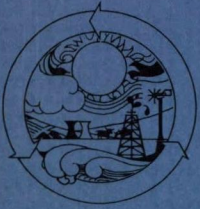


RSi



East-West Resource Systems Institute
East-West Center, Honolulu, Hawaii



The Program
of the

EAST-WEST RESOURCE SYSTEMS INSTITUTE

June 1979

FOOD
SYSTEMS

ENERGY
SYSTEMS

RAW
MATERIALS
SYSTEMS

THE EAST-WEST CENTER—officially known as the Center for Cultural and Technical Interchange Between East and West—is a national educational institution established in Hawaii by the U.S. Congress in 1960 to promote better relations and understanding between the United States and the nations of Asia and the Pacific through cooperative study, training, and research. The Center is administered by a public, nonprofit corporation whose international Board of Governors consists of distinguished scholars, business leaders, and public servants.

Each year more than 1,500 men and women from many nations and cultures participate in Center programs that seek cooperative solutions to problems of mutual consequence to East and West. Working with the Center's multidisciplinary and multicultural staff, participants include visiting scholars and researchers; leaders and professionals from the academic, government, and business communities; and graduate degree students, most of whom are enrolled at the University of Hawaii. For each Center participant from the United States, two participants are sought from the Asian and Pacific area.

Center programs are conducted by institutes addressing problems of communication, culture learning, environment and policy, population, and resource systems. A limited number of "open" grants are available to degree scholars and research fellows whose academic interests are not encompassed by institute programs.

The U.S. Congress provides basic funding for Center programs and a variety of awards to participants. Because of the cooperative nature of Center programs, financial support and cost-sharing are also provided by Asian and Pacific governments, regional agencies, private enterprise and foundations. The Center is on land adjacent to and provided by the University of Hawaii.

1777 East-West Road, Honolulu, Hawaii 96848

**THE PROGRAM
OF THE
EAST-WEST RESOURCE SYSTEMS INSTITUTE
JUNE 1979**

**East-West Resource Systems Institute
East-West Center
Honolulu, Hawaii U.S.A.**

THE EAST-WEST RESOURCE SYSTEMS INSTITUTE PROGRAM

Among the most severe problems facing humanity today are those of obtaining adequate and predictable supplies of food, energy, and raw materials. These intimately interrelated problems affect in varying degrees all people in all countries. Today, possibly as many as a billion people in the world do not receive enough food. In recent years, the economies of both developing and industrialized nations have been shaken by rapid increases in the price of crude oil. The economies of a number of developing countries have also been disrupted by sharp fluctuations in the prices of commodities which they must export if they are to develop.

The problems of resources are intimately linked with the concepts of both "stability," which is needed for present well-being, and with "resilience," which is needed for future well-being. Both nationally and internationally, then, agreements and procedures are necessary around which the kinds of interdependencies mentioned can be guided to optimize stability and resilience. Whether living in developing or industrialized countries, people need to avoid unnecessary disasters, to learn from mistakes, and to be flexible enough to cope with future uncertainties.

Thus the program of the Resource Systems Institute (RSI) of the East-West Center is directed to the overall goal of understanding how nations can maintain adequate, equitable, and reliable access to resources. This effort is intended to explore the feasibility, advantages, and costs of moving the resource systems of the East-West area toward greater stability and resilience. To do so, the program of the Resource Systems Institute consists of a broad study of the three interrelated projects described.

1. Food Systems builds knowledge about the dynamics and interdependencies of food flows, foreign exchange, and demands for energy and raw materials; explores ways for food importing nations to develop diversified food systems and to improve utilization of available food; does research on less energy intensive methods of food production; and evaluates alternative policies of pricing and land use.

2. Energy Systems provides analyses of the vulnerabilities of nations to disruptions in the flow of fuels; collects and analyzes data on energy supply, demand, and flows, especially those in rural areas; evaluates alternative development policies on a variety of energy systems; and develops energy indexing methodologies and information exchange both within and among nations.

3. Raw Materials Systems focuses on analysis of the distribution problems and on opportunities for the development of the most important raw material resources of the Asia-Pacific area, particularly fertilizer raw materials and forest products.

International teams cooperate with RSI staff to conduct research on these three systems. A series of data bases and information exchange facilities are now being developed to support their research. On an interdisciplinary basis, the various project teams will explore these problems stressing their interrelationships in both local and international terms for the Asian and Pacific region.

PROJECT 1. FOOD SYSTEMS



The international flow of food commodities in the Asian and Pacific area has increased greatly since World War II. Many countries now import a large proportion of their food supplies to meet domestic demand. North America, Australia, and New Zealand are major food exporters, providing needed foodstuffs for Japan and the Soviet Union as well as for many developing countries of the East-West region. However for many countries in the region, developing and industrialized, high dependence on food imports creates a condition of high vulnerability both to foreign exchange depletion and to the inflationary effects associated with cyclical food shortages in the international marketplace. It is important, therefore, to keep dependence on food imports below the threshold which would undermine existing and potential capabilities to satisfy other basic needs from domestic sources.

In principle, many of the food deficit areas of Asia and the Pacific have considerable potential for increasing food production. The issue is how to intensify food production in a manner that is biologically appropriate, socio-economically feasible, and sustainable in terms of energy utilization patterns. For example, one possible implication of intensified food production could be a growing dependence on imports of crude oil and its derivatives, such as ammonia and pesticides, that would make food production highly vulnerable to sudden and long-term changes in the world's supply and price of petroleum. Similarly, many strategies for increased food production may have adverse social, economic, or even ecological consequences unless careful attention is paid to the institutional and policy contexts within which food is produced and distributed.

Therefore, the major research concerns of the Food Systems project are:

- an exploration of the various strategies for developing and maintaining more diversified and resilient food production systems;
- an examination of the increasingly complex characteristics of international food flows and their subnational impacts, with special attention to the constructive roles of appropriate food policies; and
- an evaluation of the feasibility of less petroleum-intensive energy modes and technologies for supporting increased food production. This research is undertaken jointly with the activity on energy and rural development listed under energy systems.

Project Leader: Dr. John Bardach

Project Team: Dr. Bruce Currey, Dr. Bruce Koppel, Dr. Charles Schlegel, Dr. Rodney Tyers, Dr. Donald Green, Mr. Richard Morse, Mr. Y.H. Yang.

Cooperating Institutions: National and international organizations in various countries dealing with food-related issues, including World Bank, United Nations University, Food and Agriculture Organization, United Nations International Children's Emergency Fund.

PROJECT 2. ENERGY SYSTEMS



The nations of the Asian and Pacific area differ greatly in degrees of their self-sufficiency in energy. Japan, the U.S.A., and most of the developing countries are heavily dependent on imported oil. That dependence in many instances is increasing. Other countries, such as Iran and Indonesia, are present or potential energy exporters. Consequently, the countries of the area are interconnected within a system of energy production, processing, transfer, and use. This system is evolving rapidly as each nation's supplies and demands change. Most countries desire to

increase the efficiency with which they use energy in order to decrease short- and long-term dependence on outside sources and on limited internal supplies.

The countries in the Asia-Pacific area also have a common interest in seeking to understand the system sufficiently well for each to plan its energy future. Such plans may take the form of developing alternative sources, changing the mix of energy demands, or increasing the efficiency with which energy is used to satisfy human needs. Each country in the area has its own set of energy problems based on its own particular requirements and resources. At least in the short run, the approaches to solving these problems will differ considerably among countries. In general, however, each energy-related task must be examined to see which source is most suited to it. The attempt must be made both to achieve the maximum flexibility with the mix of energy sources that is available and to match energy sources with plans for economic and social development.

Two types of change affect the energy systems of the world and thus need to be considered in order to plan effectively for the future. The first is relatively slow incremental change that is occurring in the energy systems through means such as the development of new technology, economic growth, shifts in population, the buildup of adverse environmental feedback, the decay of natural ecosystems, and the gradual depletion of known energy resource deposits. The second type of change is the sudden fluctuations that can arise because of events such as a discontinuous rise in world energy prices, imposition of trade barriers, international conflicts, nuclear accidents, and bad weather.

While the impacts of these two kinds of change will vary among nations, it seems true that failure to consider and guide the continuing and forthcoming incremental changes in the best possible ways will not only increase each country's vulnerability to sudden changes but will also increase the likelihood of their occurrence. Thus, no matter what its long-term economic, political, or technical goals may be, each country has a common need for better information about the nature of these incremental changes.

Given these conditions, research conducted by the Energy Systems project is directed both toward an increased understanding of these incremental changes and toward the interactions among the technical, political, environmental, and economic components of the energy systems in the East-West area.

Project Leader: Dr. Kirk R. Smith

Project Team: Dr. John Bardach, Dr. Harrison Brown, Mr. Fred Burian, Dr. Bruce Currey, Dr. Donald Green, Dr. Gary Hansen, Dr. Bruce Koppel, Mr. Richard Morse, Dr. Guy Pauker, Dr. Robert Randolph, Dr. Elrich Sanger, Dr. Corazon Siddayao, Dr. Allen Whiting, Dr. Kim Woodard

Cooperating Institutions: Appropriate national and international organizations in various countries which focus on energy issues.

PROJECT 3. RAW MATERIALS SYSTEMS



Trade with the industrial countries is a crucial factor in the economic growth of developing countries and raw materials produced from both nonrenewable and renewable resources provide more than 80 percent of developing countries' earnings of foreign exchange. In turn, industrial countries increasingly turn to developing countries for their own supplies of raw materials.

The developing countries' share of nonfuel mineral exports is less than 30 percent of the world trade in these minerals, but the importance of these exports to the economies of many of these developing countries is considerable. Reaping of their full share of these commodities' value by the exporting country is particularly important because their national mineral resource capital can be exchanged for developmental capital. However large fluctuations in world prices of these commodities can cause major imbalances in the economies of developing countries. Further, depletion of important nonrenewable resources can cause national economies to decline unless they are balanced by development of other additional resources.

For many developing countries, the monetary value of agricultural exports is greater than that of their nonfuel mineral exports; and, in addition, exports of renewable resource commodities can continue far into the future. As renewable raw material supplies go through cycles of glut and scarcity because of variables such as weather and ravages of disease, however, their prices fluctuate correspondingly. Thus the problem of instability of such products' world prices is fully as critical as it is for nonfuel minerals and therefore can greatly disrupt the developing countries' economic growth.

Within the context of these international problems, distribution of the most important raw material resources of the Asia-Pacific area needs to be understood, as do problems and opportunities of their development. These resources include timber, rubber, cotton, jute, potash, phosphate, copper, nickel, tin, iron, bauxite, and deep-sea minerals. Development of knowledge about the resources and flow of fertilizer raw materials in the East-West area should be emphasized where great need for fertilizer by the developing countries contrasts strongly with their lack of foreign exchange to buy fertilizer on the world market.

Opportunities need to be identified to extend raw material resources by such means as: resource discovery, improved recovery, recycling, substitution of non-energy-intensive for energy-intensive materials, substitution

of renewable for nonrenewable materials, and conservation. Full analysis of resource systems will require consideration of both the demand for land and water resources and the economic and other costs of environmental and social impacts.

Project Leader: Dr. Richard Sheldon

Project Team: Dr. Saleem Ahmed, Prof. Louis Goodman, Dr. Donald Green,
Mr. Y. H. Yang

Cooperating Institutions: Appropriate national and international research organizations in various countries which focus on various aspects of raw materials, including United States Geological Survey, Committee for the Coordination of Offshore Prospecting (United Nations), Circum-Pacific Energy and Mineral Resource Council, International Institute for Applied Systems Analysis, the International Food Policy Research Institute.

INTER-INSTITUTE COOPERATION

Extended Maritime Jurisdiction: Environment
and Resource Management Issues

Issues of management and use of its resources and environment through nations' interactions and interdependent policies make the ocean a natural geopolitical link for nations east and west. Changing national perceptions of the ocean are resulting in the unilateral extension of national jurisdictions to 200 nautical miles from shore. Nevertheless, extended jurisdiction does not change the facts that: (1) marine resources are often transnational in distribution; (2) the ocean, a continuous, fluid system, transmits environmental pollutants and impacts; and (3) many maritime activities transcend the new national marine jurisdictional boundaries. Thus there may be an increase in potential and actual tensions, misunderstandings, and conflicts concerning management of marine activities, resources, and the environment.

The goals of the project are to provide an independent, informal forum for specific identification and exchange of views on evolving East-West ocean management issues and to undertake subsequent research designed to provide a knowledge base to aid in their international resolution. The project's specific objectives are:

- to provide a broad perspective on present and future trends of marine interests and marine use in the Southeast Asian Seas, and of the implications of extended maritime jurisdictions for marine use management;
- to identify, anticipate, and characterize transnational ocean management issues of mutual concern and consequence to nations of east and west using the Southeast Asian Seas; and
- to delineate for both subnational, national and international policy-makers the range of policy options with respect to the issues, and their potential problems and opportunities.

This five-year project is undertaken cooperatively by the Resource Systems Institute, the Culture Learning Institute, and the Environment And Policy Institute. Resource Systems Institute Research Associate John Bardach is a senior team member of this project.



Weekly seminars provide opportunities to share views on research in progress. Martha Caldwell, RSI Joint Doctoral Intern, presents aspects of her dissertation research on Japanese energy policy making.



Through inter-institute research projects the perspectives and resources of several Center Institutes are brought to bare on crucial research issues. John Bardach (RSI) and Choon-Ho Park (CLI) lead cooperative research on environmental and resource issues of Extended Maritime Jurisdiction and related ocean problems.

PARTICIPANT CATEGORIES

FELLOWS

Each year outstanding international scholars and officials from the academic community and government or private organizations are invited to participate in the research and professional work of Institute projects. Visiting Fellow Awards are generally for those involved for less than one month in the planning and design of projects. Research Fellow Awards are generally for those involved from one to thirty-six months in the full range of research and development activity. Recipients of Fellow Awards receive stipends comparable to salaries and accept responsibilities on the same scholarly standing as Institute academic staff. Requests for additional information should be addressed to: Director, East-West Resource Systems Institute.

GRADUATE STUDY

Graduate Study Awards

Each year the Institute makes a number of awards to individuals who wish to combine their work in an Institute project with master's or doctoral level degree study at the University of Hawaii. Awards are contingent upon the individual's acceptance for graduate study at the University of Hawaii and at the department in which the degree study will be undertaken.

Master's degree scholarships are awarded for 17 months and doctoral scholarships for 36 months. In special cases, extensions to 24 and 48 months respectively may be made for master's and doctoral candidates.

In addition to the University course work, students participate in Institute projects which enhance and complement their degree study. Project participation may consist of research design, documentation research, data collection and data processing, active roles in conferences and workshops, and the preparation of jointly authored research papers. Often a student's thesis or dissertation is an integral part of project research.

A unique feature of certain graduate degree awards is the opportunity for recipients to design and undertake field education programs in Asian, Pacific or U. S. mainland locations. Funding of approved field study proposals is subject to availability of funds.

Joint Doctoral Intern Awards



In addition to awards for graduate study at the University of Hawaii, the Institute offers a limited number of grants to students pursuing doctorates at other universities who have completed all doctoral degree requirements except the dissertation and language. These grants, called Joint Doctoral Intern Awards, support dissertation research that is closely related to Institute research projects.

These awards are offered for a maximum of two years (of which one year must be spent in Honolulu). Interns are also eligible for up to 12 months of

field research. Funding of approved field research proposals is subject to availability of funds.

APPLICATION FOR AWARDS

Applicants should be citizens or legal permanent residents of any Asian or Pacific country or the United States. Non-American award recipients must meet all exchange visitor (J-1) visa regulations.

Individuals interested in Graduate Degree Student Awards for participation in Center projects and study at the University of Hawaii must apply in the annual competition. Except for U. S. applicants, the first phase is applying to the national competition held by the Center's in-country program representatives. Application deadlines vary from March to September of the previous year. American applications are made directly to the Center and must be received no later than December 1.

Joint Doctoral Research Interns should apply directly to the Institute. Application deadlines are June 30 and December 31. Interested applicants should send a research proposal, resume, and certification of advance degree work toward a doctorate in their home institution.

Requests for additional information should be addressed to: Program Officer for Education, East-West Resource Systems Institute.



East-West Center staff and participants visit the site of a student project and a biogas digester in Wainae, Oahu, Hawaii.

Errata: RSI Bulletin, June 1979

Two additional participant categories exist at the Resource Systems Institute.

RESEARCH AND PROFESSIONAL INTERNS

Research and Professional Intern awards are made by invitation, nomination, or application. Selections are made based on relevance of each applicant's professional background to current Institute project activities. Both kinds of interns receive supervised practical experience in specific Institute projects and may be expected to provide other types of assistance for project teams.

Requests for additional information may be made directly to the Program Officer for Professional Associates or through the East-West Center Award Services.

PROFESSIONAL ASSOCIATES

For periods ranging from a few days to several months, Professional Associates participate in seminars, workshops, conferences, and planning meetings. These Associates are policymakers, public officials, scholars, and managers from business, government, and education who come to the Institute to share knowledge and experience on the Institute's interrelated projects.

Awards are made by invitation, nomination, or application. Selections are based on relevance of each potential participant's professional background to current Institute project activities. Approximately 10 conferences, workshops, seminars, and planning meetings held each year involve 200 to 250 participants from all over the world, including the United States.

For additional information, please write: the Project Leader or the Program Officer for Professional Associates, East-West Resource Systems Institute.

SOME RECENT STAFF PUBLICATIONS

BOOKS AND MONOGRAPHS

1979

Learning How to Live in a Technological Society (Ishizaka Lectures 1) by Harrison Brown, with Japanese translation by Shigeharu Matsumoto. Tokyo: The Simul Press, Inc., 1979. 209 pp.

Low-Cost Housing Technology: An East-West Perspective by Fred Burian, Louis J. Goodman, et al. Oxford: Pergamon Press, Inc., 1979. 209 pp.

Management of Development Projects: An International Case Study Approach by Louis J. Goodman and Ralph N. Love. New York: Pergamon Press, 1979. 266 pp.

Rice Postproduction Technology in the Tropics by M. L. Esmay, Eriyatno Soemangat, and A. L. Phillips. Honolulu: University Press of Hawaii, 1979 (forthcoming).

The Interaction of Time and Technology: Propositions Suggested by an Examination of Coal and Nuclear Power, Hazard Indices, the Temporal Judgements of Law and Economics and the Place of Time in Mind and Myth by K. R. Smith. New York: Garland Publishers. Outstanding Dissertation Series (forthcoming).

The International Energy Relations of China by Kim Woodard. Palo Alto, California: Stanford University Press, 1979 (forthcoming).

1978

* Central Places, Growth Centers, and Integrated Area Development: Towards an Organizational Perspective by Bruce Koppel. Manila: National Economic and Development Authority, 1978. 127 pp. RS-016-R

* Choice of Technology and Working Conditions: A Social Assessment Framework by Bruce Koppel. Geneva: International Labour Organization, 1978. 32 pp. RS-017-R

Palm Sago: A Tropical Starch from Marginal Lands by Kenneth Ruddle, Dennis Johnson, Patricia Townsend, and John D. Rees. Honolulu: University Press of Hawaii, 1978. 207 pp., \$7.50. RS-020-R

* Technology Assessment/Agriculture by Bruce Koppel. A program of research, curriculum development, policy recommendations, institution building, and publication/documentation. Manila: SEARCA, 1978. 95 pp. RS-006-R

* Available at East-West Resource Systems Institute.

The Human Future Revisited: The World Predicament and Possible Solutions by Harrison Brown. New York: W.W. Norton & Co., Inc., 1978. 287 pp.

Urbanization and Rural Development: A Spatial Policy and Equitable Growth by D.A. Rondinelli and K. Ruddle. New York: Praeger, 1978. 221 pp.
RS-021-R

ARTICLES AND OTHER PUBLICATIONS

1979

"Can Alternative Energy Resources be Brought into Large-Scale Use in the United States by the Year 2000? by Harrison Brown. Energy, 1979 (in press).

"Drip Irrigation Design Equations" by Victor A. Gillespie, Allan L. Phillips, and I-pai Wu. Journal of the Irrigation and Drainage Division, Proceedings of the American Society of Civil Engineers, 1979 (in press).

"Escaping the Oil-Import Trap" by Harrison Brown. In The New York Times, Friday, March 23, 1979.

"Evaluating Assessment: A Perspective and Commentary" by Bruce Koppel. Technological Forecasting and Social Change, 1979 (in press). RS-025-R

"Hydraulics of Microtube Emitters" by Krishanlal C. Khatri, I-pai Wu, Harris M. Gitlin, and Allan L. Phillips. Journal of the Irrigation and Drainage Division, Proceedings of the American Society of Civil Engineers 105, no. IR-2, 1979 (in press).

"N Utilization and Economics of Some Intercropped Systems in Tropical Countries" by Saleem Ahmed and H.P.M. Gunasena. Tropical Agriculture, vol. 56, no. 2, April 1979.

"Studies on Nitrogen Efficiency on Paddy Rice" by Saleem Ahmed, Yoshio Yamada, and N.H. Khan. Proceedings of the American Chemical Society/Chemical Society of Japan Annual Meeting, 1979.

"Technology Assessing: A View from Asia" by Bruce Koppel. Technos, 1979 (in press).

"The Changing Functions of Research Management" by Bruce Koppel. Agricultural Administration, 1979 (in press).

"The 'Green Revolution' as Social Development: The Case of the Philippines" by Bruce Koppel. International Journal of Contemporary Sociology, 1979 (in press).

"When Should Universities Engage in Community Development?" by Bruce Koppel. Technos, 1979 (in press).

1978

- "Aquatic Proteins" by J. E. Bardach and E. R. Pariser. In Protein Resources and Technology: Status and Research Needs edited by M. Milner, N. S. Scrimshaw, and D. I. Wang, pp. 427-484. Westport, Connecticut: Avi Publishing Co., Inc., 1978.
- "Beneficial Effects of Weeds in Pest Management--A Review" by B. H. Zandstra and P. S. Motooka. PANS 24, no. 3 (1978) pp. 333-338.
- * Case Histories in Managing Development Projects: Guidelines for Writers by Louis J. Goodman and Ralph N. Love. Honolulu: East-West Center, 1978. 35 pp.
- * Drainage Requirements for Lowland Rice by R. C. Undan, A. L. Phillips, and R. W. Hill. ASAE paper no. 78-2041. St. Joseph, Michigan: American Society of Agricultural Engineers, 1978. 21 pp.
- "In-Field Post Production Losses on Small Farms in Sri Lanka" by Sarath G. Ilangantileke. Presented at the Workshop on Grain Post Harvest Technology, Department of Agriculture, Royal Thai Government and S. E. Asian Cooperative Post-Harvest Research and Development Program, Bangkok, Thailand, January 10-12, 1978. 25 pp.
- "Military Uses of Uranium: Keeping the U. S. Energy Accounts" by Kirk R. Smith. Science 201 (1978) pp. 609-611.
- * "Potential of Organic Manures and Plant Residues in Crop Production" by H. P. M. Gunasena and Saleem Ahmed. Journal of the National Agricultural Society of Ceylon 14, annual issue (1978) pp. 69-84. RS-031-R
- * "Private Investment in Agricultural Inputs and Sustaining the Green Revolution" by Bruce Koppel. Indian Journal of Agricultural Economics (1978) pp. 1-20. RS-032-R
- * Proceedings: Second Review Meeting, INPUTS Project edited by Saleem Ahmed and H. P. M. Gunasena. Honolulu: East-West Center, 1978. 391 pp.
- * Public Policy Implementation and Project Management (PPIPM): Summary Report of the Workshop for Comparative Evaluation of Prototype Curriculum for Project Management by Louis J. Goodman, et al. Honolulu: East-West Center, 1978. 87 pp.
- * Report on the Asia-Pacific Energy Studies Conference with introductory paper by Harrison Brown and Kirk R. Smith. Honolulu: East-West Center, 1978. 112 pp., \$2.00
- "Rural Development and Education in China" by J. N. Hawkins. Social Theory and Practice 6, no. 2 (1978). RS-033-R

* Available at East-West Resource Systems Institute.

"Rural Development in Indonesia" by Gary E. Hansen. In Approaches to Rural Development in Asia. Martinus Nijhoff Publishers (1978).

"Rural Education and Technique Transformation in the People's Republic of China" by John N. Hawkins. Technological Forecasting and Social Change 11, no. 4 (1978) pp. 315-333. RS-034-R

* Technology Assessment and Research Management by Bruce Koppel. SEARCA Bulletin, no. 4, Manila. 32 pp. RS-035-R

"The International Potential of Traditional Resource Systems in Marginal Areas" by K. Ruddle and T. B. Grandstaff. Technological Forecasting and Social Change 11, no. 4 (1978) pp. 119-131.

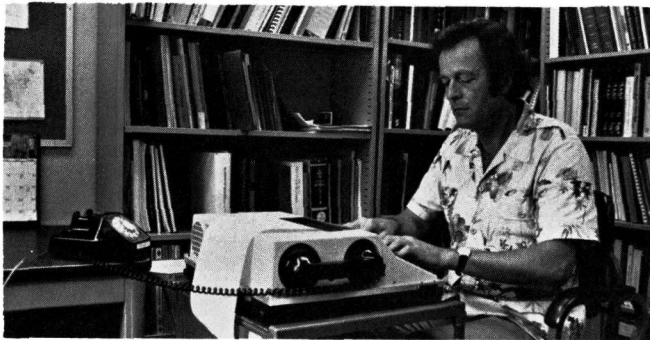
"Traditional Agriculture Skill Training among Peasant Farmers" by R. Chesterfield and K. Ruddle. Anthropos (1978). RS-036-R

"Traditional Skill Training and Labour in Rural Societies" by K. Ruddle and R. Chesterfield. Journal of Developing Areas (1978).

PUBLICATIONS IN SERIES

* The Malia Coast Comprehensive Health Center by Nancy Crocco and Tetsuo Miyabara. Case history no. 2. Honolulu: East-West Center, 1979. 77 pp.

* Quality Management Program Development in a U. S. Private Industry by Frank E. Cotton, Jr. Case history no. 1. Honolulu: East-West Center, 1978. 43 pp.



The use of telecommunication and computer technologies help link geographically disbursed research teams. From his office, RSI Research Associate Richard Sheldon conducts continuing teleconferences with colleagues in Asia, the Mainland U.S. and Europe.

* Available at East-West Resource Systems Institute.

EAST-WEST RESOURCE SYSTEMS INSTITUTE STAFF

Director

BROWN, Harrison, Ph.D. Chemistry, Johns Hopkins University, 1941: Came to the Center in August 1977 from post as Professor of Science and Government at the California Institute of Technology. For many years served as Foreign Secretary of the National Academy of Sciences and as head of the Academy's World Food and Nutrition Study. Was President of the International Council of Scientific Unions from 1974 to 1976, and also is a former faculty member with the University of Chicago's Plutonium Project and the Oak Ridge Laboratory. Special research interests: interrelationships between resources, technological change, and economic and social development.

Assistant Director

GOODMAN, Louis J., P. E., M. S. Civil Engineering, Harvard University, 1947: Came to the Center in 1971 after three years as Project Specialist in Engineering Education with Ford Foundation in the Philippines. Was formerly a faculty member at Ohio State and Syracuse Universities. Is a registered Professional Engineer and has served as consultant to governmental agencies, as well as architectural, engineering, and industrial firms working in variety of public works projects. Was Fulbright Professor in Egypt, 1964-65; and in Ecuador, summer 1967. Awarded honorary doctorate of engineering from Yeungnam University in Korea, 1976. Special research interests: the comprehensive policy problems associated with the planning and management of development projects.

Research Associates

AHMED, Saleem, Ph.D. Soil Science, University of Hawaii, 1965 (on East-West Center scholarship): Came to the Center in 1973 from position as Senior Technical Services Advisor with a multinational fertilizer manufacturing and marketing firm in Pakistan. Was formerly on faculty of the University of Karachi. A Pakistani national, serves as a consultant on fertilizer marketing and management to several international agencies. Primary research interests: the area of food and agriculture including micro aspects such as inputs use and farmer decision making, and macro aspects such as rural dynamics, agribusiness marketing, and management of human resource management.

BARDACH, John, Ph.D. Zoology, University of Wisconsin: Served as Director of Hawaii Institute of Marine Biology; is now also Adjunct Professor at University of Hawaii; has chaired aquatic food sources team as part of the World Food and Nutrition Study of the National Research Council/National Academy of Sciences. A former faculty member at University of Michigan, is executive council member of the Pacific Science Association and board member of the Law of the Sea Institute. Special research interests center around the relationship of aquatic ecology to economics, including resources management aspects of extended maritime jurisdiction.

BURIAN, Fredrich, M.A. Philosophy, University of Hawaii, 1972: Served as Research Assistant in chemistry departments at Wayne State University, Stanford University, and University of Hawaii. Holds certificate in Instructional Media Systems. Special research interests: the impact of graphic/kinetic information displays on policy formulation and the international flow of scientific information.

GREEN, Donald G., Ph.D. Extension/Adult Education, Cornell University, 1964: B.S./M.S. Agricultural Education, Iowa State University, 1953-54. Joined the Center in 1971 after four years in India with the Ford Foundation. Has also been associated with the Agricultural Development Council, with Stanford University in the southern Philippines, and has been a short-term consultant to Jordan for FAO and UNDP. Special research interests: rural development with emphasis on alternative energy sources for agriculture and on improvement of quality of life in rural areas through better food systems.

HANSEN, Gary, Ph.D. Political Science, University of California at Berkeley, 1971: Served as a staff member of the Ford Foundation from 1963 to 1965 in Indonesia. From 1969 to 1970 was a Fulbright Scholar in Indonesia. Special research interests: rural development policy, administrative aspects of local development, and rural energy policy.

KOPPEL, Bruce, Ph.D. Rural Sociology, Cornell University, 1973: Spent two years in the Philippines working in the University of the Philippines College of Agriculture/Cornell University Graduate Education Program sponsored by Ford Foundation at Los Banos. Special research interests: technology assessment and social impact analyses, regional and rural development, and institutional aspects of food policy.

MORSE, Richard, M.A. Economics, Harvard University, 1958: Joined the Center as Research Associate in 1974. Was independent consultant on South Asia investment and industrial development, 1969-74; served with Economic Cooperation Administration and Ford Foundation in Burma, 1951-56. Also was consultant to Ministry of Industrial Development, Government of India, 1958-60 and 1964-66; and Senior International Economist, Stanford Research Institute, 1961-63 and 1966-69. Special research interests: local innovation, cooperative development, and socio-economic aspects of decentralized development paths.

PAUKER, Guy J., Ph.D. Social Sciences, Harvard University, 1952: Faculty member, Department of Government, Harvard University, 1950-56; Department of Political Science, University of California at Berkeley, and Chairman, Center for Southeast Asian Studies, 1956-63; Research Associate, Center for International Studies, Massachusetts Institute of Technology, 1952-56; Senior staff member, Social Science Department, the RAND Corporation, 1960-79; also Faculty Research Associate, Environmental Quality Laboratory, California Institute of Technology, 1970-74; consultant to various corporations and U. S. government agencies. Special research interests: resources policy and international cooperation in Asia.

SHELDON, Richard P., Ph.D. Geology, Stanford University, 1956: Is Senior Research Geologist, U. S. Geological Survey (USGS). Came to the Center in December 1977 to take part in a collaborative program between the Institute and the USGS. Formerly served with USGS as Chief of the Branch of Organic Fuels, Chief of the Office of Mineral Resources, and then Chief Geologist. Is specialist in phosphate resources in the U. S., Asia, the Middle East, and the Pacific. Was former Visiting Professor at Yale University and Colorado School of Mines. Primary research interests: geology of phosphate rock resources and fertilizer raw material resource systems.

SMITH, Kirk, Ph.D. Environmental Health Sciences, University of California at Berkeley, 1977: Was employed in the Energy and Resources Group at University of California, Berkeley. Served as Advisor to several state and national energy organizations. Has extensive lecturing experience in the Soviet Union and Eastern Europe. Special research interests: environmental and risk assessment, long-term impacts of coal and nuclear power systems, resource implications of national defenses, and the shift of temporal perspective due to technological changes.

WOODARD, Kim, Ph.D. Political Science with a specialty in international relations, Stanford University, 1976: Has areas of specialty in international relations, China's foreign relations, international energy policy problems, the politics of advanced technology, international organization, and nuclear policy. Special interests at EWRSI in international energy policy problems and both the civilian and military aspects of nuclear development.

YANG, Yueh-Heng, M. S. Food and Nutrition, 1946, and M. A. Agricultural Economics, 1947, St. Johns University, Shanghai: Has 25 years of progressively responsible professional experience with the Sino-American Joint Commission on Rural Reconstruction and with the United Nations Food and Agriculture Organization. Prior to joining the East-West Center, served as deputy director of the Caribbean Food and Nutrition Institute in Jamaica, and FAO nutrition officer in INCAP, Philippines and Korea. Special interests: food and nutrition policy, planning, and development of micro level support programs.

Professional/Administrative

DJUNAIDY, Mendl, M. A. International Relations, Johns Hopkins University, 1968: As Program Officer, is primarily responsible for coordination of degree participants. Was formerly a Research Assistant at Brookings Institution and Institute for International Studies in Office of Education in Washington, D.C. before joining the East-West Center.

HONG, Rita, as Resource Materials Specialist, is in charge of specialized documentary research and reference resource collection for use of staff and participants. Was formerly with East-West Center Library (now Asia Collection on University of Hawaii campus).

HOWARD, Kajorn, M. Sc. Nutritional Science, University of Hawaii, 1966: As Program Officer, is primarily responsible for coordination of professional development activities. Born in Thailand, received bachelor degree at Chulalongkorn University. Studied at Institute of Food Technology, London, for 18 months and came to the University of Hawaii in 1962 as East-West Center student. From 1965 to 1969, served as a Research Assistant in Anthropology at Bishop Museum. Before joining the staff of the former Food Institute in January 1976, was a staff researcher with the Population Institute.

KUSUHARA, Harriet, Certificate, Accounting, Dietz Commercial School, 1941: Administrative Assistant. Has been on staff of East-West Center since its inception in 1960. Before joining Center staff, was with the International Cooperation Center, a training center established in Office of the Governor, State of Hawaii.

YOUNT, Barbara, M. A. International Law and Relations, Columbia University, 1961: Writer-Editor. Before joining RSI in 1978, was Writer/Editor with the Communication Institute. Was Managing Editor of American Scientist magazine prior to coming to East-West Center, as well as Researcher at Woodrow Wilson Institute of International Relations, Princeton University. Has received a Woodrow Wilson Fellowship, a Fulbright Scholarship, and a UNESCO Travel/Study Fellowship. While at the Center, has served as a consultant to several international organizations including the United Nations.

FELLOWS

LOVE, Ralph (New Zealand) 05/16/79-11/15/79; Ph.D. Victoria University, 1975; Director of the Management Education and Development Centre, Massey University. Serves as associate in a number of professional management and development societies in New Zealand and the United Kingdom, and has undertaken consulting work for various governments and international agencies in the South Pacific, Asia, and Africa. Special research interests: concerned with design and development of curriculum materials for education and training of project managers for all sectors of the economy and society.

RANDOLPH, Robert H. (U. S. A.) 03/01/79-02/28/81; Ph.D. History, Stanford University, 1978; Came to the Center from the International Institute for Applied Systems Analysis, Laxenburg, Austria, where he initiated the first computer assisted international team research linkages among the United States, Austria, Poland, and the Soviet Union. Earlier worked on projects on technological forecasting and technology assessment; probabilistic simulation modeling; and the design, software development, and experimental evaluation of computer based teleconferencing systems. Special research interests: modern telecommunications, especially computer-communications technologies in the Asia-Pacific region.

SANGER, Elrich (Indonesia) 11/01/78-10/31/80; Dr. Jur., Bonn University, 1958; Indonesian citizen, held several staff positions with Pertamina, the Indonesian national oil company, including Director of Legal Affairs, Foreign Relations and International Marketing, and most recently as Pertamina representative to Pertamina Oil Marketing Company in California. Has been member of the Indonesian delegation to the Organization of Petroleum Exporting Countries (OPEC), 1963-76, and elected Secretary-General of OPEC for 1969. Currently on a two-year secondment to RSI courtesy of the Government of Indonesia to serve as Executive Secretary of the Asia-Pacific Energy Studies Consortium (APESC).

SANTERRE, Michael (U. S. A.) 10/01/78-09/30/79; M.S. Oceanography, University of Hawaii, 1974; Former Research Associate, Hawaii Natural Energy Institute and Hawaii Institute of Marine Biology. Has researched various aspects of applied aquatic ecology with emphasis on waste utilization. Special research interests: evaluation of various methods of energy analysis, especially as they apply to uses of natural energy sources in food production.

SCHLEGEL, Charles C. (U. S. A.) 10/01/77-09/30/80; Ph.D. Development Sociology, Cornell University, 1978. Has field experience in Malaysia; served as methodological consultant for USAID/Cornell Center for International Studies evaluation research project in Indonesia. Special research interests: the comparative analysis of development topics cross-nationally and among subnational units in Southeast Asia, social indicators as a tool for development planning and evaluation, and methodologies for establishing and utilizing social information systems for developing countries.

SIDDAYAO, Corazon M. (Philippines) 11/01/78-10/31/81; Ph.D. Economics, George Washington University, 1975. Served as Senior Research Economist at the Institute of Southeast Asian Studies, Singapore; consultant at the U. S. Federal Energy Administration, the Ford Foundation Energy Policy Project, the World Bank, the United Nations, and other organizations. Was Teaching Fellow (Economics) and Research Associate (Policy Studies in Science and Technology), George Washington University. Engaged in resource-related research since 1971 with special focus since 1972 on the international and domestic resource aspects of government intervention in the energy industries. Special research interest: energy policy issues in Southeast Asia.

TYERS, Rodney (Australia) 05/01/78-04/30/80; Ph.D. Applied Systems Analysis, Harvard University, 1977; Was former consultant to the Ford Foundation, Islamabad, Pakistan. Has areas of specialty in the application of agricultural sector planning models to food system management and rural energy policy. Special interests: methodologies for national level food policy decision making under uncertainty.

WHITING, Allen (U. S. A.) 01/01/79-06/30/79; Ph.D. Foreign Languages (Chinese, Russian, French), Columbia University, 1952; Was Professor of Political Science and Associate, Center for Chinese Studies, University of Michigan. Special research interests: the regional geopolitical implications of Siberian resource development, based on his travel in Siberia and other parts of the Soviet Union and on interviews with Soviet, Japanese, Chinese, and American officials. His research at RSI is co-sponsored by the Ford

Foundation and is concerned with the preparation of his materials on Siberian resource development.

CONSULTANT

CURREY, Bruce (Scotland) 10/01/78-09/30/79; Ph.D. Geography, University of Hawaii, 1979; M. P. H., International Health, 1977; Was former Assistant Professor of Geography, University of Hawaii. From 1974-76 worked for Ministry of Relief and Rehabilitation, Government of Bangladesh, mapping areas liable to famine. Special research interests: disaster vulnerability, famine warning systems in South Asia.

THE EAST-WEST RESOURCE SYSTEMS INSTITUTE is directed to the overall goal of understanding how nations can maintain adequate, equitable, and reliable access to resources. The Institute program consists of a broad study of three interrelated projects:



Food Systems builds knowledge about the dynamics and interdependencies of food flows, foreign exchange, and demands for energy and raw materials; explores ways for food importing nations to develop diversified food systems and to improve utilization of available food; does research on less energy intensive methods of food production; and evaluates alternative policies of pricing and land use.



Energy Systems provides analyses of the vulnerabilities of nations to disruptions in the flow of fuels; collects and analyzes data on energy supply, demand, and flows, especially those in rural areas; evaluates alternative development policies on a variety of energy systems and develops energy indexing methodologies and information exchange both within and among nations.



Raw Materials Systems focuses on analysis of the distribution problems and on opportunities for the development of the most important raw material resources of the Asia-Pacific area, particularly fertilizer, raw materials and forest products.

International research groups are collaborating with RSI staff to analyze and conduct research on these systems. A series of data bases and information exchange facilities is now being developed to support their studies. On an interdisciplinary basis, the various project teams will explore these problems stressing their interrelationships in both local and international terms in the Asian and Pacific region.