

FRIM'S R&D EVALUATIONS OF JAPANESE CONTRIBUTIONS IN FORESTRY / AGRICULTURE RESEARCH FOR DEVELOPMENT (F/ARD)

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ABSTRACT

Issues and challenges related to forestry are increasing each day and becoming the focus of international communities and organizations. Securing funding to conduct research and development work has become a daunting task. With the scarcity of funds available for research from Malaysian traditional contributors, e.g. the Government of Malaysia through Intensification of Research in Priority Areas (IRPA), eScienceFund, TechnoFund, and InnoFund, FRIM has no option but to seek funding from other sources, such as International Tropical Timber Organization (ITTO), Global Environmental Fund (GEF) UNDP, the industry R&D grant schemes, e.g. Levy Fund, Industry Grant Scheme (IGS), the Commercialization of R&D Fund (CRDF), consultancies and the private sector. Funding from the private sector comes from collaborative research through a Memorandum of Understanding (MoU) or a Memorandum of Agreement (MoA). Because of lack of funding, research to be conducted today and in the future has to be focused on priority areas more than on basic and exploratory needs.

In 1985 at the World Forestry Congress Mexico, UNDP launched the *Tropical Forest Action Plan* (TFAP) with a budget of about USD500 million and increased to USD1 billion by 1990. The program TFAP was then renamed as *National Forest Action Plan* (NFAP) but was short lived until early 1990s. In 1992 at Rio de Janeiro, United Nation Conference on Environment and Development (UNCED) launched the program *Sustainable Development* (SD) after the The Brundtland Report, *OUR COMMON FUTURE*. The forestry world quickly took up the concept and turned it into *Sustainable Forest Management* (SFM). Then Inter-Governmental Panel on Forestry (IPF: 1995-1996) was formed and swung into action; renamed it as Inter-Governmental Forum on Forestry (IFF: 1997-2000) and again continued as United Nation Forum Forestry (UNFF:2000 until today). With many more issues unsolved, such as poverty and hunger, gender quality, health, HIV/AIDS and other diseases, and environmental stability, then the UN Millennium Summit in September 2000 in New York made the Millennium Declaration Goals and the *Millennium Development Goals* (MDGs) emerged as the principal means of implementing the Declaration. It was signed by 189 countries, including 147 Heads of State, and it comprises eight development goals of which **Ensuring Environmental Stability** (Goal 8) and **Developing a Global Partnership for Development** (Goal 9) are two goals very close to agriculture and forestry.

Fundings by Japanese agencies to FRIM through MoU or MoA have started as early as 1985, when Japan International Cooperation Agency (JICA) had decided to conduct joint research at FRIM in forest products and timber utilization, although scientific cooperation on the personal basis had started even in the early 1970s. Whether the original MoU and its continuation was a result of supporting the TFAP/ NFAP or SD/SFM or MDGs was not that transparent, or it could have been “coincidental” as since 1970, Malaysia has achieved a number of national development goals which cover essential elements of the MDGs. However, the MoU lasted for about 11 years, until October 1996 and has benefitted both the Japanese and Malaysian scientists. In 1986 Forestry and Forest Products Research Institute (FFPRI), Tsukuba with assistance from Science and Technology Agency (STA) Japan embarked on the R&D project “Enhancement of Applications of Remote Sensing Technology with ASEAN Countries”, and FRIM became one of the collaborative partners. The R&D culminated in 1995 with both sides benefitted in terms of technology and equipment acquisition and scientific exchange. Notwithstanding JICA and FFPRI/STA's cooperation, Tropical Agriculture Research Center (TARC) signed an MoU with FRIM in 1992-1997 to embark research in natural forest regeneration and mangrove ecosystem. The cooperation continued to other disciplines, such as entomology, forest management and silviculture, machinery and low impact logging, and other forest environmental sciences, but under the aegis of Japanese International Research Center for Agricultural Sciences (JIRCAS)

from 1997 until today. Similarly, National Institute for Environmental Studies (NIES), Japan signed a tri-partriate agreement with FRIM and University Putra Malaysia (UPM) - and later on Negri Sembilan Forestry Department (NSFD) and University Technology Malaysia (UTM) were included as additional collaborators - to conduct cooperative research on “Tropical Ecology and Biodiversity” in 1991 until today.

One of the critical items in R&D is its evaluation of a project proposal - including a collaborative project - before the project is implemented on the ground. Prior to the year 2000, some forms of evaluation were only done at FRIM’s Division or Research Program level. However since 2001 the evaluation of a project proposal is a must at FRIM’s level and Institutional Project Evaluation Committee was formed and entrusted with this responsibility. A project proposal was then assessed by this committee against important project evaluation criteria, such as “Does a proposal fall under Research Priority Area”, “Viability of research objectives”, “Viable and reasonable outputs in 2 - 5 years”, “Appropriateness of research methodology”, “Relevancy of key milestones”, and “Level of project risks – technical / financial / timeline”. As the project progresses an annual internal progress monitoring or evaluation is carried out in the form of a “seminar presentation” and/or “viva” at FRIM’s level, usually to be presented by the FRIM’s counterparts with assistance of Japanese scientists in the case of a collaborative project between FRIM and JIRCAS and other Japanese R&D institutions. At the viva stage a project is assessed against a number of criteria, rated on the scale of 1 (Lowest) to 5 (Highest), such as 1. “Achievement on project objectives”, 2. “Milestone achievement”, 3. “Utilisation of human resources”, 4. “Utilisation of research equipment”, 5. “Timing performance”, 6. “Financial performance”, and 7. “Overall assessment”. A recommendation to the overall status of the project is then made. On a different aspect, any paper to be published must be jointly authored by the FRIM and Japanese scientists and usually firstly reviewed by FRIM Division Director responsible for that collaborative project. Last, but not least all other outputs of the collaborative project, such as patent, intellectual property right, trade mark, etc if any are jointly owned or subject to the conditions stipulated in the MoU or MoA. A seminar presentation of FRIM-Japan cooperation was done last in July 2006 for FRIM/NIES/UPM/NSFD/UTM Collaborative Project.

KEYWORDS

FRIM, JIRCAS, MoU/MoA, R&D proposal evaluation, Project monitoring criteria.

FRIM's R&D Evaluations of Japanese Contributions in Forestry /Agriculture Research for Development (F/ARD)

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J-FARD & JIRCAS International Symposium

Contribution of Japanese Scientists towards the Millennium Development Goals

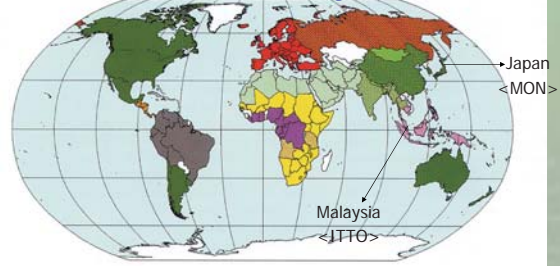
<Research Collaboration and Capacity Building>

12 -13 September 2007

United Nations University, Tokyo



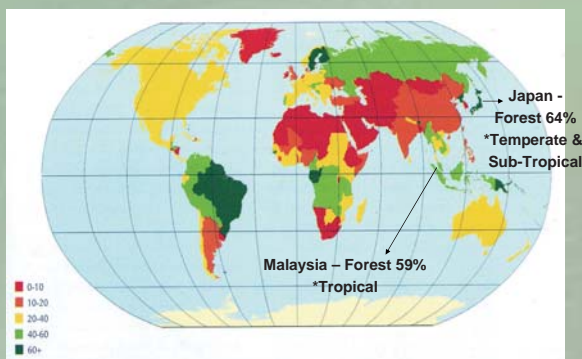
Orientation 1 International Initiatives on Criteria and Indicators for Sustainable Forest Management



Legend:
Dry Zone Africa Process, Tarapoto Proposal, African Timber Organisation Initiative, Pan-European Forest Process, Near East Process, Regional Initiative for Dry Forests in Asia, Montreal Process, Leguaneque Process of Central America, ITTO



Forest Area as Percentage of Country Land Area



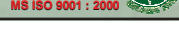
TROPICAL FORESTS

Total Forests 1990 3963 2000s 3442 mil. ha

RAINFOREST

WORLDWIDE 1945 MIL. HA 1990

1803 mil. Ha 2000



TROPICAL ASIA

15 COUNTRIES

Year 2000

473 mil. ha (26%)

1980s:546 mil. ha
1990s:530 mil. ha

RAINFOREST

231 mil. ha (yr.2000s)
256 mil. ha (yr.1990s)



TROPICAL AMERICA

32 COUNTRIES

Year 2000

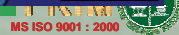
821 mil. ha (46%)

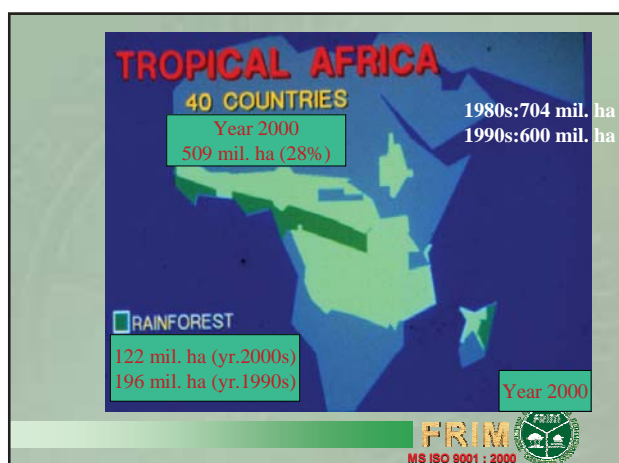
1980s:896 mil. ha
1990s:868 mil. ha

RAINFOREST

296 mil. ha (yr. 2000s)
598 mil. ha (yr.1990s)

Year 2000





UN Programs on Forestry Down the Memory Lane

- TEAP/NFAP (1985 to 1990s)
- SD 1992 (The Brundtland Report, *OUR COMMON FUTURE*)
 - ↓
 - SFM
 - (IPF: 1995-1996) ▪ (IFF: 1997-2000) ▪ (UNFF: 2000 – today)
 - Prog: Swapping Debt for Nature
 - Prog: Nature Banking
 - UNCBD
 - UNFCCC and Kyoto Protocol (KP)
 - Forest Management Certification & Timber Labeling
- MILLENNIUM DECLARATION (2000)
 - MDGs

FRIM
MS ISO 9001 : 2000

Progress Towards UN Millennium Development Goals (2000)

1. Eradicate extreme poverty & hunger
2. Achieve universal primary education
3. Promote gender equality & empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

FRIM
MS ISO 9001 : 2000

R&D

DOWN THE MEMORY LANE

MALAYSIA - JAPAN COOPERATION

1985-2007

FRIM
MS ISO 9001 : 2000

R&D: FRIM – JICA (1985 – 1996)			
AREA OF COOPERATION	PROJECT COST	DURATION: MOU / MOA	OUTPUTS
RESEARCH IN FOREST PRODUCTS & WOOD UTILIZATION	MAINLY EQUIPMENT, EXPERTISE & TRAINING	1985-1990 1990-1993 1994-1996	<ul style="list-style-type: none"> ➤ Many experts dispatched from Japan in the field of Wood Quality, MDF, Wood Finishing, Veneer Peeling, Charcoal Technology, etc. ➤ Many counterparts training in Japan. ➤ 40 equipment purchased. ➤ Publications & seminars

FRIM
MS ISO 9001 : 2000

R&D: FRIM – FFPRI / STA (1986 – 1995)			
AREA OF COOPERATION / SCIENTISTS INVOLVED	PROJECT COST	DURATION: MOU / MOA	OUTPUTS
ENHANCEMENT OF APPLICATIONS OF REMOTE SENSING TECHNOLOGY WITH ASEAN COUNTRIES <u>Scientists: I. Ohnuki; H. Sawada; G. Takao; H. Saito; Y. Awaya; S. Ono (JICA-AirAsia Survey Co. Ltd).</u>	MAINLY EQUIPMENT, EXPERTISE & TRAINING	1986-1988 1989-1991 1993-1995	<ul style="list-style-type: none"> ➤ Maps of landuse in Klang Valley. ➤ Many counterparts training in Japan. ➤ Some equipment purchased. ➤ Publications on remote sensing technologies with respect to the use of satellite and/or imagery

FRIM
MS ISO 9001 : 2000

R&D: FRIM - JIFPRO (1992 – 1996)

AREA OF COOPERATION / SCIENTISTS INVOLVED	PROJECT COST	DURATION: MOU / MOA	OUTPUTS
MONITORING OF FOREST DAMAGE CAUSED BY ACID RAIN	MAINLY EQUIPMENT, EXPERTISE & TRAINING	1992-1996	<ul style="list-style-type: none"> ➢ A number of counterparts training in Japan. ➢ Some equipment purchased. ➢ Publications.



R&D: FRIM/UPM/NSFD/UTM – NIES (1991 – 2007)

AREA OF COOPERATION / SCIENTISTS INVOLVED	PROJECT COST	DURATION: MOU / MOA	OUTPUTS
R&D IN TROPICAL ECOLOGY AND BIODIVERSITY, e.g. deforestation & forest productivity; logging & fragmentation; landscape conservation & management; logging systems; ecological services & environmental economics. <u>Scientists:</u> T. Okuda (Silv); K. Niiyama (Eco); T. Tange (Silv); Y. Ohtani (Env).	MAINLY EQUIPMENT, EXPERTISE & TRAINING	1991-1994 1994-1997 1997-2000 2000-2003 2003-2004 (automatic extension)	<ul style="list-style-type: none"> ➢ Many counterparts training in Japan. ➢ Many equipment purchased. ➢ Canopy Walk at Pasoh built. ➢ Publications & Seminars held. ➢ Cooperation with other institutions, e.g. Wageningen Univ., Vietnam Univ. of Forestry, etc.



R&D: FRIM – TARC / JIRCAS (1992 –2007)

AREA OF COOPERATION / SCIENTISTS INVOLVED	PROJECT COST	DURATION: MOU / MOA	OUTPUTS
R&D IN "SUSTAINABLE MANAGEMENT OF TROPICAL FORESTS – The title of projects to be agreed mutually, e.g. Seedlings regeneration 92-97, 02-07; mangrove ecosystem 96-98; Mahogany shoot borer 95-99; Growth performance of indigenous species 97-99; RIL / LIL (Logging machinery) 97-03.	MAINLY EQUIPMENT, EXPERTISE & TRAINING <u>Scientists:</u> Y. Osumi (Silv); S. Sasaki (Logging); Y. Ochiai (Silv); H. Tanouchi (Silv); K. Tanaka (For); M. Tani (Env); Y. Maruyama (Silv); T. Yagihashi (Silv)	TARC: 1992-1997 JIRCAS: 1997-2002 2002-2007	<ul style="list-style-type: none"> ➢ Many counterparts training in Japan. ➢ Many equipment purchased. ➢ Publications & Seminars held. ➢ Study tours undertaken.



PROJECT PROPOSAL EVALUATION CRITERIA

FAQ ??????????

- Falls under Research Priority Area
- Professional qualifications & expertise of proposed r&d
- Viability of research objectives
- Viable & reasonable outputs in 2 – 5 years
- Collaboration & industry linkages - advantage
- Appropriateness of research methodology
- Relevancy of key milestones
- Commercialization potential - advantage
- Cost effectiveness
- Supplemental funding available – advantage
- Project risks reasonable



PROJECT PROPOSAL EVALUATION CHECKLIST

- Pitfalls to NO Recommendation / Delayed R&D:
 - ✗ Research already conducted and financed by the Government.
 - ✗ Survey or data collection with no scientific elements or investigation.
 - ✗ Output not likely to be achieved in the collaboration period.
 - ✗ Output already commercialized, especially by private entrepreneur.
 - ✗ Research is only to test products for company or institution.



PROJECT PROPOSAL EVALUATION CHECKLIST...cont.

- Pitfalls to NO Recommendation / Delayed R&D:
 - ✗ For industrial driven research: No Undertaking Letter or Agreement if such collaboration determines the success or failure of research.
 - ✗ Ethical-valued research vs. research with scientific merits.
Examples... tobacco r&d vs. animal feed.



PROJECT PROPOSAL EVALUATION CHECKLIST...cont

- **Pitfalls to NO Recommendation / Delayed R&D:**

- ✗ For all R&D on medicinal plants, endorsement by “National Committee on Medicinal Herbs R&D” @ Ministry of Health, Malaysia.
- ✗ All R&D involving animal/human must get the approval of all authorities - Institutionally and Nationally, e.g Ethical Comm. or Ethical Board.
- ✗ Expensive equipment which form the trust of the R&D is considered on the case by case basis; Support by Japan to purchase such equipment is most welcome.



PROJECT PROPOSAL EVALUATION CHECKLIST...cont

- **Pitfalls to NO Recommendation / Delayed R&D:**

- ✗ For “Extension of Existing Project”, other than progress report in the proposal indicating gaps of R&D required, the R&D elements i.e. title, scope, objectives and methodology remain the same as approved before. Additional expenses must be made available by Japan / Malaysia.



PROJECT PROPOSAL EVALUATION CHECKLIST...cont

- **Pitfalls to NO Recommendation / Delayed R&D:**

- ✗ In all cases justifications to purchase major equipment must be indicated.
- ✗ Milestone indication: At least 1 milestone per half-year On Case by case basis - valid reason acceptable for at least 1 milestone per year.



PROJECT PROPOSAL EVALUATION CHECKLIST...cont

- **Pitfalls to NO Recommendations for Funding:**

- ✗ Activities excluded from R&D Collaboration:
 - ⇒ Scientific and technical information services
 - ⇒ General purpose data collection
 - ⇒ Testing and standardization
 - ⇒ Feasibility studies
 - ⇒ Specialized medical care
- (note: exception to the rules to be well justified...e.g see below)
- ✗ “Life long or Never ending R&D”...e.g R&D in taxonomy, (heritage) conservation, bio-diversity, climate change, etc that mimic “...data collection, operational and/or developmental projects” without convincing scientific merits, of national and/or regional economic importance, and do not support Malaysia’s position in the international fora and conventions e.g CBD, UNFCCC/KP, RAMSAR, etc....**STRATEGIC BASIC RESEARCH**



PROJECT PROPOSAL EVALUATION CHECKLIST...cont

- **Pitfalls to NO Recommendations for Funding:**

- ✗ Examples of “Life long or Never ending R&D” incorporating “Strategic direction / intent”:
1. Development of DNA barcode of *Neobalanocarpus heimii* (Chengal) as a tool for forensics and chain of custody certification
 2. Isolation and characterization of genes encoding for lignolytic enzymes from selected white-rot fungi with potential for bio-pulping
 3. Development of gene-derived DNA markers of *Shorea leprosula* towards tree improvement and conservation of dipterocarps



Internal Progress Monitoring / Evaluation Form

	1	2	3	4	5
1. Achievement on project objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Milestone achievement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Utilization of human resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Utilization of research equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Timing performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Financial performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Overall assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: i. If overall assessment (item 7) score equal or less than 2, project will be terminated

ii. If milestone achievement (item 2) and financial performance (item 6) equal or less than 2, payment will be deferred.



FUTURE AREAS OF R&D

LEARNING FROM THE PAST & PRESENT

Future Plan (2011 & Beyond)

MS ISO 9001 : 2000

Public & Private Sectors R&D in Malaysia (2001 – 2005)

- RM 1.43 billion allocated for R&D
- Of total, RM 1.0 billion for public sector R&D (EAR, Priority and Strategic IRPA projects)
- Remaining RM 430 million for private sector R&D through Industry R&D Grant Scheme (IGS), MSC R&D Scheme (MGS) and Demonstrator Applications Grant Scheme (DAGS)

Eighth Malaysia Plan (2001-2005)

MS ISO 9001 : 2000

From R&D funds to IRPA to eScienceFund EVOLUTION OF RESEARCH PRIORITY SECTORS / CLUSTERS

RMK-5 R&D	RMK-6 R&D	RMK-7 IRPA*	RMK-8 (EAR)(PR)(SR)*	RMK-9** (eSc)(Techno)(Inno)
<ul style="list-style-type: none"> • Agriculture • Medical • Industrial 	<ul style="list-style-type: none"> • Agriculture • Medical • Industrial 	<ul style="list-style-type: none"> ♦ 01 Agro-Industry ♦ 06 Health ♦ 03 Manufacturing & Construction ♦ 09 Science & Engineering ♦ 08 Environment ♦ 02 Energy, Mineral & Geo-Science ♦ 04 Services & IT ♦ 05 Economics ♦ 07 Social Sciences • Top-down Biotech & photonic introduced 	<ul style="list-style-type: none"> R M K 7 S e c t o r s 	<ul style="list-style-type: none"> ♦ AGRO-INDUSTRY ♦ BIOTECH ♦ INDUSTRIAL ♦ SEA TO SPACE ♦ ICT ♦ SCI & TECH SERVICES

PR,SR:RMK- 8 had its own priority areas e.g. Nano & Optical tech. Infra
* Sector Concept
** (Cluster Concept with Sub-Cluster)

MS ISO 9001 : 2000

IRPA Funding Mechanism (2001 – 2005) in Malaysia

Sectors	Projects	RM million
Science & Engineering	576	137.1
Agro-Industry	420	95.8
Manufacturing & Construction	311	358.9
Health	219	115.4
Services & IT	204	47.1
Social	151	21.4
Environmental	119	21.7
Energy, Mineral & Geo-Science	74	32.7
Economics	65	6.8
Total	2,139	836.9

Eighth Malaysia Plan (2001-2005)

MS ISO 9001 : 2000

Ninth Malaysia Plan (2006-2010)



FRIM
MS ISO 9001 : 2000

Prioritizing and Consolidating R&D and Commercialization in Malaysia (2006-2010)

From R&D Funding Mechanism (2001-2005) to R&D and Commercialization Funding Mechanism (2006-2010)

- Commercialize > 10% of public-funded R&D projects
- Bring innovative ideas to the market
- Implement demand-driven R&D to increase rate of commercialization
- Set up the ScienceFund and TechnoFund
- Enhance the Commercialization of R&D Fund (CRDF)

Ninth Malaysia Plan (2006-2010)

MS ISO 9001 : 2000

Promoting Targeted Technologies for New Sources of Growth in Malaysia

- Target R&D to build competence and specialization in emerging technologies
- Avoid spreading of resources too thinly across a broad range of areas
- Priority accorded to developing a few niche areas
- Focus given to Biotechnology, Advanced Materials, Advanced Manufacturing, ICT, Nano-technology and Renewable Energy

Ninth Malaysia Plan (2006-2010)

MS ISO 9001 : 2000

