

Curriculum Vitae

Duangjai Intarapravich Bloyd Mineral & Energy Resources Economist

Technology Development Partners, Inc.
14905 Notley Road, Silver Spring, Maryland 20905, USA
Tel: +1-240-401-9819, Fax: +1-301-388-0537
Email: jai.bloyd@gmail.com

OVERVIEW

A mineral and energy resources economist with twenty years research and management experience in a wide range of projects in the areas of mineral resources, energy and environment, energy modeling and forecasting, economic development, and climate change issues. Has unique qualifications and experience from working in both developed and developing countries including Thailand, United States and other Southeast Asian countries, and with the private sector, national governments and international organizations. Has outstanding analytical skills and experience in using various econometric and energy/environment simulation models. Has proven ability to lead and to work effectively with teams and experts across institutions. She is a disciplined writer who has written more than 40 technical reports, books, journal articles and discussion papers.

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

EMPLOYMENT HISTORY

- February 1997-Present: President, Technology Development Partners, Inc., Maryland.
- May 2007-April 2010: Special Term Appointment, Argonne National Laboratory, Illinois.
- December 2002-July 2003: Senior Research Fellow, International Center for Sustainable Development, Maryland.

- October 1995-2001: Special Term Appointment, Argonne National Laboratory, Illinois.
- November 1995-November 1996: Consultant, Thailand Environment Institute, Bangkok, Thailand.
- January 1995-November 1995: Director, Energy and Environment Program, Thailand Environment Institute, Bangkok, Thailand.
- November 1994-December 1994: Research Fellow, Policy Study Program, Thailand Environment Institute, Bangkok, Thailand.
- January 1993-October 1994: Visiting Fellow, Program on Resources, East-West Center, Hawaii.
- November 1991-April 1993: Lecturer, Department of Agricultural and Resources Economics, Kasetsart University, Bangkok, Thailand.
- December 1990-September 1991: Research Fellow, Natural Resources and Environment Program, Thailand Development Research Institute (TDRI) Foundation, Bangkok, Thailand.
- July 1989-November 1990: Research Associate, Natural Resources and Environment Program, Thailand Development Research Institute Foundation, Bangkok, Thailand.

EXPERIENCE

Multi-Sector Analysis

- Project: *Sustainable Redevelopment of Communities Destroyed by the Tsunami (2005)*

The project was supported by the US Department of Energy's Clean Energy Technology Exports (CETE) Initiative through Oak Ridge National Laboratory. The project's goal was to assist Thailand in its recovery and redevelopment process after the tsunami. The project involved working with the Thai government, as well as NGOs, universities, and others involved in the redevelopment effort, as they were rebuilding their communities. The final report identified some principal sustainable technologies and information that are useful for disaster response and community redevelopment. The report also recorded the work process, identified issues and problems related to sustainable redevelopment of communities, and evaluated the final results of sustainable community designs that could be used as a model for sustainable redevelopment of communities in other countries.

- Project: *City Level Energy Decision Making: A Case Study of Bangkok (1999).*

The project illustrated the value of information for facilitating policy decisions on energy efficiency and conservation and showed how city energy data could be collected at different levels of detail. As energy data is often collected at an aggregated level, i.e., national level, the study illustrated an end-use sectoral modeling framework that could facilitate the construction of a city energy model to represent the energy situation in a city based on national level data.

- Project: *Thailand Country Study on Climate Change (1996).*

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). For this purpose, the energy network for Thailand was developed using the ENPEP model to estimate baseline greenhouse gas (GHG) emissions in Thailand (1994) as a benchmark for various GHG mitigation scenarios.

- Project: *Electricity and Environment in Thailand (1995).*

The project examined 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: *Asia-Pacific Electricity Project (1995).*

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.

Renewable Energy/Energy Efficiency

- Project: APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Evaluation of the Role of Village Power Applications in Response to the Tsunami Recovery Effort (2007)

The project was financially supported by the Asia Pacific Economic Cooperation (APEC) Secretariat and implemented by the APEC Expert Group on New and Renewable Energy Technologies (EGNRET). The objectives of the project were to examine the role of village power applications in the recovery effort from the 2004 Indian Ocean tsunami, to identify the obstacles which might have been present that prevented greater use of these applications to benefit APEC member economies, and to document lessons learned that could serve as a basis for developing guidelines for the future rapid utilization of village power systems in the aftermath of another natural disaster in the APEC region.

- Project: APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Renewable Energy Products Database: Paving the Way for Deployment of Renewable Energy (2007)

A significant barrier to successful transactions of renewable energy products is lack of information. With the objective to promote an increase in trade in renewable energy products in the APEC region, the Asia Pacific Economic Cooperation (APEC) Expert Group on New and Renewable Energy Technologies initiated this project. The project has developed a database of applied renewable energy products from APEC economies to be an information source for consumers who are looking for renewable energy products that provide a specific energy service.

- Project: *Development of Criteria and Benchmarks for Green Hotels in Thailand-Phase 1 (2002).*

The project was to identify appropriate best practices and potential projects for Thai hotels on energy, water and waste management. The information and lessons learned from the project first phase will be utilized for the development of customized criteria and benchmarks on energy and environmental performance for the Thai hotel industry.

- Project: *APEC 21st Century Renewable Energy Development Initiative (2002).*

The report was a synthesis of the results of the “Survey of APEC Member Economies’ Renewable-Energy-Based Priority Needs and Issues Relating to Sustainable Development,” which the US Department of Energy (USDOE) sent out to all twenty-one APEC member economies. The report was prepared to facilitate information sharing among APEC members regarding current renewable applications relating to sustainable development and growth, and to identify barriers, issues and priorities involving these applications.

- Project: *Asia Pacific Economic Cooperation Energy Working Group Project (1997).*

The report reviewed a number of important issues related to the implementation of Demand Side Management 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: *Renewable Energy for Irrigation Water Pumping Development Project (1997).*

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 (1997).*

Prepared a proposal for the Provincial Electricity Authority of Thailand to submit to the National Energy Policy Office for project 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 (1997).*

Prepared a proposal for the Provincial Electricity Authority of Thailand to submit to the National Energy Policy Office for project funding. The project was to electrify an island in southern Thailand using a wind/PV/diesel hybrid system.

Fossil Energy

- Project: *Asia-Pacific Oil and Gas Study (1995).*

Co-editor of the East-West Center's technical report Pacific Energy Outlook: Strategies and Policy Imperatives to 2010.

- Project: *Thailand's Oil and Gas Sectors (1994).*

Produced Energy Advisories on Thailand's oil and gas sectors and Thailand's new energy policy

Modeling Experience

- Project: *Demand Analysis for the State of Kentucky (2010).*

This project was to develop detailed data on energy consumption in the residential and commercial sectors for the state of Kentucky Department for Energy Development and Independence. The data was prepared for utilization in the Energy and Power Evaluation Program (ENPEP) in order to forecast future energy demand in Kentucky.

- Project: *Demand Analysis for the State of Illinois (2008).*

This project was to develop detailed data on energy consumption in the residential and commercial sectors for the state of Illinois. The data was prepared for utilization in the Energy and Power Evaluation Program (ENPEP) in order to forecast future energy demand in Illinois.

- Project: *Development of Analytic Methodologies to Incorporate Renewable Energy in Domestic Energy and Economic Planning (1999)*.

The project was to identify, assess, and improve analytic methodologies to incorporate renewable energy options in domestic energy and economic planning. A central goal of the project was to establish the basis for future work to improve renewable energy technologies modeling capabilities for use by planners and analysts in the Asia Pacific Economic Cooperation (APEC) member economies. Three energy system models were reviewed in the project—the Energy and Power Evaluation Program (ENPEP), the Market Allocation Program (MARKAL), and the Long-Range Energy Alternatives Planning System (LEAP). The economies selected as case studies in the project were Thailand, Indonesia, the Philippines and the People’s Republic of China.

- Project: *Mineral Resource Management Planning for Thailand (1990)*.

The study constructed econometric models to forecast the demand of critical minerals in Thailand and their supply availabilities, and recommended long-term mineral development strategies for Thailand.

- Ph.D Dissertation: *A Dynamic Econometric Analysis Integrating Long- and Short-Run Adjustments in the Mineral Industry (1989)*.

The dissertation formulated dynamic simulation models for analyzing resource markets in the short run and long run—using the copper market as the case study. In addition to constructing fixed coefficient models, the study also examined the possibility of adopting varying coefficient methods in modeling to determine whether they can overcome the problem of structural change and consequent parameter instability in commodity forecasting models.

Mineral Resources

- Project: *Reclamation Bonding for the Thai Mineral Industry (1993)*.

The study investigated the appropriateness of financial guarantees for environmental protection from mineral resource development.

- Project: *Mineral Resource Management Planning for Thailand (1992)*.

The study recommended long-term mineral development strategies for Thailand.

PUBLICATIONS

- Bloyd, D.I. ENPEP Model Data Collection and Preparation for the KY Residential and Commercial Sectors, Presented to Department for Energy Development and Independence, Kentucky, June 2010.
- Bloyd, D.I. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Evaluation of the Role of Village Power Applications in Response to the Tsunami Recovery Effort, Asia Pacific Economic Cooperation Expert Group on New and Renewable Energy Technologies, APEC Publication Number APEC#207-RE-0, November 2007.
- Bloyd, D.I. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Renewable Energy Products Database: Paving the Way for Deployment of Renewable Energy, Asia Pacific Economic Cooperation Expert Group on New and Renewable Energy Technologies, APEC Publication Number APEC#207-RE-01.5, November 2007.
- Bloyd, D.I. Sustainable Redevelopment of Communities Destroyed by the Tsunami. Submitted to Oak Ridge National laboratory, December 2005.
- 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 and 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.
- Clark, A.C. and D. Intarapravich. *Mining and the Environment: Land Reclamation Policies and Options for Southeast Asia, 2002*, in ed. Jennifer Cook Clark, Regulatory Regimes and Management Practices for Investment Promotion and Sustainable Development of the Mineral Resources Sector in Economies in Transition and Developing Countries of East and South-East Asia. Economic and Social Commission for Asia and the Pacific (ESCAP), United Nations, Bangkok, Thailand, 2002, pp 53-66.

- 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. Demand Side Management in APEC Economies: Recommendations for APEC Energy Ministers. Research paper submitted to Apogee Research International Ltd. as part of the Asia Pacific Economic Cooperation Energy Working Group Project sponsored by Natural Resources Canada, May 1997.
- 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, 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 ed. F. Fesharaki et al., Pacific Energy Outlook: Strategies and Policy Imperatives to 2010, 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.