A Brief Description of

The Interests and Activities of the East-West Resource Systems Institute East-West Center

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EAST-WEST RESOURCE SYSTEMS INSTITUTE
EAST-WEST CENTER
HONOLULU, HAWAII

OVERVIEW

Among the severest problems facing humanity today are those of obtaining adequate and predictable supplies of food, energy and raw materials. These problems are intimately interrelated and they affect in varying degrees all people in all countries, whether rich or poor. Today, possibly as many as a billion people in the world do not receive enough food. In recent years, the economies of both rich and poor nations have been shaken by rapid increases in the price of crude oil and by a major embargo on its shipment to certain countries. The economies of a number of developing countries have also been shaken 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 "stability," which is needed for the present good, and "resilience," which is needed for the future good. Whether we live in developing or developed countries, we need to avoid unacceptable disasters, learn from our mistakes and be flexible enough to cope with future unknowns.

Ideally, the resources available in the world would be equitably shared and considerations of stability and resilience would not loom very large on the human agenda. However, political boundaries combined with inequitable distribution of resources, divide regions of the world into interdependent but non-resilient subsections. A basic policy issue then, both national and international, is to design agreements and procedures around which these kinds of interdependence can be directed to optimize resilience and equity in every

geographic region. We must also study how well basic human needs are met by internal structural changes which redistribute access to resources and alter resource transfers.

By the end of 1978, the program of the East-West Resource Systems Institute will consist of a broad study of East-West problems of food, energy and raw materials and their relationships with each other. The program will consist of three projects which are interrelated and which should be viewed together: *Food Systems*, *Energy Systems*, and *Raw Materials Systems*. The projects will explore these problems on an interdisciplinary basis stressing their articulation in both local and international spheres in the Asia-Pacific area. Existing institutional linkages will be cultivated, new ones sought where appropriate, and particular emphasis will be given to inter-institute cooperation within the East-West Center.

PROJECT I: FOOD SYSTEMS

In the post World War II era, the international flow of food commodities in the Asia-Pacific area has greatly increased. Many countries now import a larger proportion of their food supplies to meet domestic demand. North America, Australia and New Zealand are major food exporters and provide needed foodstuffs for Japan and the Soviet Union as well as for many developing countries of the region including the People's Republic of China. Likewise, the export of food has become a major source of foreign exchange for importing vitally needed energy and raw material products. The United States, for example, depends upon food exports to help pay for its growing

imports of crude oil. One major research aim is to contribute to understanding the underlying dynamics of this emerging and complex set of interdependencies taking into consideration the consequences of the continued growth of population and affuence and the effects of major perturbations such as trade embargoes or substantial changes in climate.

The growing dependence upon food imports is frequently prompted by the many economic benefits associated with the principle of comparative advantage in international trade. In other instances, various countries find it difficult to generate adequate food supplies to meet domestic needs and must therefore import food from the world market. For many countries, however, excessive dependence upon food imports creates a condition of high vulnerability to foreign exchange depletion and the inflationary effects associated with cyclical food shortages in the international marketplace. It is therefore important to contain dependence upon food imports below the threshold which would undermine existing and potential capabilities of meeting basic needs from domestic sources. Accordingly, the research will seek to explore various measures of enabling food importing nations to develop more diversified and adaptable indigenous food systems and to improve utilization of available food.

In many of the food deficit areas of Asia and the Pacific there is considerable potential for increasing food production. In order to achieve this end, resource inputs into agriculture, aquaculture, and fisheries will need to be greatly increased. This will entail increased energy use in the food system, either directly or indirectly. Thus, a possible attendant consequence of increasing food production could be growing dependence upon

imports of crude oil and such derivatives as ammonia and pesticides, thereby creating a high level of vulnerability to sudden and long-term changes in the world supply of petroleum. The research will therefore explore the application of less petroleum intensive energy modes and technologies for increasing food production.

While considerable potential exists for increasing food production in food deficit areas, in many instances existing institutional and economic conditions hinder progress. Thus, high levels of underemployment serve to dampen the demand and incentive to produce additional food. Land tenure arrangements along with existing marketing and distribution systems often serve to engender high levels of inefficiency in the production and processing of food commodities. Pricing and other policy factors frequently contribute to inappropriate utilization of land, water, and other production inputs. Policy and institutional alternatives will be examined which could generate the higher levels of employment, income, and productivity requisite to creating sufficient levels of supply and demand to meet basic food and nutritional needs.

PROJECT II: ENERGY SYSTEMS

The nations of the East-West region differ greatly in their degrees of energy self-sufficiency. Japan and the United States as well as most developing countries are heavily dependent upon imported oil and that dependence is increasing. A part of the research of this project will be directed 1) at an analysis of the vulnerabilities of importing nations to disruptions in the flow of oil and 2) at an

analysis of ways by which higher levels of energy self-sufficiency might be achieved.

Vulnerabilities are of several kinds. The flow of oil can be interrupted by political forces and by hostilities, which are difficult to anticipate but the effects of which can be studied. It can also be interrupted by the breakdown of transportation, which in the Pacific region is primarily by sea. What are the primary weaknesses of the marine transportation system? What are the possible consequences of developing extremely large transfer ports and storage facilities for oil? Which of the energy needs now met by imported petroleum could be provided by alternative means -- either through increased efficiency or substitution? What are the economic and other costs of attaining self-sufficiency?

To what extent and how rapidly can the nations of the region achieve energy self-sufficiency by using alternative energy sources such as geothermal, nuclear, and the various solar energy systems? What are the environmental, social, cultural, economic and political factors which should be considered for such a transition? What influence will these alternatives have on the stability and resilience of the energy systems in the area? How much should these types of considerations be weighed in the choices among alternatives?

Tropical coastline regions in the Asia-Pacific area share a particular set of alternative energy possibilities including ocean thermal, geothermal, and biomass. In addition the trade winds can be harnessed to provide energy. There are on-going research projects into some of these possibilities throughout the area and including Hawaii. Much could be gained by coordinating these efforts.

The United States and Japan have already started to generate nuclear power on a substantial scale. To what extent will nuclear energy be further developed in these countries and in the developing areas of the region? What measures can be taken to lessen the likelihood that nuclear materials will be diverted for weapons purposes? What should be the policies of the region with respect to reprocessing of nuclear materials and the disposal of radioactive wastes? What kinds of problems would be created by the establishment of regional energy generation, reprocessing and waste disposal facilities? Under what sort of transnational system could standards be set and regional facilities be owned and operated?

Research on energy systems will be directed at these energy problems in the Asia-Pacific area. It will be undertaken in collaboration with the East-West Environment and Policy Institute and make full use of a consortium to be established between institutions, East and West. In addition, the Institute will strive to develop a collection of data on energy supply, demand and flows throughout the area both to describe the present situation and to facilitate development of future alternative courses.

It is intended that RSI's energy research efforts will be balanced between those projects with immediate policy implications, such as studies of the vulnerabilities of oil-importing regions, and projects which deal with issues of longer-term concern, such as the possible impact on the choices among energy systems due to human-induced climatic changes. It is also intended that a balance will be made between those projects emphasizing energy supply and those dealing with demand.

PROJECT III: 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 non-renewable and renewable resources provide more than 80 percent of developing countries' earnings of foreign exchange. On the other hand, industrial countries are turning increasingly to developing countries for their supplies of raw materials.

The developing countries' share of non-fuel mineral exports is less than 30 percent of the world trade, but the importance of these exports to the economies of many of these developing countries is considerable. The capturing of a part of the value of these exports by the exporting country is particularly important, insofar as their national mineral resource capital is exchanged for development capital. However, large fluctuations in world prices of these commodities can cause major imbalances in developing countries' economies. Also depletion of important non-renewable deposits can cause declines of national economies, unless balanced by development of additional different resources.

The monetary value of agricultural exports by many developing countries is greater than that of their non-fuel mineral exports, and in addition exports of renewable resource commodities can continue long into the future. However, depending on weather and ravages of disease, renewable raw material supplies go through cycles of glut and scarcity, and their prices fluctuate correspondingly. Thus the problem of stability of world prices of such agricultural products is fully as critical as

it is for non-fuel minerals, and can be highly disruptive to developing countries' economic growth.

Research of the Raw Materials Systems project will be directed at understanding the distribution of the most important raw material resources of the Asian-Pacific area, and problems and opportunities of their development. These resources include timber, rubber, cotton, jute, potash, phosphate, copper, tin, iron, bauxite and deep sea minerals. Particular emphasis will be placed on development of knowledge concerning the resources and flow of fertilizer raw materials in the East-West area, where the large need for fertilizer in the developing countries contrasts strongly with their lack of foreign exchange to buy fertilizer on the world market.

Emphasis will be placed on identification of opportunities to extend raw material resources by resource discovery, improved recovery, recycling, substitution of non-energy-intensive for energy-intensive materials and of renewable for non-renewable materials, and by conservation and less wasteful use. Full analysis of resource systems will require considering both the demand for land and water resources and the economic and other costs of environmental and social impacts.

UNIFYING PROGRAM DIMENSIONS

Several issues cut across the projects described above. These include: (1) differing perceptions of basic needs by particular people and cultures; (2) contrasts among local resource systems and end-user demands for food,

energy, and raw materials, as they affect national and international exchange patterns and related policies; (3) the impact of differential resource ownership and control on the distribution of income and the ability to obtain basic needs; (4) the ability, both short and long term, of the environment to assimilate the impacts of modern industrial society and resource use; and (5) time perspectives that affect resource policy, including changes in basic needs over time, resource accounting and time discounting, and equity between generations.

Such practical and perceptual issues often evolve as conflicts, or alternatively can be developed as bridges, among peoples. The work of the East-West Resource Systems Institute, cooperatively planned and conducted with other Asia-Pacific institutions, will direct sustained attention to these fundamental issues in a manner that it is hoped will contribute to human knowledge, mutual understanding, and concerted approaches to policy formation.

MECHANISMS

The East-West Center has over the years established excellent working relationships with a variety of institutions in most Asian nations, as well as Australia, New Zealand, the islands of the South Pacific, and the United States. Full use will be made of these relationships to establish collaborative programs of research and study. In addition to the senior academic staff of 15, covering a variety of disciplines, some 45-50 graduate students, 10 post-doctoral participants, and a sizeable number of leaders and policymakers will be involved with the programs of the Institute.

EAST-WEST RESOURCE SYSTEMS INSTITUTE
STAFF

Director

BROWN, Harrison, Ph.D. Chemistry, John 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 Foreign Secretary of the National Academy of Sciences and head of the Academy's world food and nutrition study. Was president of the International Council of Scientific Unions from 1974 to 1976, and a former faculty member with the University of Chicago's Plutonium Project and the Oak Ridge Laboratory.

Assistant Director

GOODMAN, Louis J., P.E., M.S. Civil Engineering, Harvard University 1947: Came to the Center in 1971 after 3 years as project specialist in engineering education with Ford Foundation in the Philippines. Was former faculty member at Ohio State and Syracuse Universities. Is a registered professional engineer and has served as consultant to government agencies, architects, engineers, and industrial firms in variety of public works projects. Fulbright professor in Egypt, 1964-65; and in Ecuador, summer 1967. Awarded Honorary Degree of Doctor of Engineering from Yeungnam University in Korea, August 1976.

Research Associates

AHMED, Saleem, Ph.D. Soil Science, University of Hawaii, 1965: A soil scientist with extensive experience at a leading agricultural chemical firm where his work included agronomic

trials, extension training and fertilizer marketing. He has also taught at the University of Karachi. A Pakistani national, he is primarily responsible for Institute's activities in I.N.P.U.T.S.

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; chaired aquatic food sources as part of the World Food and Nutrition Study of the National Research Council/National Academy of Sciences. Former faculty member University of Michigan and executive council member Pacific Science Association.

BURIAN, Fredrich, M.A. Philosophy, University of Hawaii, 1972: Has served as research assistant in chemistry department at Wayne State and Stanford Universities, and University of Hawaii. Holds certificate in instructional media systems.

GREEN, Donald G., Ph.D. Extension/Adult Education, Cornell University, 1964: An adult educator with experience in planning and conducting nonformal continuing education programs supportive of agricultural and rural development. Received bachelor's and master's degrees from Iowa State University. Before joining the Institute in 1971, was associated with the Agricultural Development Council, with the Ford Foundation in India for four years, with Stanford University in Southern Philippines for three years, and with UNDP and FAO as a consultant to Jordon.

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 Fellow in Indonesia.

KOPPEL, Bruce, Ph.D. Rural Sociology, Cornell University, 1973: Spent two years in the Philippines working in the University of Philippines College of Agriculture/Cornell University Graduate Education Program sponsored by Ford Foundation at Los Banos.

MORSE, Richard, M.A. Economics, Harvard University, 1958: Joined the Institute staff as research associate in May, 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; consultant to Ministry of Industrial Development, Government of India, 1958-60 and 1964-66; senior international economist, Stanford Research Institute, 1961-63 and 1966-69.

PHILLIPS, Alan L., Ph.D. Agricultural Engineering, University of California at Davis, 1967: An agricultural engineer who received education at Michigan State University and the University of California at Davis. Professional experience includes eleven years with the University of Puerto Rico. Was UNESCO Expert in Mechanical Engineering at the University of Nairobi in Kenya (1971) and UNESCO Expert in Agricultural Engineering at Central Luzon State University, the Philippines (1972-73). A licensed professional engineer in Hawaii.

RUDDLE, Kenneth, Ph.D. Geography, University of California at Los Angeles, 1970: From 1970 to 1974 was research geographer and statistical director with Latin American Center at University of California at Los Angeles, promoted to assistant director of Center in January 1973.

Also served as research associate in ethnology at National History Museum of Los Angeles County, California.

SHELDON, Richard P., Ph.D. Geology, Stanford University 1956: Senior Research Geologist, U.S. Geological Survey. Came to the Center in December of 1977 to take part in a collaborative program between the Institute and the USGS. Formerly served with the USGS as Chief of the Branch of Organic Fuels, Chief of the Office of Mineral Resources and finally Chief Geologist. Specialist in phosphate resources in the U.S., Asia, the Middle East and the Pacific. Former Visiting Professor at Yale University and Colorado School of Mines.

SMITH, Kirk, Ph.D. Enviromental Health Sciences, University of California at Berkeley, 1977: Employed in the Energy and Resources Group at U.C. Berkeley. Advisor to several state and national energy bodies. Extensive lecturing experience in the Soviet Union and eastern Europe.

STAUB, William J., Ph.D. Agricultural Economics, University of Missouri, 1972: Was agricultural economist with Economic Research Service, USDA, before joining Institute staff in 1972. Special interest in the effect of increases in agricultural productivity on the employment of farm labor.

WOODARD, Kim, Ph.D. Political Science with a specialty in international relations, Stanford University. His doctoral thesis concerned the international energy policies of the People's Republic of China. His areas of specialty include international relations, China's foreign relations, international energy policy problems, and the politics of advanced technology, international organization, and

nuclear development. His interests at EWRSI include international energy policy problems and both the civilian and military aspects of nuclear development.

YANG, Yeuh-Heng, M.A. Agricultural Economics, St. John University, Shanghai, 1947: Had 23 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, he served as deputy director of the Caribbean Food and Nutrition Institute in Jamaica.

Professional/Administrative

DJUNAIDY, Mendl, M.A. International Relations, John Hopkins University, 1968: *Program Officer.* Was recipient of Frances P. Bolton and East-West Center Fellowships. Former research assistant at Brookings Institute and Institute for International Studies in Washington D.C. before joining the East-West Center.

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

HOWARD, Kajorn, M.Sc. Food Science, University of Hawaii, 1966: *Program Officer.* Primarily responsible for coordination of professional development activities. Born in Thailand, received bachelor's 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 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 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.

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.

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