

# Trade benefits throughout China and beyond

Greater access to world trade is bringing great benefits to China. But making sure these benefits are fairly distributed is a complex task



Above and facing page: For farmers in western China, increasing production is a key strategy to reducing poverty.

**W**orld Trade Organization (WTO) accession is designed to free up international markets. Participating countries must comply with WTO rules, often necessitating changes to internal policies, with implications for industry and agriculture. China's WTO accession in December 2001 signalled a range of changes and benefits for the overall economy. But ensuring these benefits reached everyone in the country without compromising food security was, and still is, a complex task.

ACIAR has supported two projects to help manage the transition to WTO accession; the first focused on the implications of this transition on food security, the second addressed the flow of benefits throughout China.

The Chinese Government has pursued a policy of food security for many years, including self-sufficiency in the grains sector. Food security has been a factor helping underpin recent economic growth. Another factor has been increased economic integration with the global economy. With WTO accession has come the deeper integration of the Chinese economy into world markets, an ongoing process.

During the 1990s, price growth for grains and other agricultural industries was strong, with a relatively stable domestic market supported by government interventions. Growth has mainly benefited the country's east, with China's west accounting for more than 70 percent of the country's poor.

Increased agricultural production is a key strategy for reducing poverty. The difficulty for those in western China engaged in agriculture is a lack of comparative advantage, against other

regions and global producers. Agricultural sectors without a comparative advantage are the most vulnerable to changes, especially those that face increased competition with other producers, both within and outside China, something the WTO rules are designed to achieve.

To better understand the implications for competition and food security in western China, ACIAR-supported project work has used economic modelling. The underlying methods of analysis developed in an earlier ACIAR project allow identification and quantification of relevant economic parameters, for their incorporation into the model as datasets.

This work has allowed the project team to compile datasets that have formed the foundation for a general equilibrium model of the Chinese economy. The model identifies five agricultural and 39 non-agricultural sectors, and aggregates this information into three regions: eastern, central and western.

Using the model, the implications of WTO accession for each region and the regional disparity of expected benefits have been demonstrated. This revealed a worsening of the income disparity between the wealthier eastern and poorer western regions. If left unaddressed, rural households in western China will suffer the worst effects of China's WTO accession.

Knowing the implications of WTO accession and the effects if left unmanaged is vital to the next stage of research – formulating policy options that the Chinese Government can use to alleviate negative impacts, says Emeritus Professor Ron Duncan of the Australian National University, who is leading the project on food security.



“This knowledge gives us a baseline, and the model a tool to ask the ‘what-if’ questions on behalf of policy-makers, for comparison of policy effects against the baseline,” he says.

Already this work has revealed that although agricultural sectors are adversely affected by WTO accession, the magnitude of these affects is less than anticipated.

Simulations on possible Government policy interventions to maintain grain self-sufficiency have revealed costly programs would be necessary. If transfer payment schemes that target inland regions are used to increase farmer welfare, they would need to be carefully designed to avoid large distortions in resource allocations. (Transfer payment schemes can use public spending to balance income disparities).

Areas with land- or labour-intensive agriculture are likely to gain from trade liberalisation. Those with low availability of land and labour will suffer a comparative disadvantage. With agriculture expected to shrink in importance due to trade reforms in the lead-up to and since WTO accession, China’s ability to achieve self-sufficiency in many agricultural commodities will be reduced.

Ultimately, the lack of reforms in agriculture, due to the policy of self-sufficiency, has reduced potential income growth and competitiveness. Monopolies in many agricultural sectors, such as in input supplies and output markets, mean that WTO accession is likely to increase incomes only where a comparative advantage is tied to market reforms. China’s policies to ensure food security will need to adapt to these realities if its agricultural sector is to maintain competitiveness.

For the Chinese Government, the challenge is developing policy

options that promote growth while buffering poor smallholders from negative impacts of WTO accession and policy reform.

Past research has shown the value of public investment, both in agricultural growth and poverty alleviation. The key for western China is the effective utilisation of these investments and associated policies to create opportunities for smallholders to gain through WTO accession.

The second ACIAR project is tackling these issues, again using economic analysis and modelling. Policy issues are being examined at the regional, village and household levels.

Surveys have been used in the development of datasets, beginning in Gansu Province.

The long-term aim is the development of a series of policy option papers, in Chinese, to advise a range of policy-makers. Past experience has shown that this – along with conferences to disseminate these papers and build networks of policy-makers – is an effective means of creating dialogue on policy options.

Professor Duncan believes smallholder farmers in western China can benefit with appropriate policy interventions, both in the short-term transition to WTO compliance and in the longer-term as markets open up.

“Our work is helping equip Chinese policy makers with information to examine the full range of policy options, for the most effective means of helping smallholders access the benefits of WTO accession,” he says.

Given the size of the Chinese economy and population, this would make a real difference in a number of lives, as the benefits flow equitably from east to west.

# Making every drop count

Managing China's water supply is vital to food production, reports Janet Lawrence

Irrigation plays a pivotal role in China's plans to meet future food demand. But the volume of water available for irrigation is under threat, largely from the increasing thirst of the country's urban and industrial sectors.

In the Zhanghe River Basin, in China's Hubei province, there is strong interest in widespread introduction of water-saving irrigation (WSI) techniques, that can increase food production using less water. But effective introduction of WSI depends on adequate operation of the water supply system.

Similar problems in Vietnam led Australian scientists from Melbourne University, under the leadership of Professor Hector Malano, to participate in an ACIAR project to study system-wide water management in that country's irrigation schemes. They worked with Vietnamese agencies to adapt a computer model, IMSOP (Irrigation Main System Operation), to analyse and improve operations and develop the infrastructure and institutional arrangements for pricing irrigation supply services. The team also modified and adapted the computer model ASSET MANAGER to speed up collection, retrieval and analysis of asset data.

The project's success caught the attention of the Zhanghe irrigation authorities, who approached the Australians on the team to see if they could undertake a similar study in China.

Together they developed a small ACIAR project designed to improve main system water management in China through a demonstration study in the Zhanghe Irrigation Scheme (ZIS). Its main objective was to appraise the situation in Zhanghe and modify the IMSOP and ASSET MANAGER models to include features peculiar to Chinese irrigation schemes.

The focus of the study centred on Zhanghe's Fourth Main Canal that operates under an arranged demand schedule, whereby farmers request water deliveries from the agency as they need them. The canal receives water from the main river system on average four times a year, for five to 15 days each time. Farmers must give three days notice of their need for water to their canal station, which aggregates the farmers' orders. The main canal office then aggregates all canal station demands to determine the total inflow required.

The project team found that farmers tended to delay their water orders on the expectation that rain would reduce their water bill (which is charged on a volumetric basis). This led to a congestion of orders when farmers all realised their crops were in danger of water stress and therefore submitted their requests within a short period of time. At that point the system was unable to deliver sufficient water for all.

The team modified and adapted the IMSOP model to account for this mode of operation,

resulting in the addition of a utility for prediction and sequencing of farmer's orders. Other IMSOP modifications came from data collected and processed from the Tuanlin weather station's databases. Through quality checks, the team identified and corrected many inconsistencies.

It emerged that changes in the water pricing policy in recent years had led to reduced water demand from farmers and a shortfall in revenues from water fees in relation to cost of water supply. The ASSET MANAGER analysis allowed the irrigation company to calculate actual operational cost of the Fourth Main Canal and develop a sustainable water fee policy.

Wuhan University scientists translated the modified versions of IMSOP and ASSET MANAGER into Chinese and they are now installed on ZIS's computers. China's National Centre for Irrigation and Drainage intends to promote the work at ZIS to other irrigation areas in China. Such guidelines will be vital as the Chinese Government tackles the massive effort to rehabilitate and modernise ailing structures.

By facilitating more widespread adoption of WSI practices, the project will also help to deal with problems of increasing water shortage and competition that are prevalent in vast areas of China, especially north of the Yangtze River. In several regions, the lack of water may limit future economic development.