income supporting green box measures, privatisation of rural infrastructure and conducive and enabling environment to develop viability of Indian agriculture; all these are the new areas of opportunities for banks' financial intervention. Unless the banking sector gears up to meet these challenging opportunities, Indian agriculture would not be able to take full advantages of the WTO arrangements.

The more mundane course of action needed at the grass root level is that of educating the functionaries, who are in close touch with the farmers. The rural branch managers are the most appropriate group of opinion creators. In their dual role as the credit planners and credit dispensers, they can influence the thinking process and the action program of farmers.

They have the business interest also in the development of agriculture. Educating them about the measures to be adopted for reorienting the priorities at the farm level should be the prime responsibility of the banks. Refining the methodology adopted for formulating the Service Area Credit Plans is the responsibility of the Reserve Bank of India. Enlisting the cooperation of all the stakeholders- the extension agencies, input suppliers, output users and the exporters – is the responsibility of the Lead District Managers, assisted by the District Development Managers of NABARD. Extending crop insurance facilities to mitigate the uncertainties of farm income is the responsibility of the Union Government. And finally, responding to the changing economic stimuli generated by globalisation would be the responsibility of the farm community itself.

The main stakeholders under the WTO commitments are farmers, farmers' groups/associations, NGOs, banks, processors, private researchers, research institutions and exporters. They are neither adequately involved in the policy discussions nor made aware of the WTO commitments and their implications. The producers, processors and exporters are not made aware of quality, health and safety standards imposed under the WTO regime. Consequently, a lot of controversies and confusions are created. The state governments should establish appropriate institutional mechanisms to inform, train, guide and regulate producers, traders, processors and exporters on provisions of the AOA, India's commitments, health, quality and safety standards imposed by different countries.

Another major handicap faced by the stakeholders is lack of information on the commodity-wise market outlook and prospects and relevant developments in the world market. It is difficult and costly for individual stakeholder to gather accurate information on prices, supplies and demand for the commodities they are dealing with in different countries and competition for their products. In a competitive market, timely, comprehensive and systematic information is a must even for establishing cases of dumping. India does not have at present a system of compilation and dissemination of these data. The stakeholders rely on the newspapers and media for the information. There is a need to have a nodal point both at the centre and in the states to systematically collect the information, build data bank, carry out market surveys, prepare trade documentary on agricultural exports and disseminate them on regular basis to the stakeholders.

In order to take advantage of the fast changing trends in the international market, India should focus its attention on conducting periodically studies to enhance its competitiveness. Some of them are recommended for immediate commissioning:

1. Feasibility study for agricultural exports in each agro-ecological zones based on product identification.
2. Analysis of the comparative advantage and export competitiveness of tradable agricultural commodities at state and commodity levels.
3. Assessment of world market potential and trade prospects for Indian tradable agricultural commodities.
4. Periodical review of commodity outlook and prospects.
5. Trade felicitation study for promoting agricultural exports.
6. Assessment of credit needs from production to export of agricultural commodities and refining the credit delivery system.
7. Studies on crop genetics and potential use of biotechnology to promote export of tradable agricultural commodities.
8. Banks' finance to a resource poor small farmers for income diversification options under governments' income safety net measures.
9. Implications of government policy moving away from Amber box measures to green policy measures including privatisation of research.
10. Study on requirement of SPS measures and trade related IPRs for each agricultural tradable commodity.

India is blessed with diverse climatic and agro-ecological conditions and an enterprising farming community. Green revolution during the last three decades has proved the potential and dynamism of the agricultural sector. Converting the deficit into a surplus country in food despite the growing population in a large country like India, in itself is a remarkable achievement and perhaps unparallel anywhere in the world. The liberalisation and integration with the global market under the WTO regime now poses another challenge. It can also be viewed as an opportunity to scale higher growth and rural prosperity. By diversifying agriculture to produce a variety of tradable agricultural commodities, opportunities for economic advancement could be created for all sections of the rural economy. Instead of continuing as a parking lot to the poor people, the rural sector should become a place for lucrative returns and ample employment opportunities. What is required is a right package of policies and programs to develop an efficient and globally competitive agricultural sector. This needs another green revolution of a different type.