



George Arapata Kuru

george.kuru@ata-marie.co.id

Professional forester, biometrician, traceability expert and IT System Designer with 30 years' international experience.

New Zealand citizen, Jakarta domiciled

B.For.Sc. (Hons), University of Canterbury, New Zealand 1987

M.For.Sc., University of Canterbury, New Zealand 1988

www.ata-marie.com

Present position

President Director, Ata Marie Group Ltd

Years within the firm

13 years

Membership of professional bodies

Member, New Zealand Institute of Forestry

Specific expertise focuses on

Sustainability and traceability, carbon forestry and accounting and forest management systems, system design and development for agriculture, plantations and natural forest.

- **Agriculture and forest industry consultant** - specializing in rural business valuation, production modelling, due diligence, feasibility assessments
- **Biometrician** - specializing in resource assessment, forest- inventory, growth and yield modelling, raw material supply forecasting, information technology and supply chain management for the forestry and agricultural sectors
- **Legality, sustainability, and traceability expert** – Design of legality, quality assurance and environmental compliance management systems for industry and Governments.
- **Systems design and development** - for agri-business, plantations, and natural forests, harvesting, supply chain management and natural resource inventory in plantations and natural forests.
- **Emissions and carbon advisor** - Climate change and forest carbon modelling assessments under Clean Development Mechanism (CDM), Reduced Impact Logging (RIL), Voluntary Carbon Standard (VCS) and other voluntary standards, forest and agriculture related climate change and climate change mitigation, and the carbon compliance markets under the IPCC regulations.

Country works in

Pacific: New Zealand, Australia, Solomon Islands, Tonga, Niue, Fiji

Africa: Ghana, Cameroon, Ethiopia, Central African Republic, Republic of Congo, Kenya, Rwanda, Liberia.

Asia: Indonesia, Peoples Republic of China, Singapore, Hong Kong,

	Philippines, Papua New Guinea, Cambodia, Thailand, Vietnam, Bangladesh, Laos Europe: United Kingdom, Netherlands, Russian Federation Americas: Nicaragua, Chile
Language skills	English Indonesian – familiarity NZ Maori
Other skills	Comprehensive knowledge of Microsoft Office suite. Intermediate level knowledge in GIS and remote sensing software (ArcGIS).
Publications	<ol style="list-style-type: none"> 1. Dykstra D.P., Kuru G.A., Taylor R., Nussbaum R., Magrath W.B. and Story J., 2003. Technologies for wood tracking – verifying and monitoring the chain of custody and legal compliance in the timber industry. Environment and Social Development East Asia and Pacific Region Discussion Paper. Environment Department, World Bank, Washington DC, USA. 68 pp. 2. Dykstra D.P., Kuru G.A., Nussbaum R., 2003. Technologies for wood tracking. International Forestry Review, Volume 5, Number 3, September 2003, pp. 262-267. 3. FAO 2007. Information Note 1: Procurement of Timber for Tsunami Reconstruction in Indonesia. FAO publication. George Kuru prepared the document. http://www.fao.org/forestry/11702-1-0.pdf. 4. FAO 2007. Information Note 2: Timber Usage for Tsunami Reconstruction in Indonesia. FAO publication. George Kuru prepared the document. http://www.fao.org/forestry/11703-1-0.pdf 5. FAO 2007. Guideline 1: Required Documentation for Transportation of Timber within Indonesia for Tsunami Reconstruction. FAO publication. George Kuru assisted in preparation of this document. http://www.fao.org/forestry/11700-1-0.pdf. 6. FAO 2007. Guideline 2: Clearance Procedures for Timber Imported into Indonesia for Tsunami Reconstruction. FAO publication. George Kuru assisted in preparation of this document. http://www.fao.org/forestry/11701-1-0.pdf. 7. International Labour Organization 2011. Local investments for climate change adaptation: green jobs through green works / ILO Regional Office for Asia and the Pacific. - Bangkok: ILO, 2011, 288 p. ISBN: 9789221247685; 9789221247692. George Kuru prepared the chapter 8 on forestry. 8. Kuru, G.A. 2005. FAO Assessment of Timber Demand and Supply for Post-Tsunami Reconstruction in Indonesia. FAO publication. http://www.fao.org/forestry/8455-1-0.pdf. 9. Kuru, G.A. 2005. Development and Implementation of a Wood Procurement Plan for Post-Tsunami Reconstruction in Indonesia. FAO publication. http://www.fao.org/forestry/10473-1-0.pdf. 10. Kuru, G.A. 2000. Development of Forest Management Information Systems. New Zealand Journal of Forestry Vol. 44(4). 11. Kuru, G.A. 1992. Simulation of thinning effects on stand structure using linear co-ordinates. Australian Forestry 55(1). 12. Kuru, G.A., Whyte, A.G.D. and Woollons R.C., 1992. Utility of the reverse Weibull and extreme value density functions to refine diameter distribution growth estimates. For. Ecol. Manage., 48 : 165-174 13. Newell, J. and Kuru, G 2008. Legal Verification Systems for Wood Supply Between Russia and China. WWF-International, Gland, Switzerland. 77 pages.
Selected Project Experience	2017 Project Leader for carbon impact assessment of the APP Forest Conservation Program in Indonesia

2016 Project Leader for REDD+ Project Design for the intercommunal forest reserve Bangtate—Banga—Bangou, Western Region, Cameroon.
1998—2005 Managing Director of Forestech Research and Dev. Ltd, Christchurch, New Zealand

Professional experience

Years	Location	Company	Position	Description
Professional Experiences				
1998-2007	Christchurch, New Zealand	Forest tech Research and Development Ltd	Managing Director	
2007-Now	Indonesia	Ata Marie Group Ltd	Director	
2017-now	Indonesia	Ata Marie Systems Ltd	President Director	
2020	Ghana	Fairtrade Africa	Project Technical Director	<p>Create Project Design Document for Gold Stand Project supporting improved land use, energy conservation and sustainable cocoa production.</p> <p>Preparation of the Project Design Document for a project in Ahafo Region, Ghana. The project activities include conservation of natural forest areas within a cocoa dominated landscape, reduced harvesting of forests for fuelwood, introduction of high efficiency wood burners.</p>
2020	SEA Region	New Forests Ltd	Project leader	<p>Preparation of VCS carbon investment models to support preliminary investment evaluations of 100+ potential carbon investment in the region</p> <p>Design of a platform model for evaluation of the suitability and potential of properties in South East Asia for green carbon investment using VCS and IPCC methodologies.</p>
2020	Indonesia	Ata Marie Group Ltd	Project leader	<p>Preliminary evaluation of investigate the opportunities for establishing a National Carbon Bond program for Indonesia</p> <p>International organizations are in the process of establishing an Indonesian National Carbon Bond program for the Republic of Indonesia. Funds will be sourced from several international funds. The investigate the opportunities for mobilizing green investment funds for forest conservation and carbon emission reduction projects in Indonesia. The project covers 4 large provinces in Sumatra and Kalimantan and looks at opportunities for creditable projects under the VCS and ART TREE standards. The project is being funded by IDH Sustainable Trade Initiative.</p>
2020	Indonesia	Ata Marie Group Ltd	Project leader	<p>Preparation of a Project Design document for a VSC Carbon project in Indonesia</p> <p>Provision of GHG modelling expertise for development GHG models for a VCS project with Afforestation, Reforestation and Revegetation (ARR), Improved Forest Management (IFM), Reduced Emissions from Deforestation and Degradation (REDD), and Wetlands Restoration and Conservation (WRC) activities. The project area the restoration of 130,000 hectares of peatland forest.</p>
2020	Indonesia	Ata Marie Group Ltd	Project leader	<p>No Deforestation No Peat No Deforestation, No Peat, No Exploitation (NDPE) policy implementation project</p> <p>Project leader of a multi-disciplinary team implementing a NDPE program for a large palm oil consortium. The project involved review of the NDPE Policy and development of a comprehensive implementation strategy for internal and 3rd party raw material supply. NDPE is a policy framework for responsible environmental and ethical business practices for land management businesses.</p>
2020	Indonesia	Ata Marie Group Ltd	Project leader	<p>Peatland rehabilitation for pulpwood plantation concession</p> <p>Project leader of a multi-disciplinary team implementing a review of water management program in a forest concession in West Kalimantan. The purpose is developing a plan for the implementation of water management infrastructure to implement sustainable</p>

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				peatland management. The project includes detailed topographical mapping of the site, designation of water management zones, and design of canal, dam, and irrigation gates for control of soil water levels in each water management zone. The project included preparation of an environmental impact assessment and GHG impact model.
2019	Liberia	SOFRICO /EQO Nixus	Consultant	<p>Liberia Forest Sector Project</p> <p>Part of a multi-disciplinary team tasked with reviewing legality compliance within the forestry sector in Liberia. Responsible for compiling the list of industry participants, identifying the legality compliance requirements and the level of compliance for licensing and operational implementation of forestry operations.</p>
2019	Ghana	Ata Marie Group Ltd	Project leader	<p>Support and implementation of legality assurance and wood tracking systems in Ghana</p> <p>Configuration and refinement of procedures and systems for timber administration in Ghana for the Ghana Forestry Commission. This extra work included business process refinements and development of specialist user portals for timber industry participants, general public, and domestic and international regulatory authorities.</p>
2018-2017	Indonesia	Asia Pulp and Paper	Project leader and GHG modelling expert	<p>Project leader for carbon impact assessment of the APP Forest Conservation Program in Indonesia</p> <ul style="list-style-type: none"> - Responsible for management of resource mapping exercise for 2.5 million hectares of forest concession lands and their land cover. - Responsible for the technical analysis of carbon emissions. - Responsible for carbon stock assessment and project emissions under IPCC and INCAS standards.
2018	France	INTERPOL	Project leader	<p>Systems for the administration of legal compliance and enforcement for forestry sectors</p> <p>Preparation and presentation of reports for annual INTERPOL conference supporting Project LEAF (Law Enforcement Assistance for Forests).</p>
	Indonesia	Multi-client	Project leader	<p>Project specialist for International Crypto-Currency Development</p> <ul style="list-style-type: none"> - Design of multi-industry technical processes and standards for sustainability certification in forestry and agri-business sectors. - Design of multi-industry technical processes and standards for commodity trading in forestry and agri-business sectors.
2017	Indonesia	PT HKI, a member of Semporna Agro Group	Project leader	<p>Evaluation of forest information systems for PT HKI in West Kalimantan, Indonesia</p> <ul style="list-style-type: none"> - Review and evaluation of rubber plantation management and administration procedures. - Evaluation of resource inventory, growth and yield modelling, and production forecasting procedures. - Evaluation of IT systems for mapping and remote sensing, plantation development, plantation inventory and planning and tapping / rubber production.
	New Zealand	Te Rima Trust	Project leader	<p>Study into the development of port and shipping service for a green field log barging facility in New Zealand</p> <ul style="list-style-type: none"> - Scoping of vessel and port facility requirements for 600,000 m3 per annum log barging facility. - Preparation of costing and feasibility assessment.
2016	Cameroon	National development participatory program (PNDP), the donor coordinating agency for the Government of Cameroon	Project leader	<p>REDD+ Project Design for the intercommunal forest reserve Bangangté-Bana-Bangou, Western Region, Cameroon</p> <ul style="list-style-type: none"> - Responsible for management of the environmental and social evaluation teams. - Responsible for the technical analysis of carbon emissions. - Responsible of the PDD according to VCS and CCB requirements.
	Indonesia	Djarum Group	Project leader	<p>Evaluation of suitability of pine species for plantation development for Djarum in East Kalimantan, Indonesia</p> <ul style="list-style-type: none"> - Organization of soil survey and site suitability assessment. - Preparation of pine timber and resin production evaluation report.

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	Indonesia	Djarum Group	Project leader	Evaluation of forest information systems for Djarum in East Kalimantan, Indonesia <ul style="list-style-type: none"> - Review and evaluation of forest management and administration procedures. - Evaluation of forest inventory, growth and yield modelling, and production forecasting procedures. - Evaluation of IT systems for mapping and remote sensing, plantation development, forest inventory and planning and forest production.
	Ethiopia	African Bamboo PLC	Project leader	Design of forest management plans and information systems for African Bamboo in Ethiopia <ul style="list-style-type: none"> - Review of bamboo natural resources in central highlands. - Design of harvesting and logistics processes, machinery, harvesting practices. - Design of supporting IT systems.
	Central Suau/ Papua New Guinea	GIZ	Carbon specialist	GIZ Project Design Document Development for Forest Carbon Project (logged – protected Forest) <ul style="list-style-type: none"> - Oversight of remote sensing/GIS resource mapping and carbon inventory. - Analysis of forest carbon inventory, and preparation of baseline assessment according to VCS/CCBS requirements. - Preparation of preliminary manual for MRV System (based on outcome of preparation phase)
	Ghana	Forestry Commission of Ghana	Project manager	Development and deployment of legality assurance and wood tracking system in Ghana Implementation of procedures and systems for timber administration in Ghana for the Ghana Forestry Commission. The work is in support of the Voluntary Partnership Agreement (VPA) FLEGT program. The system records all forest standing stock, logging and wood processing. The system will provide full chain of custody and legality assurance services for the whole timber sector in Ghana.
	Indonesia	Asia Pulp and Paper		Growth modelling and production planning for major pulp and paper corporate Responsible for analysis of forest plantation growth and yield for 3 major species totalling 1,000,000 hectares.
2013	Liberia	Equatorial Palm Oil PLC		Design and analysis of high carbon stock (HCS) forest inventory in Liberia Responsible for sample design, preparation of computer databases for data capture and inventory analysis.
2012	Milne Bay, PNG Papua New Guinea	New Britain Palm Oil Company Ltd	Project Manager	Design and analysis of high carbon stock (HCS) forest inventory Management of HCS inventory. Responsible for inventory design, management of field work, preparation of computer databases for data capture, and inventory analysis.
	Indonesia	PT Vale Indonesia	GHG modelling specialist	Preparation of carbon emissions inventory for mining company Preparation of emissions inventory from Land Use, Land Use Change and Forestry (LULUCF) for a mining company prepared under the Greenhouse Gas Protocol.
	Indonesia	Asia Pulp and Paper	GHG modelling specialist	Preparation of carbon sequestration and carbon foot print and lifecycle assessment program Preparation of carbon sequestration and carbon footprint assessment. The carbon modelling is implemented under the GHG Protocol, ISO 14040 and ISO 14064.
	Vietnam	Asian Development Bank		Biometrician for Forests for Livelihood Improvement in the Central Highlands program Provide biometric support for the FLITCH project providing forest management planning services to 6 provinces in the central highlands in Vietnam. Services being provided include forest inventory analysis and growing stock assessment, derivation of growth and yield models, assistance for forest management plan1ning and development of sustainable forest management plans.
2011	Indonesia			Review of carbon foot print and lifecycle assessment program in Indonesia

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	Aceh Province, Indonesia	Headed by the Leuser International Foundation (LIF) with funding from NZAID		<p>The consultant participated in an assessment of Carbon Footprint of a major forestry company in Indonesia. The scope of review included Life Cycle Assessment of selected wood products and determination of carbon emissions estimates from Land Use, Land Use Change and Forestry. The carbon modelling was implemented under the GHG Protocol, ISO 14040 and ISO 14064.</p> <p>Aceh Tengah and Bener Meriah Watershed Protection Program Project</p> <p>The consultant leading a land use and reforestation/forest rehabilitation project in central Aceh, Indonesia. The project is part of the Watershed Protection Programme in Aceh that aim to protect the head water catchments of the main river systems in central Aceh. The project is focus on community-based initiatives in turn based on afforestation and agricultural activities.</p> <p>Teak forest industry tour</p> <p>Organization and support of a forest industry tour visiting teak plantations and wood processing facilities in central Java.</p> <p>Plantation forest management information system</p> <p>Deployment of a MIS system at Green Wood Resources (Beijing) Forestry Co. Ltd to support management of various plantation investments.</p> <p>Forest biomass resource assessment</p> <p>Assessment of PT Tusam Hutani Lestari HTI Concession and its suitability for supply of sustainable pulpwood production.</p> <p>Carbon assessment project</p> <p>The consultant is preparing monitoring, reporting and verification procedures for direct measurement of carbon stocks and estimation of carbon emissions from land conversion. The carbon profile is then used, in conjunction with other criteria, to identify lands that can be converted to oil palm without generating net carbon emissions in the long term. The client is The Forest Trust (TFT) and the beneficiaries are the members of the RSPO. The consultant is also involved in planning and implementing field survey and data analysis. The project is conducted in cooperation with Greenpeace.</p>
2010	Indonesia			<p>Contributing author with paper on climate change adaption from forestry perspective</p> <p>Preparation of the "Forestry" chapter of the "Green Jobs Through Green Work". A document being prepared by the International Labour Organization of the United Nations. The chapter focuses on forests and climate change, impacts of climate change on forestry, mitigation and forestry, and impacts on project design and implementation.</p> <p>Forestry expert on the Leuser Ecosystem REDD+ project team.</p> <p>The Leuser REDD project is funded by German Ministry Of Environment, Nature Conservation, And Nuclear Safety (BMU SBF) as part of the German Financial Cooperation with the Indonesia International Climate Initiative (ICI) and is being implemented by KfW. The purpose of the project is to design policy and specific activities to reduce deforestation and rehabilitate degraded forest lands in the Leuser Ecosystem in Aceh and North Sumatra Province, one of the largest remaining natural forest areas in Asia. The consultant is part of a multi-disciplinary team and his responsibilities are to provide general forestry expertise as well as specific technical advice with regards to MRV.</p> <p>Plantation mapping in East Kalimantan</p> <p>Supervision of mapping project to map land use and identify palm oil plantation boundaries.</p> <p>Plantation mapping in East Kalimantan</p> <p>Supervision of mapping project to map land use and identify palm oil plantation boundaries.</p>

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	Sabah, Malaysia			<p>Reduced Impact Logging Assessment</p> <p>Management of independent field inspection and assessment of Reduced Impact Logging program in Sabah Indonesia. The client was the Sabah Forestry Department and the consultant was sub-contracted through Global Forest Services Inc.</p> <p>Land Valuation of Cassava Bio-energy property in South Sulawesi</p> <p>Evaluation and valuation of 65,000-hectare property in South Sulawesi. The property is proposed for a large-scale development of cassava plantation to be used as feedstock for ethanol production.</p> <p>Forest Inventory in South Kalimantan</p> <p>Management of field forest inventory inspection for 50,000 hectare of forest plantation in South Kalimantan Province, Indonesia supervising 3 field crews.</p> <p>Forest Inventory in Aceh Province</p> <p>Management of field forest inventory inspection for 110,000 hectare of forest plantations in Aceh Province, Indonesia supervising 3 field crews and one GIS and remote sensing team.</p> <p>Review of proposed Global Conservation Standard</p> <p>Part of an international panel of experts conducting a review of the draft text of the proposed Global Conservation Standard.</p>
	China	Dandong Forest Industries		<p>Resource assessment and remote sensing training</p> <p>Management of resource assessment and training program for a forest investment project in Dandong, Liaoning Province, Peoples Republic of China.</p>
	Aceh Province, Indonesia			<p>Development of Voluntary Carbon Standard PDD</p> <p>Preparation Project Design Document for 1-million-hectare property for a confidential client.</p>
2009	Mindanao Island, Philippines	Poyry		<p>Natural forest assessment</p> <p>Evaluation and valuation of 35,000-hectare natural forest concession</p>
	Cambodia	Grandis Timber		<p>Assessment of teak plantations</p> <p>Evaluation and valuation of Teak Plantation project in Western Cambodia.</p>
	Indonesia	PT Hutan Rindang Banua		<p>Due diligence for plantation asset sale.</p> <p>Evaluation of 60,000-hectare plantation resource in Central Kalimantan. Consultant responsible for project management. Project including assessment of site, inventory of forests assessment of companies environmental and CSR performance.</p>
	Indonesia	PT Golden Agri		<p>Preparation of pre PDD VCS assessment.</p> <p>Pre-assessment of 120,000-hectare natural forest concession in Central Kalimantan under Voluntary Carbon Standard (VCS). Project was conducted on behalf of Carbon Conservation Ltd.</p>
	South East Asia - Pacific	New Zealand Imported Tropical Timber Group.		<p>Verification of legal origin for various jurisdictions</p> <p>Evaluation of wood products legality verification systems in Asia and Pacific regions</p>

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	Guondong Province, China	Poyry		<p>Assistance with plantation resource assessment</p> <p>Analysis of establishment and growth for teak and eucalyptus plantations in China.</p>
		Fiji Hardwood Corporation Ltd, funded by an ITTO grant		<p>Design and implementation of sawmill management systems for Fiji Hardwood Corporation Ltd</p> <p>Design and implementation of sawmill management systems at Waivunu sawmill.</p>
	Malaysia	Poyry		<p>Verification of legal origin</p> <p>Part of a team evaluating the procurement procedures of an exporter of logs and processed wood products from Sarawak Malaysia. The purpose of the project was to document the client's current operating procedures and make recommendations regarding establishment of verified legal origin status for all the wood products procured by the client.</p>
	Indonesia	GTZ		<p>Asset Mapping Assistance Project.</p> <p>Implementation of monitoring and evaluation project for the Asset Mapping Assistance Project. AMAP is an AUSAID funded project, with GTZ IS as implementing agency, with the role of monitoring and evaluating fixed asset survey in Aceh province. The consultant was project leader managing a team of 9 staff of GIS technicians and construction inspectors.</p>
	Indonesia	GTZ		<p>Asset Mapping Assistance Project.</p> <p>Preparation of the monitoring and evaluation project plan for the Asset Mapping Assistance Project. AMAP is an AUSAID funded project, with GTZ IS as implementing agency, with the role of monitoring and evaluating fixed asset survey in Aceh province.</p>
	Laos	Birla Lao		<p>Design of forest MIS for plantation development company.</p> <p>The design involves design and development of silvicultural operations planning and management systems for 50,000 plantation development projects.</p>
	Indonesia	Asia Pulp and Paper		<p>Provision of advice for CO2 offset and environmental investment.</p> <p>The project involves the providing technical advice to an investment company negotiating investment packages for CO2 offsets, avoided deforestation, non-timber forest management and sustainable forest management.</p>
	Indonesia	Asia Pulp and Paper		<p>Derivation of CDM CO2 footprint for forest plantation company</p> <p>The project involved the estimation of the carbon footprint of the plantation forest operations of a major forestry corporation in Indonesia. The carbon footprint study involved modelling of the CO2 sequestration from growing plantation forests and the emissions from forest fires, harvesting, degradation of logging waste and fuel consumption from machinery used in forest operations. The study was conducted in association with ERM as part of an analysis of options for application for carbon credits under the clean development mechanism (CDM).</p>
	Indonesia	Asia Pulp and Paper		<p>Derivation of CO2 footprint for forest plantation company</p> <p>The project involved the estimation of the carbon footprint of the plantation forest operations of a major forestry corporation in Indonesia. The carbon footprint study involved modelling of the CO2 sequestration from growing plantation forests and the emissions from forest fires, harvesting, degradation of logging waste and fuel consumption from machinery used in forest operations. The study was conducted in association with ERM.</p>

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2006-2008	In Aceh and Nias Island, Indonesia	Badan Rekonstruksi dan Rehabilitasi (Indonesia Government Reconstruction Coordinating Agency)	logistics coordination advisor	<p>Indonesia – Monitoring of Needs for Construction Materials and Logistics Planning for Aceh and Nias reconstruction</p> <p>Involving the coordination of GOI Ministries, Indonesian timber industry groups, UN Agencies and NGO's to determine needs and facilitate the availability of all building materials supply for reconstruction. Position initially funded by AUSAID / AIPRD and now by UNDP.</p> <p>Coordinating and supporting logistics policy and projects of BRR, NGOs and UN Agencies in the the area of shipping, port development, temporary materials storage facilities, and road transport development. Specific tasks completed on Nias included:</p> <ul style="list-style-type: none"> Monitoring of the progress and status of reconstruction programs in Aceh and Nias. Organizing roading needs assessment for reconstruction activities. Quantifying building materials needs, identifying bottlenecks and supply shortages and advising addressing materials supply problems. Organizing logistics working groups and workshops on logistics. Coordinating transport infrastructure projects to assist BRR and NGO relief program. Provision of specialist advice on timber supply including identifying suppliers, providing advice on timber use, and advising on timber procurement and transport.
	Nias	BRR Nias	Acting Logistic Manager	
2007	Indonesia/Thailand	Thai Paper Mill Company Ltd		<p>Project management for various forest due diligence</p> <p>Management of forest inspection and due diligence projects for several commercial clients in Aceh, West Papua, and Thailand. The due diligence included forest resource mapping using remote images and GIS, field inspection and forest inventory, and yield modelling and forest valuation. The consultant was responsible for overall project management, coordination of GIS and field technicians, data analysis and reporting.</p>
	Russian Federation	World Wildlife Fund		<p>Legal verification of wood supply chains for WWF</p> <p>Design of legal verification systems for logs and timber produced in and exported from central Siberia in the Russian Federation. The project involved travelling to Russia, visiting timber production sites, documenting the production and distribution processes of selected companies, and making recommendations for improving the verification and auditing of legal wood supply. The project conducted on behalf of World Wildlife Fund (WWF) and IKEA.</p>
2006	New Zealand	Ngati Porou Whanui Forests Limited		<p>Implementation of GIS, forest management and financial management systems</p> <p>Working for Ngati Porou Whanui Forests Limited, have prepared and compiled spatial data, established GIS systems, designed and developed customized forest management systems, migrated company financial systems to JADE financials, and implemented training and support.</p>
	Aceh, Indonesia	BRR (Indonesia Government Reconstruction Coordinating Agency)	Wood Coordination Supply Expert	<p>Wood supply coordination for Aceh reconstruction</p> <p>Involving the coordination of GOI Ministries, Indonesian timber industry groups, UN Agencies and NGO's to facilitate the availability of wood supply for reconstruction. Position funded by UNDP.</p>
2004-2006	New Zealand	New Zealand Permanent Forests		<p>Carbon systems analysis for New Zealand Permanent Forests</p> <ul style="list-style-type: none"> Development of procedures manual for management systems associated with financial control, operations control and reporting, yield and CO2 forecasting, and carbon yield monitoring. Development of yield and CO2 forecasting models for pine, fir, and Eucalyptus species.
2005	Sabah State, Malaysia	Yayasan Sabah		<p>Reduced impact logging program</p>

Years	Location	Company	Position	Description
				Assessment of needs for implementation of reduced impact logging
	Aceh, Indonesia	FAO		<p>Planning wood supply for Aceh reconstruction</p> <p>Assessed wood supply needs and prepared a report providing information on the wood demand and supply situation for reconstruction purposes, recommending measures to be taken to meet the timber requirements, and indicating possible roles of FAO in providing assistance.</p>
	Fiji	Fiji Hardwood Corporation Ltd		<p>Implementation of mill and timber yard management systems</p> <p>Design and development of systems management of mill production, timber distribution and sales systems for an integrated sawmill, timber moulding and distribution company.</p>
	Australia			<p>Growth and yield modelling of <i>Eucalyptus globulus</i></p> <p>Derivation of growth functions for <i>Eucalyptus globulus</i> and analyse the impact of site-specific indices such as land use class, rainfall and potential evaporation on growth and yield.</p>
2004	New Zealand	Fiji Hardwood Corporation Ltd		<p>Systems Review</p> <p>Review of procedures and systems of forest resource description and forest inventory systems maintained by a major corporate client in New Zealand. The review included (i) documentation of procedures, process, methodologies and rationale of corporate systems and data models, (ii) testing procedures, responsibilities, and validation and audit procedures.</p>
	Fiji	Fiji Hardwood Corporation Ltd		<p>Design of logistics / chain of custody / resource management systems</p> <p>Design and development of systems for complete chain of custody from log stock inventory, log delivery, invoicing of contractors and customers. Also implementing forest inventory, resource mapping and production planning systems.</p>
	Indonesia	The project is sponsored by DFID and USAID and managed by The Nature Conservancy.		<p>Chain of custody system design and development</p> <p>Design and development of systems for complete chain of custody from forest inventory, to log delivery, product tracking through saw and plywood mills through to dispatch to customers.</p>
	Indonesia	Report prepared for CIFOR on contract to Global Forestry Services.		<p>Chain of custody report</p> <p>Preparation of report on the status of technology for management of harvesting operations, product identification and labelling, transport of material and chain of custody.</p>
	Hawaii, USA	Landcare NZ Ltd		<p>Weed management systems</p> <p>Design and development of a weed management system as a decision support system for the management and control of weeds on agricultural lands. The system supports the following functions</p> <ul style="list-style-type: none"> (i) Description of weed species, their infestation rates, control strategies and priorities for control. (ii) Layout of management areas, properties and management units. (iii) Programming of weed control operations on individual management units. (iv) Reporting and analysis of weed control operations.
	New South Wales - Australia	Poyry		<p>Yield table preparation for confidential client</p> <p>Analysis of inventory data from across New South Wales and preparation of site and silvicultural regime specific yield tables for radiata pine.</p>

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2003	Indonesia	RAPP		<p>Wood flow and sustainability modelling.</p> <p>Modelling of wood flow projections for a major pulp and paper company in Indonesia and determination of sustainable levels of plantation and pulp mill production.</p>
	Indonesia	RAPP		<p>Design of FMIS for corporate plantation management company.</p> <p>Design of Forestry Management Information System (FMIS) for a large corporate forest plantation company in Indonesia. The FMIS incorporates forest and infrastructure asset register, operations management system, financial management systems, and supply chain management system.</p>
	Fiji	Fiji Hardwood Corporation Ltd		<p>Analysis of systems requirements for Mahogany management</p> <p>Reviewed Fiji Hardwood Corporation Ltd in terms of current company structure, processes and system requirements. Prepare an overview of alternative systems for forest management, supply chain management, planning and financial control consistent with the systems requirements. Also assisted in growth and yield assessment and forest valuation.</p>
	New Zealand			<p>Permanent sample plot systems</p> <p>Design and development of permanent sample plot database systems for confidential client in New Zealand.</p>
2002	Indonesia	Asia Pulp and Paper		<p>Wood flow analysis</p> <p>Assessment of growth functions, forest inventory data and forest resource description and preparation of wood flow forecasts for APP, a corporate forestry enterprise in Indonesia.</p>
	Indonesia	Asia Pulp and Paper		<p>Forest management and chain of custody systems</p> <p>Review of existing forest management and chain of custody systems for a corporate forestry enterprise and the recommendation of “best practices”.</p>
	Indonesia	Asia Pulp and Paper		<p>Development of growth and yield models for <i>Acacia mangium</i></p> <p>Development of height, basal area, mortality and volume growth functions for <i>Acacia mangium</i> grown in Sumatra, Indonesia.</p>
	New Zealand	Te Puni Kokiri		<p>Review of Government forestry policies for Maori land</p> <p>Prepared a review of the Governments proposed policy for the development of plantation areas on land owned by indigenous New Zealanders (Maori). The review covered an analysis of the consultation processes used, the quality of the proposal in terms of desired outcomes, and the ability of the proposal to address the underlying problems land management problems.</p>
	Cambodia	World Bank		<p>Chain of custody project – World Bank</p> <p>Member of team of experts assessing and comparing the utility, limitations and costs of new and available systems and technologies for tracing the source of wood and verifying that it was legally harvested and traded.</p>
	New Zealand			<p>Design of dispatch systems</p> <p>Design of transport planning and truck dispatch system for corporate client in New Zealand.</p>
	New Zealand	New Zealand Permanent Forests Ltd		<p>Participation in due diligence for a major corporate acquisition for confidential client</p> <ul style="list-style-type: none"> • Management of large-scale plantation forest inventory. Responsible for inventory sample design, co-ordination of field operations, data capture and processing and reporting. • Assessment of corporate requirements for financial management and forest management IT systems for the new company.

Years	Location	Company	Position	Description
2001	Indonesia	Poyry		<p>Volume and taper equations for <i>Acacia mangium</i></p> <p>Development of compatible volume and taper equations for <i>Acacia mangium</i> grown in Central Sumatra, Indonesia.</p>
	Bangladesh	World Bank		<p>Inventory Specialist for World Bank Forest Resources Management Project</p> <p>Design of forest inventory project for native and plantation forest in the Chittagong Hill Tracts. Preparation of field procedures, planning of field logistics and manpower, organization of GIS and maps, and design of information systems.</p>
	New Zealand	Weyerhaeuser NZ Inc		<p>Review of forest resource description systems for Weyerhaeuser NZ Inc</p> <p>Reviewed the systems and procedures for quantifying the company's forest resources and for modelling future wood flows and cashflows.</p>
	Niue	Landcare NZ Ltd		<ul style="list-style-type: none"> • Development of forest records and inventory sampling and analysis systems for implementation in Niue Island. • Assessment of the impact of soil and site variables on the growth and yield of Mahogany (<i>Swietenia macrophylla</i>) plantations. • Preparation of growth and yield equations and tables for Mahogany plantations.
	New Zealand	Rayonier NZ		<p>Review of log conversion factor systems for a large corporate</p> <p>Reviewed the methods and systems for deriving conversion factors from tonnes and JAS to cubic metres for a large corporate client in New Zealand. The review included analysing the existing log conversion rates, deriving estimates of m3 production rates from actual tonnes and JAS for the whole company and describing potential sources of error.</p>
	New Zealand			<p>Design of integrated transport monitoring system</p> <p>Prepared a specification for a system for the management of truck dispatch and pickup and delivery of logs. System specification included description of database elements and radio/cell phone communications between the control centre and logging trucks.</p>
	New Zealand			<p>Environment Court</p> <p>Reviewed the indigenous forestry management rules of the revised District Scheme of the Southland District Council.</p>

	New Zealand	Pyne Gould Guinness		<p>Review of log sales management systems for a large corporate</p> <p>Reviewed existing log sales and accounting systems for a large corporate client in New Zealand. The review included analysing the data processing systems and risk assessment systems used by the company in controlling and monitoring log purchases and sales. The review resulted in improvements to the computer systems and management processes resulting in increased efficiencies.</p>
	New Zealand	Carter Holt Harvey Ltd		<p>Review of Silvicultural Quality Control Systems</p> <p>Reviewed existing silvicultural quality control systems for a large corporate client in New Zealand. The review included assessing the management of QC and reviewing sampling designs and field implementation.</p>
	New Zealand	Carter Holt Harvey Ltd		<p>Review of Preharvest Inventory (PHI) Systems</p> <p>Reviewed existing preharvest inventory systems for a large corporate client in New Zealand. The review included assessing the management of PHI and implementing management improvements, reviewing sampling design and field implementation, and reviewing all PHI computer systems and specifying system improvements.</p>
1998-2000	Indonesia	EU		<p>Management systems for natural forest management – EU foreign assistance project</p> <ul style="list-style-type: none"> • Development of a documented national standards and quality management systems for Permanent Sample Plot implementation. • Design and development of database information systems for species identification, forest inventory and permanent sample plot growth monitoring. • Analysis of natural forest inventory data in Berau, East Kalimantan; including stratification of forests by vegetation types and analysis of forest yields by environmental factors.
1999	New Zealand	Selwyn Plantation Board		<p>Forest growth modelling</p> <ul style="list-style-type: none"> • Validation and calibration of Douglas Fir growth and yield functions for a large company in New Zealand. • Analysis of growth and yield effects of bio-solids application to forest plantations in Canterbury.
	Western Province, Solomon Islands	Kolombangara Forest Products Ltd		Development of compatible volume and taper equations for plantation grown <i>Terminalia brassii</i> , <i>Gmelina arborea</i> and <i>Camposperma brevipetiolata</i>
	Fiji	Fiji Pine Ltd		Development of forest records and inventory sampling and analysis systems for implementation in Fiji for Fiji Pine Ltd.
	Australia	Poyry		<ul style="list-style-type: none"> • Modeling of wood production from, and valuation of, the Victorian Plantation Corporation for a confidential client. • Modeling of wood production from, and valuation of, the wood resources of a confidential client in Tasmania. • Development of specialist inventory and silvicultural scheduling systems for Norske Skog, Tasmania.
1998-2000	Tonga & Philippines	Landcare NZ Ltd		<p>New Zealand foreign assistance project</p> <ul style="list-style-type: none"> • Development of forest records and inventory sampling and analysis systems for implementation in Tonga (Eua plantation estate, Tonga Forestry Department) and the Philippines (Bukidnon Forests Incorporated) for Landcare NZ Ltd. These systems included an integrated land management database and GIS. The GIS used were Arc View and Map Info. • Analysis of natural forest inventory data for the establishment of wood processing plant in Mindanao, Philippines.
1998-2001	New Zealand			<p>Installation of various MIS</p> <p>Development, installation, and training in MIS systems for 6 different commercial forestry companies. Details provided on request.</p>
1998	Thailand	Poyry		Review of volume and taper equations for <i>Eucalyptus camaldulensis</i> , and development of merchantable yield tables for a confidential client in North East Thailand.
	Cambodia	IMF		<p>IMF foreign assistance project</p> <p>Preparation of recommendations for wood product monitoring and inspection procedures for Cambodian Government. Prepared for the DAI consulting group</p>

	Papua New Guinea	Brown River Forestry Partnership Ltd		<p>Sawmill feasibility study</p> <p>Prepared an analysis of the feasibility of a cut-stock wood processing plant for Brown River Forestry Partnership Ltd, Port Moresby, Papua New Guinea.</p>
	New Zealand	Canterbury University	Trainer	<p>Presentation of the FORE419 lecture series (4th year B.For.Sc.) on forest modelling and resource assessment at the School of Forestry, University of Canterbury.</p>
	New Zealand	Weyerhaeuser NZ Ltd		<p>Log Tracking</p> <ul style="list-style-type: none"> • Prepared procedures and guidelines for Weyerhaeuser NZ Ltd to assist in the on-site testing, evaluation, and modification of a Canadian log tracking system. • Assessment company quality procedures and development of quality manual for Groome Pöyry Ltd, a forestry consulting firm in preparation for certification under ISO9000.
1996 - 1997			<p>Systems Specialist, SGS Forestry, Oxford, United Kingdom</p>	<ul style="list-style-type: none"> • Supervision of the design and specification of systems for sampling, measurement and quantification wood products for the purposes of (a) monitoring log and timber exports for commercial clients and Government agencies (b) derivation of international trade statistics. • Supervision of upgrading and maintenance of computer systems at the operational sites. • Member of the company management team responsible for development and presentation of technical and financial proposals to companies/Governments for the implementation of monitoring services. Also team leader of projects for development of new products and services. • Supervision of SGS Forestry computer systems including co-ordination with the Group IT services in the UK and Geneva. • Knowledge of procedures and systems for measurement, inspection, tracking, and export of wood products and other commodities. • Design and specification of data capture systems (hand-held computers/PDA), database systems (SQL Base, SQL Windows), and data communication systems. • Management of software development projects. • Design and implementation of labelling systems – bar-coding, scanning and field data capture, and communication to central data processing sites.
1988 - 1995				<ul style="list-style-type: none"> • Forest Resources Specialist Consultant • Self-employed and subcontracting to Groome Poyry Ltd
1995	Solomon Islands	Kolombangara Forest Products Ltd		<p>Development of silvicultural management and planning systems for Kolombangara Forest Products Ltd, Western Province, Solomon Islands.</p>
	New Zealand	Weyerhaeuser		<p>Forest appraisal</p> <p>Assistance with development of forest appraisal training course for in major New Zealand Forestry Company.</p>
	Australia			<p>Inventory and resource assessment</p> <p>Planning, supervision, and data analysis logging waste assessment in East Gippsland, Victoria, Australia. The project involved planning forest inventory procedures, supervision of field operations, design of specialist forest inventory computer program, and analysis of field data. Field procedures used 3P sampling methods.</p>
	Australia			<p>Resource assessment</p> <p>Assessment of privately owned radiata resources in northern Tasmania, Australia. The project involved collation and analysis of forest stand record systems, GIS databases, and growth and yield data. Forests were modelled using growth and yield functions developed in Tasmania in conjunction with the STANDPAK growth and yield modules.</p>
	New Zealand			<p>Information system</p>

				Development of lumber management systems for a small vertically integrated timber marketing company. The system is written in Microsoft Access. The system tracks wood flows from the logging site, through small contract mills, to kilning and dressing, through to delivery to the lumber buyer. The purpose of the system is to track product and cash flows throughout the production and distribution process.
1994	Indonesia			Inventory Planning, supervision and data analysis for forest inventory of 28 concessions in Indonesia. The project involved planning forest inventory procedures, supervision of field operations, design of specialist natural forest inventory computer program, and analysis of field data. Data analysis comprised developing yield tables for multiple species in Kalimantan, Seram and Irian Jaya.
				Australia - Resource assessment Forest resource analysis of plantation and natural forest resources in Western Australia conducted to assist the future planning and development of existing MDF and particleboard capacity. The project involved preparing yield table estimates for both plantation and natural forests, preparation of growth and yield forecasts, and the formulation and solution of LP forest estate model.
				China - Inventory and resource assessment Inventory and GIS of forest resource in Yangchun County, Guangdong Province, People's Republic of China for Hong Kong clients. The project involved preparing estimates of current stocks of both plantations; design of GIS to record forest, road, and population locations; preparation of yield tables and growth forecasts; and the formulation and solution of LP forest estate model.
				New Zealand - Inventory Inventory and growth and yield project of sand dune forests in Northland, New Zealand. Development of plantation monitoring procedures and plantation estate resource description and modelling of future productivity. Project undertaken to assist planning of major MDF and veneer mill development in the region.
1993	New Zealand			Inventory and growth and yield Inventory and growth and yield projection for plantations at mid-rotation in the Central North Island, New Zealand. Development of plantation monitoring procedures and management information systems for Winstone Pulp International Ltd. The system concentrated on quantifying plantation quality and growth potential at the mid-point between planning and harvesting, and then using this information to prepare yield tables of final harvest by log quality grades.
				New Zealand - Logging Management System Development of LOGTRAK (written in Microsoft Access), a log tracking and management system. Systems analyst for development of MIS that records all aspects of log flows from the forest site to the mill. The system includes modules for recording contractual arrangements with loggers, loaders, transportation operators and log buyers and for calculating payments to the respective parties.
	Indonesia			Log Tracking Systems Report on the use of Australasian Technology to assist in the eco labelling of tropical logs. Systems design as above, but included other aspects such as legislative and cultural framework, use of electronic measurement equipment and telecommunications.
	New Zealand			Provision of advice to Ministry of Maori Affairs and Ministry of Forestry on natural forest management policy: Actively involved in development and formulation of legislation and government regulations regarding natural forest harvesting and conservation.
1991 - 1992	New Zealand			Natural Forest Inventory and Valuation - New Zealand Government 2-year Project: Joint project leader for the planning, collection and analysis of inventory data for Maori owned indigenous forests. Developed software for data analysis (PARADOX database language) and resource mapping (Terrasoft GIS language). Produced growth and yield projections for several natural forest species.
1992	Indonesia			MIS and training

				Development, installation and support the Plantation Record System called FMS (written in DATAFLEX database language). Installation and staff training of FMS with Inhutani II Head Office in Jakarta for management of plantations. Described below, but modified for Indonesian management techniques, conditions and requirements.
1992	New Zealand			<p>Econometrics</p> <p>Econometric modelling for evaluation of the socio-economic impact of large-scale afforestation on the East Coast of New Zealand. The East Coast is an isolated, sparsely populated, and economically depressed region of New Zealand. The project examined the long-term economic, social and environmental impact of a planned 100 000 ha afforestation project in the region. Special emphasis was placed on examining the impact on indigenous Maori people who comprise a majority of the population.</p>
1991	New Zealand			<p>Plantation Record System - FMS:</p> <p>Development of FMS package for plantation forest management. Installed with plantation forest owners within New Zealand. Integrated tool for recording plantation location, species composition, management history, growth and yield, and inventory data.</p>
1990	New Zealand			<p>Post-Harvest Assessment Systems:</p> <p>Development of inventory procedures and MIS for the assessment of monitoring of harvesting operations and waste volumes. Systems designer of sampling methods and statistical analysis methods.</p>
1989	New Zealand			<p>Growth and Yield Modelling:</p> <ul style="list-style-type: none"> - Development of growth and yield functions for plantation forest species in New Zealand for production forecasting and yield prediction. Scientific methodology published in <i>Journal of Forest Ecology and Management</i>, January 1992. - Sector Modelling of Natural Forest: Development of regional sector models for natural forest in New Zealand. Modelling involved the use of forest estate simulation and encompassed financial analysis of future natural forest management and plantation reafforestation program, employment projections, and industrial development.
1983-1987	New Zealand	Forest Service	Forester Trainee	<p>Junior forester with posted to several offices throughout New Zealand, including Lake Taupo Forest, Franz Josef, Blenheim District Office, Forest Research Institute in Rotorua, and Wellington Conservancy office in Palmerston North. The position involved one year's full time work followed by 4 years University studies and full time holiday employment. Left the New Zealand Forest Service following the privatisation and dissolution of the Department in 1997.</p> <p>Employed as a full-time junior trainee officer at Lake Taupo Forest for 1 year. This involved in general silvicultural, harvesting, and inventory activities. Employed for 4 months as inventory assistant at Franz Josef, West Coast. This involved being team leader of a forest inventory team working in natural forests. Employed for 4 months as technical assistant to the district forester, Blenheim. This involved planning and undertaking forest resource inventories throughout the Marlborough region. Employed for 4 months as technical assistant in Genetics and Tree Improvement Division, Forest Research Institute, Rotorua. Responsible for assisting in tree selection, creating genetic trials, and field assessment of trials. Employed for 4 months as technical assistant to the Regional Forester, Palmerston North. Responsible for preparation of department databases on local government plans and regulations relating to forest management.</p>