

# Policy analysis of linkages between Indonesia's agricultural production, trade and environment (ADP/1994/049)

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<b>Collaborating organisations</b>	Australian National University (ANU), Australia; Ministry of Agriculture (MOA), Indonesia; Centre for Strategic and International Studies (CSIS), Indonesia
<b>Project leaders</b>	Prof. Kym Anderson (University of Adelaide (UA)), Dr Achmad Suryana (MOA), Dr Mari Pangestu (CSIS)
<b>Related projects</b>	ANRE/1989/023, ANRE/1990/022, ANRE/1990/038, ANRE/1992/028, ANRE/1994/09, EFS/1988/038
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<b>Duration of project</b>	1 January 1996 to 30 June 1999, extension 1 July 1999 to 31 December 2002
<b>Total ACIAR funding</b>	\$1,003,473

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### Project objectives

The key objective of this project was to assess the production, consumption, trade, income distributional, regional, environmental and welfare effects of structural and policy changes as they affect Indonesia's agricultural sector over the next 5–10 years. By using an appropriate framework that can be reused readily by analysts in the Indonesian Government and research institutes, a major spin-off will be capacity building in the country.

The project was extended to establish long-term, in-country capacity for Indonesian researchers to:

- use the WAYANG CGE model for a wide range of policy analysis applications well into the future
- be able to train others in the use of WAYANG
- upgrade and modify the model as circumstances change and opportunities for improvement evolve.

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### Location of project activities

South-East Asia

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## Overview

Launched in Bogor on 7 September 1996, ACIAR PN 9449 strove to improve agricultural trade and economic policy formation in Indonesia. Over the following 6 years the project's team developed and adapted an economic modelling framework that Indonesian analysts could reuse, update and maintain to address evolving development issues and policy priorities.

The project also initiated a capacity-building strategy to foster policy dialogue and help integrate Indonesia's diverse agricultural policy community, including universities, research centres and government agencies. This capacity-building strategy focused on training a new generation of users, and linking the Indonesian researchers with international researchers to improve, sustain and evolve these analytical policy tools.

In its early stages the economic modelling framework began assessing the efficiency, distributional, environmental and welfare effects of structural and policy changes on agriculture within Indonesia. The policy changes analysed included the trade impacts on agricultural production, the food consumption impacts on poverty and the environmental impacts on the natural resource base from regional and global trade agreements. Understanding and quantifying the economic impacts of agricultural growth and trade expansion were high priorities in the mid 1990s as many of Indonesia's policies were being questioned, especially in relation to their impact on the natural environment.

To address these concerns, the project introduced an important set of analytical tools that involved what was, at that time, a relatively new focus for the Ministry of Agriculture on the interactions between agriculture, other sectors, trade, income distribution, poverty alleviation and food security.

In particular, the project developed a national computable general equilibrium (CGE) model that could be linked and supported by a global CGE model, the Global Trade Analysis Project (GTAP) model. The GTAP model allowed researchers to analyse potential impacts due to evolving trade agreements and the rapid export-oriented growth of China and other reforming economies. In addition, these modelling tools helped enrich the policy debate about the environmental linkages between agricultural practices and natural resources impacts on soils, forests, water and the atmosphere.

While the project kept these objectives in mind throughout its life, the immediate research focus shifted rather abruptly. The financial, economic and political events which led eventually to the resignation of Indonesia's President Soeharto, in May 1998, compelled the participants to evaluate how PN 9449 could assist policymakers adapt to the impacts on poverty and food security caused by the economic crisis. The extent of the crisis resulted in refocusing the modelling and training efforts so as to also address more immediate agricultural, employment and food policy concerns faced by the country's policymakers.

The project team included representatives of a mix of institutions, each bringing a particular bundle of expertise to the project. The team was chosen to build on and broaden previous collaborations between the Centre for Agro-Socioeconomic Research (CASER, today know as ICASEPS) and the Economic Division of the Research School of Pacific and Asian Studies (RSPAS) at the Australian National University (ANU), and between the Centre for Strategic and International Studies (CSIS) in Jakarta and the Centre for International Economic Studies (CIES) at the University of Adelaide. The team included a valuable mix of disciplinary skills, in particular economic policy analysis, trade and environmental skills. A number of students from both Australia and Indonesia were also involved in the project.

## Project achievements

The project established new economic modelling tools and a new generation of researchers who today better understand and can better explain to policymakers the strengths, benefits and weaknesses of CGE modelling. The project's model simulations and policy research efforts achieved three interrelated outcomes. First, the project provided timely new knowledge, exploring the implications of the economic crisis on the agricultural and food sector in Indonesia, and on how the various trade and other policy responses could diminish the negative impacts of the crisis.

Second, the project built up the capacity in research centres and universities to manage, train and disseminate the results of CGE models developed by the project as well as newer generations of these models. Importantly, three of the students who participated in training components of the project, using the project's CGE models for their postgraduate studies, are now teaching at universities in Bogor, East Timor and South Kalimantan.

Third, the economic modelling results were used to promote debate and develop a broader understanding of how alternative agricultural and food policy reforms that underpin Indonesia's agricultural development strategy enhance production and employment of key agricultural sector products in line with national development goals and with the Asia Free Trade Agreement, the Asia Pacific Economic Cooperation trade agreements and the World Trade Organization.

## The difference the project has made

How has the project contributed to improvements or changes in the local community? This should focus on users of the new knowledge/approaches and answer the question ‘so what?’ For example, the smallholder farmers who have implemented the new water management regime have reduced water use by 30%, freeing up this water for use in the local village and increasing environmental flow.

Overall, this ACIAR project has made a number of important contributions to agricultural policy formation and policy analysis capacity in Indonesia. One example is the way in which the project has raised awareness about the importance of recognising and understanding the economic interactions between agriculture and other sectors, and the implications of those interactions on trade, income distribution, poverty alleviation and food security.

Today, an increasing number of policymakers now know how to obtain agricultural and trade policy analysis based on quantitative measures of the production, consumption, trade, welfare and distributional consequences of current versus alternative policies. In particular, the Ministry of Agriculture and the Ministry of Trade consistently request and draw on the results from the analytical tools promoted by the project.

These types of analyses are important in ensuring the sustainability of agricultural development in Indonesia, in securing access to international loans, and in reducing the risk that multilateral and regional trade negotiations are not frustrated by unsubstantiated or exaggerated claims about adverse distributional effects of agricultural development and trade.

The project has also made a difference by enhancing the capabilities of research centres and universities in Indonesia to model the economy-wide effects of economic growth, structural changes and policy developments at home and abroad on agricultural production, trade and income distribution. A related capacity-building contribution is the country’s long-term capacity to independently undertake subsequent empirical policy analysis and to communicate their analysis to the broader development community.

## Project impacts

This section describes the flow-on effects of the project and the impacts on the community, researchers etc. as a result of the difference the project has made. These should include any community, capacity-building and scientific impacts and are a summary of question 3 in the second report. For example, the local researchers are now conducting training workshops in the surrounding districts.

The project has made an impact on the agricultural and economic research community in Indonesia by encouraging new networks of research centres and universities. These local and international research networks have grown and matured over time. A related impact is the improvement in the country’s long-term capacity to independently undertake and communicate subsequent empirical policy analysis.

Three of the project's research team are presently in powerful policymaking positions in Indonesia. The project leader of CSIS was appointed Minister of Trade in 2004, and one of the major project participants from ICASEPS was named Director General of the Trade Research and Development Agency in the Ministry of Trade. Similarly, the Director General of the Indonesian Agency for Agricultural Research and Development (IAARD) from the Ministry of Agriculture was formerly a project leader from ICASEPS.

The project's concepts, ideas and policy tools are now used in a variety of ways by both the Ministry of Trade in its global trade negotiations and national level policy dialogue, and by the Ministry of Agriculture to evaluate the production and poverty implications of proposed food policy options.

One of the most important scientific impacts of the study was the development of the 3-region, 65-sector, multiple-household WAYANG CGE model of the Indonesian economy. The WAYANG model was made publicly available via the web for both medium-term crisis-related policy research and long-term research on agriculture, trade and environmental linkages. A modelling feature unique to WAYANG at that time was the inclusion of 10 household groups based on income levels and production activities. This innovation allowed researchers and policymakers to understand, for the first time, the distributional consequences of policy-, market- and trade-related economic changes in a CGE framework for Indonesia.

From: Gordon, J. and Davis, J. (eds) 2007. Adoption of ACIAR project outputs: studies of projects completed in 2002–2003. ACIAR: Canberra.