

Curriculum Vitae

DUANGJAI INTARAPRAVICH BLOYD, Ph.D.
Mineral & Energy Resources Economist

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EDUCATION

Ph.D., Mineral and Energy Resources Economics, West Virginia University, West Virginia, USA, 1989

M.S., Development Economics, National Institute of Development Administration, Bangkok, Thailand, 1983

B.S., Economics, Kasetsart University, Bangkok, Thailand, 1980

OTHER TRAINING

Green Building Design and Documentation Workshop—reviewed the Leadership in Energy and Environmental Design (LEED™) green building rating system, Portland General Electric, Oregon, U.S.A, November, 2001

Training on energy planning modeling—Energy and Power Evaluation Program (ENPEP), Argonne National Laboratory, Chicago, U.S.A, July-August 1996.

LANGUAGES

Thai, English

EXPERIENCE

Managed and participated in a wide range of projects in the areas of energy and environment, energy modeling and forecasting, and climate change issues. The experience includes working in both Asia and United States. The work experience in Thailand includes the Director of Energy and Environment Program at Thailand Environment Institute (TEI), a research fellow at Thailand Development Research Institute (TDRI), and a lecturer at the Department of Agricultural and Resources Economics at Kasetsart University. The work experience in the U.S. includes a research fellow at the Minerals Policy Program and the Program on Resources: Energy and Minerals of the East-West Center in Hawaii, and an STA (Special Term Appointment) of Argonne National Laboratory in Chicago. She also has experience in working in other Asia Pacific Economic Cooperation (APEC) countries through her work at the East-West Center in Hawaii, the work that she has been doing with the US Department of Energy APEC Program, and the research that she conducted directly for the APEC Energy Working Group. Her modeling experience includes the development of a computer

model of Thailand's energy system as part of the US Country Study Program, and the operation of the three major computer energy system models used in country and regional level analysis—ENPEP, MARKAL and LEAP.

December 2002-Present—International Center for Sustainable Development

Director, Energy and Environment Program

- Project (on-going): *US-China Cooperation on the Efficient Use of Natural Gas.* ICSD is assisting the US Department of Energy in developing a natural gas technology coalition to help the City of Beijing promote more use of natural gas. This project is part of a US multi-agency effort with the Chinese government on “greening” the 2008 Beijing Olympics.

February 1997-Present—Technology Development Partners, U.S.A

Principal

- Project: *Development of Criteria and Benchmarks for Green Hotels in Thailand-Phase 1.* Working with an NGO in Oregon, the International Sustainable Development Foundation, as the principal investigator in this project. The on-going activity is the first phase of the project for which appropriate best practices and potential projects for Thai hotels on energy, water and waste management are identified. The information and lessons learned from this study will be utilized in the next phase of the project for the development of customized criteria and benchmarks on energy and environmental performance for the Thai hotel industry. The project was funded by the United States-Asia Environmental Partnership (US-AEP)/Council of State Governments program to the Oregon's Office of Economic and Community Development Department.
- Project: *APEC 21st Century Renewable Energy Development Initiative.* Working in support of the U.S. Department of Energy's (USDOE) APEC Program. The activity was to write a report to synthesize the results of the “Survey of APEC Member Economies' Renewable-Energy-Based Priority Needs and Issues Relating to Sustainable Development”. The survey was sent out by the USDOE to all APEC member economies to invite the energy officials of APEC member economies to share information on current renewable applications relating to sustainable development and growth, and to identify barriers, issues and priorities involving these applications. The report was to provide information that would help to form future collaborative projects in the APEC region. The project was funded by Oak Ridge National Laboratory.
- Project: *Opportunity to Introduce A High Efficiency Ceiling Fan in Thailand.* Worked as a consultant for a US company to investigate energy efficiency programs in Thailand for which a new US high efficiency ceiling fan may qualify for procurement and/or funding for further development.
- Project: *Development of Analytic Methodologies to Incorporate Renewable Energy in Domestic Energy and Economic Planning.* The project was to identify, assess, and improve analytic methodologies to incorporate renewable energy options in domestic

energy and economic planning, which would establish the basis for future work to improve renewable energy technologies modeling capabilities for use by planners and analysts in APEC member economies. The project was funded by APEC Secretariat in Singapore in support of the APEC Energy Working Group.

- Project: *City Level Energy Decision Making: A Case Study of Bangkok.* The principal objective of the project was to outline the types of decisions for which different levels of information could support, and to identify the value of additional information for decision makings on energy projects. The project was funded by Oak Ridge National Laboratory.
- Project: *Asia Pacific Economic Cooperation Energy Working Group Project.* Responsible for writing a section on Demand Side Management in APEC Economies. The report reviewed a number of important issues related to the implementation of DSM programs in APEC member economies, and provided recommendations for APEC energy minister on the actions that APEC might take in order to promote the development of an energy efficient electric power infrastructure. The project was funded by Natural Resources Canada, in support of the APEC Energy Working Group.
- Project: *Thailand Business Opportunities Mission.* Conducted a workshop on “Energy and Environmental Business Development Opportunities in Thailand” for State of Hawaii Department of Business, Economic Development and Tourism.

October 1995-Present—Argonne National Laboratory, USA.

Special Term Appointment

To support the United State Department of Energy’s involvement in the Asia Pacific Economic Corporation (APEC) forum’s energy efficiency and renewable energy activities.

- Project: *Energy Efficiency in Commercial Buildings.* Helped US companies to work jointly with Thai partners as energy consultants for Thailand’s Department of Energy Development and Promotion program on energy auditing of large buildings in Thailand.
- Project: *Renewable Energy for Irrigation Water Pumping Development Project.* Worked with Thailand’s Royal Irrigation Department to determine the potential for using wind and PV for water pumping in southern Thailand.
- Project: *Wind Resources Monitoring in the Southern Coast of Thailand.* Prepared a proposal for the Provincial Electricity Authority of Thailand to submit to the National Energy Policy Office for funding. The project was to measure wind resources in coastal areas of southern Thailand to facilitate a decision to invest in grid-connected wind farms.
- Project: *Village Power Hybrid System Demonstration Project.* Prepared a proposal for the Provincial Electricity Authority of Thailand to submit to the National Energy Policy Office for funding. The project was to electrify an island in southern Thailand using a wind/PV/diesel hybrid system.

November 1995-November 1996—Thailand Environment Institute, Bangkok, Thailand

Consultant

- Project: *Thailand Country Study on Climate Change*. Responsible for determining greenhouse gas mitigation options for the Thai energy sector as an input to the development of Thailand's national strategy on climate change under the United Nation Framework on Climate Change Convention (UNFCCC). The project was supported by the United States Country Study Program through the Office of Environmental Policy and Planning of Thailand.

January 1995-November 1995—Thailand Environment Institute, Bangkok, Thailand

Director, Energy and Environment Program

- Project: *Electricity and Environment in Thailand*. Principal investigator and Project Coordinator of the project funded by the Electricity Generating Authority of Thailand (EGAT) to examine alternative electricity demand and supply scenarios over the next 30 years in order to guide the development of Thailand's electricity sector towards providing for the electricity needs of society at the least cost and minimum environmental impacts.
- Project Manager, Projects: Thailand's Energy Future; National Inventory of Greenhouse Gases GHGs not covered by the Montreal Protocol; National Strategies on Global Climate Change; and Asian Least-Cost Greenhouse Gases Abatement Strategies (ALGAS)

November 1994-December 1994—Thailand Environment Institute, Bangkok, Thailand

Research Fellow, Policy Study Program

- Project manager, Projects: Trade and Environment; and Joint Implementation

January 1993-October 1994—East-West Center, Hawaii, U.S.A.

Visiting Fellow, Program on Resources: Energy and Minerals

- Project: *Thailand's Oil and Gas Sectors*. Produced Energy Advisories on Thailand's oil and gas sectors and Thailand's new energy policy
- Project: *Asia-Pacific Oil and Gas Study*. Co-editor of the East-West Center's technical report Pacific Energy Outlook: Strategies and Policy Imperatives to 2010
- Project: *Asia-Pacific Electricity Project*. Principal investigator on the project which culminated in the production of the Asia-Pacific Electricity Data Book. The study forecasted the electricity generation and capacity of 17 major countries in the Asia-Pacific region and selected Pacific islands through the year 2010.

November 1991-April 1993—Kasetsart University, Bangkok, Thailand.

Lecturer, Department of Agricultural and Resources Economics

- Lecturer on Mathematical Economics; Natural Resource Economics; and Seminar in Agricultural Resource Economics

October 1991-November 1991—East-West Center, Hawaii, U.S.A.
Research Fellow, Minerals Policy Program

- Studied environmental regulations and environmental funding in the U.S. mining industry

December 1990-September 1993—Thailand Development Research Institute (TDRI) Foundation, Bangkok, Thailand
Research Fellow, Natural Resources and Environment Program

- Project: *Reclamation Bonding for the Thai Mineral Industry.* Principal investigator of the project which was a sub-project of the "Mineral Resource Management Planning for Thailand (Phase 2)" for the Department of Mineral Resources, Ministry of Industry (1992/1993). The study investigated the appropriateness of financial guarantee for environmental protection from mineral resource development.
- Project: *Mineral Resource Management Planning for Thailand (Phase 1)* Principal investigator and Project coordinator of the project for the Department of Mineral Resources, Ministry of Industry. (1991/1992). The study recommended long-term mineral development strategies for Thailand.

July 1989-November 1990—Thailand Development Research Institute Foundation, Bangkok, Thailand
Research Associate, Natural Resources and Environment Program,

- Project: *Mineral Resources Development and Its Environmental Implications.* Principal investigator and Project coordinator of the project which was a sub-project of "Industrializing Thailand and Its Impact on the Environment" (1989/1990).

PUBLICATIONS

Bloyd, D. I. Development of Criteria and Benchmarks for Green Hotels in Thailand—Phase 1. International Sustainable Development Foundation. Report submitted to the Council of State Governments/United State-Asia Environmental Partnership, September 2002.

Bloyd, D. I. Synthesis of the Survey of APEC Member Economies' Renewable-Energy-Based Priority Needs an Issues Relating to Sustainable Development. Asia-Pacific Economic Cooperation Expert Group on New and Renewable Energy Technologies, March 2002.

- Bloyd, D. I. and C. Bloyd. *Renewable Energy and Sustainable Development: Lessons Learned from APEC for the Preparation of Rio+10*. Asian Perspective Vol. 25, No. 3, pp. 85-111, 2001.
- Intarapravich, D. City Level Energy Decision Making: A Case Study of Bangkok. Oak Ridge National Laboratory, Asia Pacific Economic Cooperation Energy for Sustainable Communities Program, November 1999.
- Intarapravich, D. Development of Analytic Methodologies to Incorporate Renewable Energy in Domestic Energy and Economic Planning. Asia-Pacific Economic Cooperation Expert Group on New and Renewable Energy Technologies, APEC Publication Number 99-RE-01.2, APEC Secretariat, Singapore, October 1999.
- Intarapravich, D., and C. Bloyd. Opportunities for Energy Efficiency Investment in Thailand. Asia-Pacific Sustainable Development Center, East-West Center/PREM, Honolulu, Hawaii, February, 1997.
- Intarapravich, D. Greenhouse Gas Mitigation Options in the Thai Energy Sector. Report submitted to Thailand Environment Institute for Office of Environmental Policy and Planning, Ministry of Science, Technology and Environment in preparation of Thailand National Strategies on Global Climate Change, November 1996.
- Intarapravich, D., et.al. *Asia-Pacific Energy Supply and Demand to 2010*. Energy Vol.21, No.11, pp.1017-1039, 1996.
- Dorian, J., Intarapravich, D., et.al. *Economic Assumptions Underlying Asian Energy Markets*. Energy Vol.21, No.11, pp.1005-1015, 1996.
- Intarapravich, D. *Opportunities for Energy Efficiency Investment in Thailand*. Paper presented at Energy and Environmental Management Conference for 1996 (TEEM' 1996). Monterey, California, September 3-5, 1996.
- Intarapravich, D. *Assessing Greenhouse Gas Mitigation Options for the Thai Power Sector*. AMBIO Vol. 25, No.4, pp. 233-239, June 1996.
- Intarapravich, D., et al. *Electricity: Meeting Needs with Least Environmental Impacts*. Thailand Environment Institute 1995 Annual Conference: Sharing Environmental Responsibility: Towards Partnership Management. Bangkok, July 1995.
- Fesharaki, F., Clark, A.L., and D. Intarapravich. *Energy Outlook to 2010: Asia-Pacific Demand, Supply, and Climate Change Implications*. Asia Pacific Issues, No. 19, April 1995.

- Fesharaki, F., Clark, A.L., and D. Intarapravich. eds. Pacific Energy Outlook: Strategies and Policy Imperatives to 2010. East-West Center Occasional Papers, Energy and Minerals Series No. 1, March 1995.
- Intarapravich, D. *Electricity in Asia Pacific* in Pacific Energy Outlook: Strategies and Policy Imperatives to 2010. in ed. F. Fesharaki et al., East-West Center Occasional Papers. Energy and Minerals Series No. 1, March 1995.
- Intarapravich, D., Fesharaki, F., and R. Hagen. Asia-Pacific Electricity Data Book. Program on Resources: Energy and Mineral, East-West Center, Honolulu, Hawaii, March 1995.
- Intarapravich, D. *Joint Implementation: TEI's Perspective* Paper presented at International Prospects for Joint Implementation: A Southeast Asia Regional Workshop, Bangkok, January 27-28, 1995.
- Intarapravich, D. *The Institutional Needs of Joint Implementation Projects: Case Study of Thailand*, in ed. E. Watt et al., Case Studies of the Institutional Needs of Joint Implementation Projects, Lawrence Berkeley Laboratory Report, Berkeley, California, 1995.
- Phantumvanit, D., Intarapravich, D., and S. Wigzell. *Interlinkages between Trade and Environment: A case of Thailand*, Paper Presented at Asia and the Pacific 1994: Merging Business and Environment, Bangkok, December 7-8, 1994.
- Intarapravich, D., and A. L. Clark. *Mineral Development in Thailand: The Need for Land-Use Planning for a Better Balance of Environment and Economic Goals* Asian Journal of Environmental Management, Vol. 2, No. 2, November 1994.
- Intarapravich, D. Demand and Supply Adjustment in the Mineral Industry. East-West Center Working Papers, Energy and Minerals Series, No.7, September 1994.
- Intarapravich, D. *Thailand's New Energy Policy: Balances Economic Growth with Environmental Concerns*, Hydrocarbon Asia, May/June 1994.
- Intarapravich, D. *Thailand's Energy Outlook: Prospects for Oil and Gas Sectors*. Energy Advisory # 123, East-West Center, Honolulu, Hawaii, April 1994.
- Intarapravich, D. *Thailand's New Energy Policy: Growth versus Environment Dilemma*. Energy Advisory # 124, East-West Center, Honolulu, Hawaii, April 1994.
- Clark, A. L., and D. Intarapravich. *Mining and the Environment: Land Reclamation Policies and Options for Southeast Asia*. Minerals and Energy Forum. Beijing, China, March 1994.

- Intarapravich, D. and A. L. Clark. *Performance Guarantee Schemes in the Minerals Industry for Sustainable Development: The Case of Thailand*, Resources Policy, Vol. 20, No.1, March 1994.
- Intarapravich, D. *Mineral Resource Economics* in Reading Materials in Natural Resources Economics and Environment. in ed. S. Issavilanond and R. Tokrissana, Economic Department, Kasetsart University in collaboration with Natural Resource Management Program, Winrock International Institute for Agricultural Development, March 1994.
- Intarapravich, D. Reclamation Bond: Application for the Thai Mineral Industry. (in Thai with English Summary). TDRI Research Report, Submitted to the Department of Mineral Resources, Ministry of Industry, Thailand. April 1993.
- Intarapravich, D. *Land-Use Planning for Mineral Resource Development*. Proceeding of National Conference on Geologic Resources of Thailand: Potential for Future Development. Central Plaza Hotel, Bangkok, November 17-24, 1992.
- Phantumvanit, D., and D. Intarapravich. *Forest Conservation vis-a-vis Mineral Resources Development-Can they coexist?* Discussion Paper. Regional Expert Consultation on Forestry Policy Developments and Research Implications in Asia and the Pacific, FAO Regional Office for Asia and the Pacific, Bangkok, October 1992.
- Intarapravich, D. *Industrial Minerals and the Thai Economy*. Industrial Minerals, May 1992.
- Intarapravich, D., et al. Mineral Resource Management Plan. (in Thai with English Summary). Research Report Submitted to the Department of Mineral Resources, Ministry of Industry, Thailand, April 1992.
- Intarapravich, D. *Mineral and Metal Demand Forecasting from a Developing Nation's Perspective: Thailand*. Discussion Paper Presented at the Specialist Working Group Meeting on Metal Demand Forecasting Methodologies. East-West Center, Honolulu, September 4-6, 1991.
- Intarapravich, D. *Coal and the Environment in Thailand*. Discussion Paper Presented at the Coal and the Environment: Asia 2010. East-West Center, Honolulu, July 11-12, 1991.
- Intarapravich, D., Meenapanth, S., and Q. Leepowpanth. Overview of the Thai Mining Industry. (in Thai with English Executive Summary). TDRI Research Report, Submitted to the Department of Mineral Resources, Ministry of Industry, Thailand, April 1991.

Intarapavich, D., et.al. Mineral Resources Development: Making the Best of a Limited Resources. TDRI Research Report No. 4 of the project "Industrializing Thailand and Its Impact on the Environment" Thailand Development Research Institute, 1990.

Panayotou, T., Leepowpanth, Q., and D. Intarapavich. Mining, Environment and Sustainable Land Use: Meeting the Challenge. TDRI Synthesis Paper No.2 of the project *Industrializing Thailand and Its Impact on the Environment*, Thailand Development Research Institute, 1990.

Leepowpanth, Q., Intarapavich, D., and S. Rachdawong. *Mineral Resource Development: Status of and Issues in the Mineral Industry*. TDRI Quarterly Review, March 1990.

Intarapavich, D. A Dynamic Econometric Analysis Integrating Long- and Short- Run Adjustments in the Mineral Industry. Ph.D. Dissertation. West Virginia University, Morgantown, West Virginia, 1989.