No.10

インドネシア共和国
建材開発技術協力事業
アフターケア調査団報告書

昭和63(1988)年4月

国際協力事業団

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インドネシア共和国
建材開発技術協力事業
アフターケア調査団報告書

昭和63(1988)年4月

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序　　文

インドネシア共和国は、自国が推進中のLOW−COST−HOUSING政策の一環として、地場資源を利用した建材を開発することを目的に我が国にプロジェクト方式技術協力を要請してきた。

これを受けて我が国は、昭和53年7月、「建材開発技術協力事業」に関する討議議事録（R／D）に署名し、延長を含め5年4ケ月にわたる協力を行ない昭和58年11月にプロジェクトは終了した。

その間、19名の専門家派遣、14名の研修員の受入れ、総額3億円にのぼる機材供与を実施した。

本件プロジェクトは、我が国の協力終了後も順調に進展し、「試験機関」としてインドネシア側により堅実に運営されている。

今回のアフターケア調査団は、プロジェクト終了後のインドネシア側のパイロットプラント運営状況について調査し、実績を評価すると同時に、より円滑な運営に資するためのスペアパーツ等の機材供与並びに短期専門家の派遣について協議を行なうため派遣したもので、この報告書はそれらの結果をとりまとめたものである。

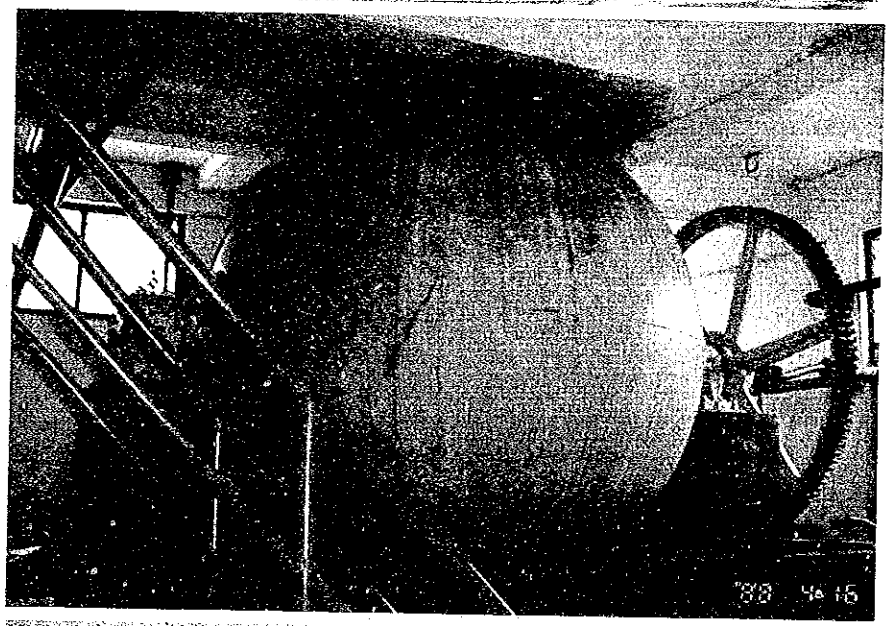
今回の調査実施に際し、御協力いただいた関係各位に対し、心から感謝の意を表する次第である。

昭和63年4月

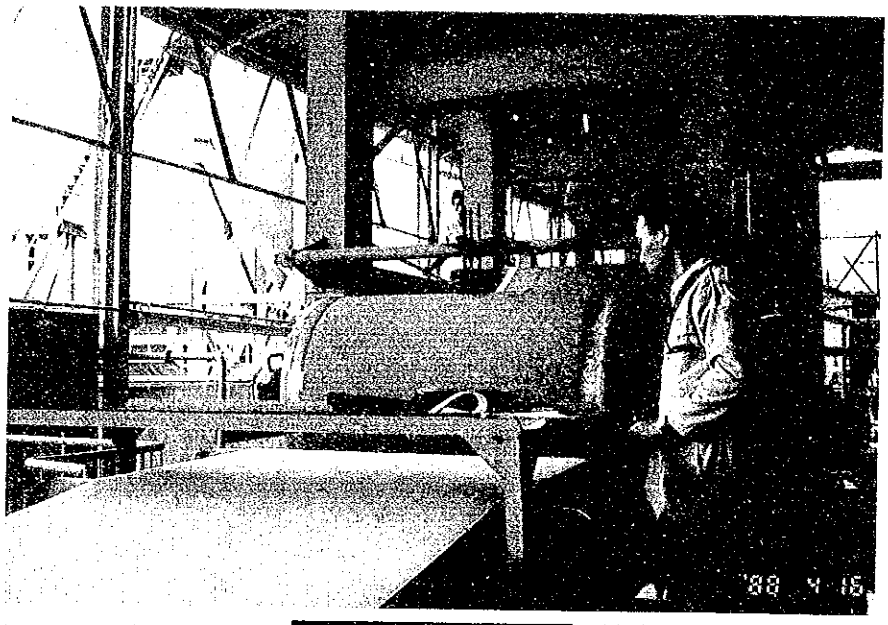
国際協力事業団

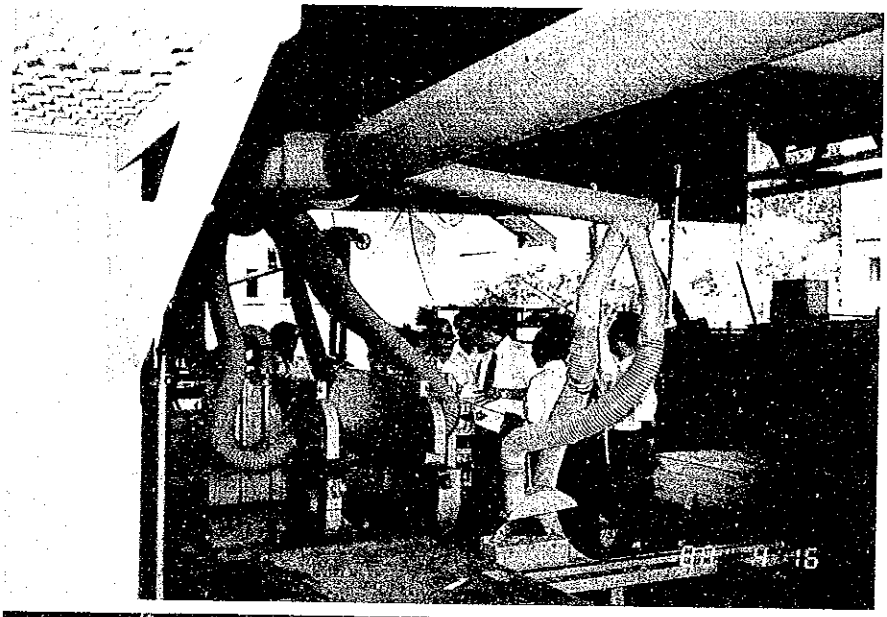
理事　古関俊彦

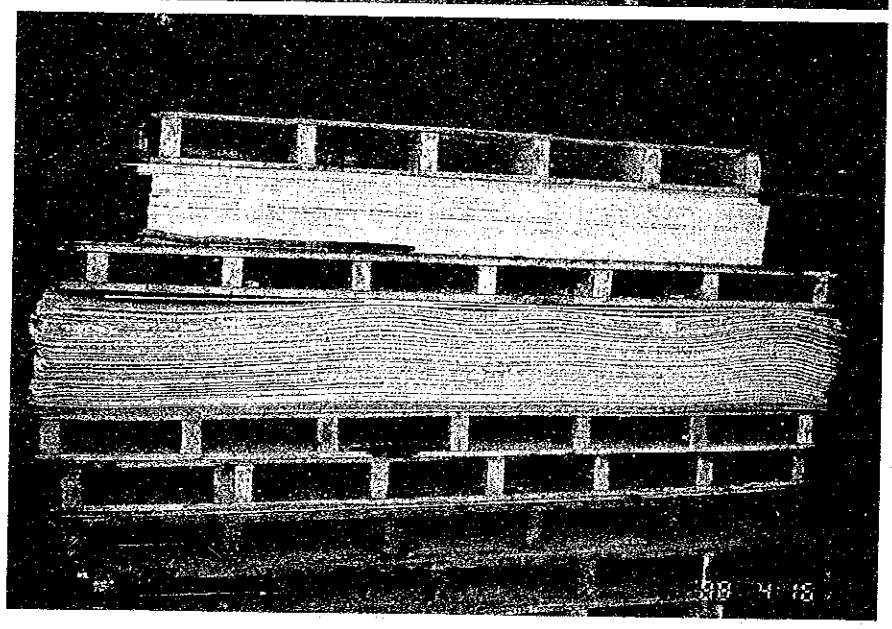
パルププラント



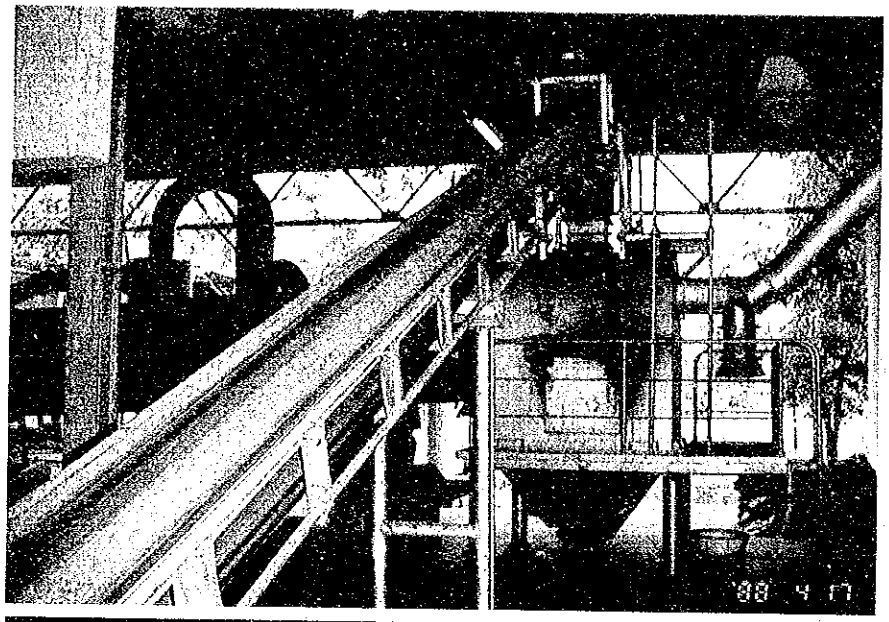
PCBプラント

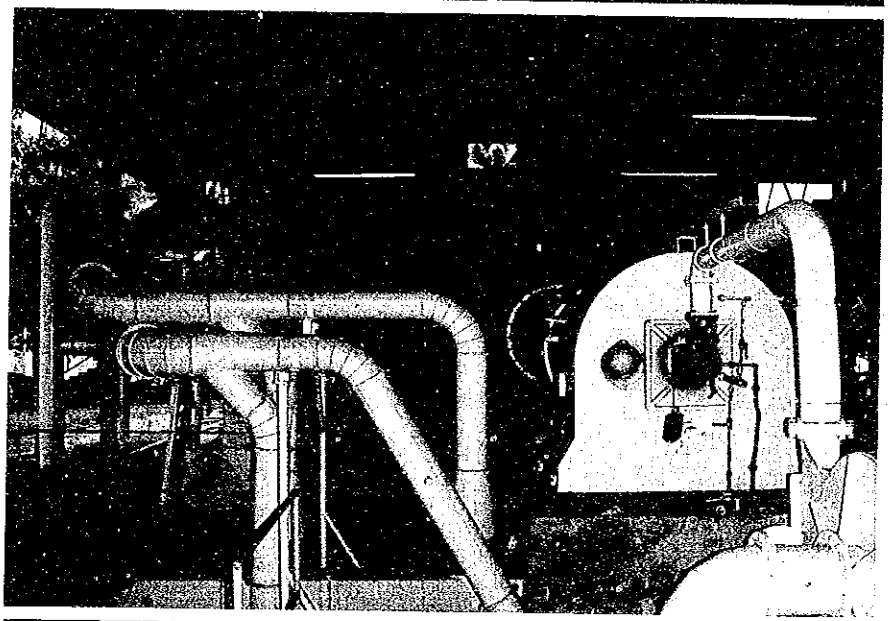




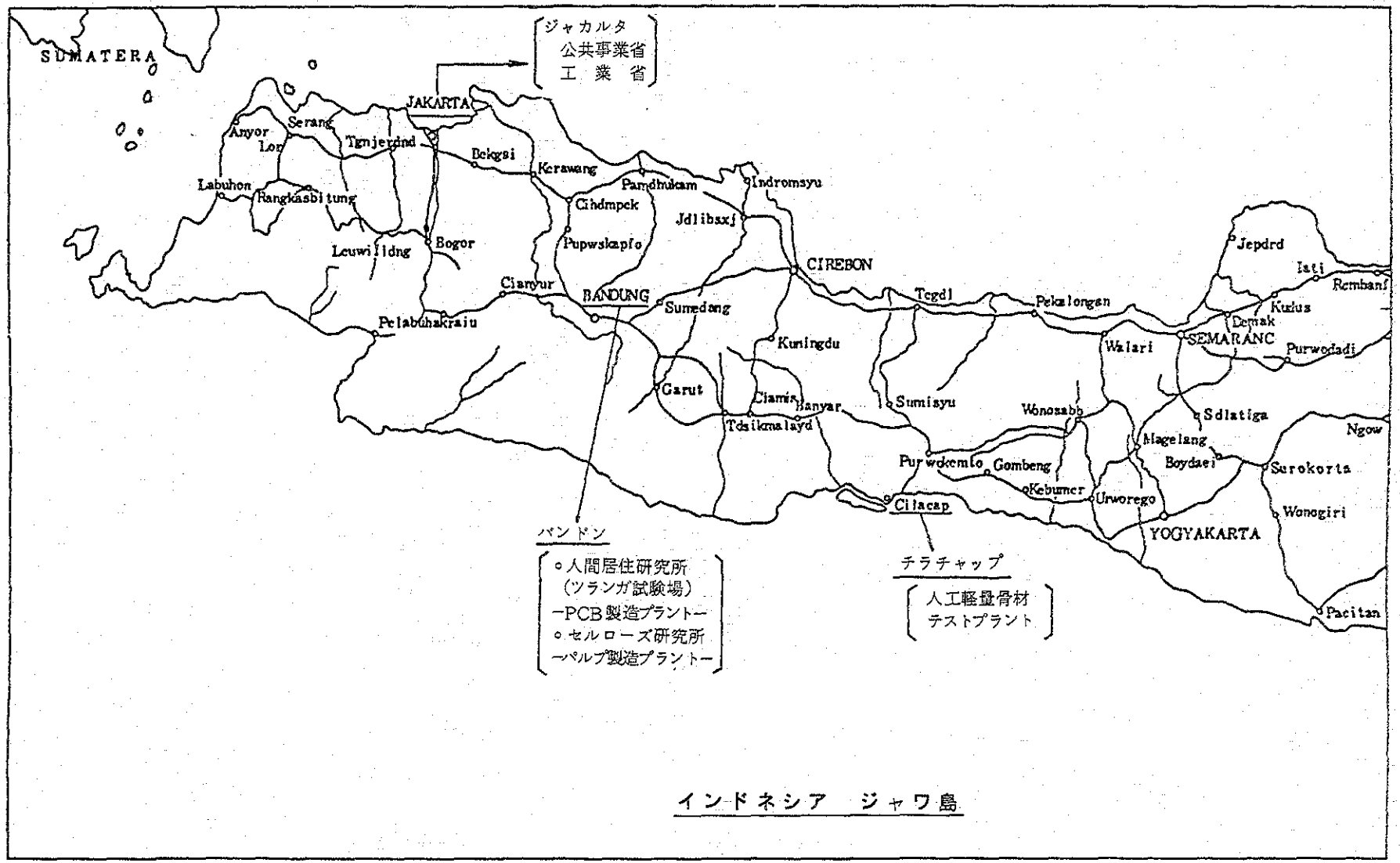


ALAプラント





ミニッツ署名・交換


SUMATERA
ジャカルタ
公共事業省
工業省
JAKARTA
Anyor
Serang
Lon
Tgnjerdnd
Bekgsi
Krawang
Labuhon
Rangkasbitung
Pamdhukam
Indromsyu
Cihdmpek
Jdlibsxj
Leuwilidng
Bogor
Pupwskapfo
CIREBON
Jepdrd
Iati
Rembanf
Cianyur
BANDUNG
Sumedang
Tegdl
Pekalongan
Kudus
Demak
Kuningdu
Walari
SEMARANC
Purwodadi
Pelabuhakraiu
Garut
Ciamis
Banyar
Sumisyu
Wonosabo
Sdlatiga
Ngow
Tasikmalayd
Magelang
Purwokerto
Gombeng
Boydaei
Surokorta
Kebumen
Urworego
Cilacap
Wonogiri
YOGYAKARTA
Pacitan
バンドン
○人間居住研究所
（ツランガ試験場）
−PCB製造プラント−
○セルロース研究所
−パルプ製造プラント−
テラチャップ
人工軽量骨材
テストプラント
インドネシア　ジャワ島

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インドネシア共和国
建材開発技術協力事業
アフターケア調査団報告書

【要　　旨】

1. 前回実施したプロジェクト方式技術協力事業が終了し約4年半が経過したが、この間、原材料価格の高騰とそれに伴なう建材市場の変化等の問題はあったものの、我が国が人間居住研究所に対し設置したパルプセメントボード（ＰＣＢ）及び人工軽量骨材（ＡＬＡ）製作用パイロットプラント並びにセルローズ研究所に対し設置したパルプ（ＰＵＬＰ）製作用パイロットプラントは、「イ」側の各研究所の手で、堅実に運営・管理され、"実験プラント"としての責任を果たしてきていることが認められた。

2. しかしながら、既供与機械の中には、定期点検・部品の交換、修理等を必要とするものがあり、更にＰＣＢ・ＡＬＡ・パルプの市場性を向上させ、技術協力の成果の展開を図る為には、若干の機材の追加供与と共に専門家の短期派遣も必要であることが認められた。

3. 「イ」側は主たる輸出品である原油の世界的な価格の下落により経済的に打撃を蒙っておりLOW-COST-HOUSING政策もその余波をうけ見直しをせまられているところから、このような時期に日本側がアフターケアを実施することに対し、深甚な謝意を表明した。

4. 「イ」側との協議は順調に推移し、アフターケア実施の大要については、別添のMINUTES OF DISCUSSIONS（Ｍ／Ｄ）の内容で合意に達した。

5. 適切なアフターケアの実施は、「日」・「イ」関係の更なる発展に寄与するところが大として、現地の「日」・「イ」両サイドからも期待されており、今後は予算・専門家のリクルートの見通し・機材購送スケジュール等の諸事情を勘案しつつ、可能な限り綿密にアフターケアを実施していくことが望ましい。

Ⅰ 調 査 の 概 要

1. プロジェクトの概要

インドネシア共和国政府は、1974年から始まった第2次経済開発5カ年計画においてＬＯＷ−ＣＯＳＴ−ＨＯＵＳＩＮＧ政策を進めており、その一環として従来から特に地場資源を利用した建材開発に力を入れている。

しかしながら「パルプセメントボード（ＰＣＢ）」、「人工軽量骨材（ＡＬＡ）」については技術と資金の不足から開発が遅れ、小規模な実験研究等が行なわれているに過ぎない状況であった。

他方、「イ」国にはＰＣＢ・ＡＬＡの主要原料が豊富に存在することから、これら建材の本格的な開発に取り組むため、我が国にプロジェクト方式技術協力を要請してきた。

我が方はこの要請を受け各種調査団を派遣し、昭和53年7月19日Ｒ／Ｄに署名。フォローアップ1年4カ月を含む5年4カ月間、昭和58年11月30日まで「インドネシア共和国建材開発技術協力事業」が公共事業省所轄の建築研究所（現・人間研究所）にＰＣＢ・ＡＬＡのパイロットプラントを、工業省所轄のセルローズ研究所にパルプのパイロットプラントを供与・設置して実施された。

内容的には、「イ」政府が推進中のLOW−COST−HOUSＩNGの供給に貢献すべく豊富に存在する農産廃棄物（廃材・バガス他）及び膨張粘土等未利用資源を利用したＰＣＢ（パルプ製造を含む）及びＡＬＡの研究開発（製造）を行なうことを目的とし、これら建材の原料の試験分析、パイロットプラントを使用しての製造・利用技術の移転及び人材養成を行なうものであった。

協力期間終了時には

(1) ＰＣＢ部門；現地カウンターパートのみによるＰＣＢ製造が可能となり、数多くの試作品が発表され、実用化が検討された。

(2) パルプ製造部門；パルプ製造技術はまだ初期開発の段階であるが、ＰＣＢ向けパルプの製造工程条件が明らかになった。

(3) ＡＬＡ部門；人工軽量骨材の品質は向上し、実際の建設に試験的に応用された。

という成果をあげた。

本件プロジェクトの定量的にみた協力実績は、専門家派遣：長期8名、短期25名（いずれも延人数）、研修員受入れ18名、機材供与総額3億1,800万円というものであった。

2. 調査団派遣の経緯と目的

協力終了後4年半を経過しているため、供与機材の故障・部品の不足が予想され、また前回協力成果では十分な対応が出来なくなったと思われる分野について、カウンターパートに対する補完的技術指導を行なう必要があると考えられる。

また、昭和61年度海外会計検査において、ＰＣＢ部門のパイロットプラントが稼動していないことが指摘されており、その原因についても調査する必要がある。

以上のような事情に鑑み、当年度事業として本件プロジェクトに対しアフターケアを実施することとし、

1) 本件協力に係る「イ」国側の現状を調査し、

2) 「イ」国関係機関と協議の上、協力計画を策定することを目的として、アフターケア調査団を派遣した。

3. 調査団の構成

○ 林　　健太郎　（団長・総括）
国際協力事業団
鉱工業開発協力部
鉱工業開発技術課
課長代理

○ 西　　常　男　（パルプセメントボード及びパルプ）
合資会社　松本鉄工所
代表社員

○ 高　田　俊　二　（人工軽量骨材）
小野田エンジニアリング株式会社
エンジニアリング本部
エンジニアリング第1部
機械第3グループ

○ 山　下　　誠　（業務調整）
国際協力事業団
鉱工業開発協力部
鉱工業開発技術課

4. 調査日程

日順	月日	曜日	行程	訪問先等	調査内容
1	4. 14	木	東京→ジャカルタ		（移動）
2	15	金		ＪＩＣＡインドネシア事務所 在インドネシア日本国大使館 公共事業省 工業省	・調査団目的説明・日程等打ち合わせ ・表敬及び調査団目的説明 ・表敬、アフターケアの主旨及び調査団目的説明、インドネシア側必要措置に係る協力依頼 ・同上
			ジャカルタ→バンドン		（移動）
3	16	土		公共事業省人間居住研究所 工業省セルローズ研究所 公共事業省人間居住研究所	・表敬及び日程等打ち合わせ ・同上 ・パルププラント調査 ・パルプセメントボートプラント調査
4	17	日	バンドン→チラチャップ	公共事業省人間居住研究所	（移動） ・人工軽量骨材プラント調査
5	18	月	チラチャップ→ジョグジャカルタ	P.T.SEMEN NUSANTARA	・セメント工場プラント視察 （移動）
6	19	火	ジョグジャカルタ→バンドン		（移動） ・団内打合せ
7	20	水		公共事業省人間居住研究所	・人間居住研究所及びセルローズ研究所との間の協力計画 第1回協議 （供与機材・専門家・C/P）
8	21	木		公共事業省人間居住研究所	・第2回協議 （ミニッツ・A_1，A_4フォーム） ・ミニッツ作成 ・ミニッツ署名、交換
9	22	金	バンドン→ジャカルタ		・第3回協議（A_1，A_4フォーム） ・A_1，A_4フォーム signed copy取得 （移動）
10	23	土	ジャカルタ→日本	ＪＩＣＡインドネシア事務所	・協力計画及び調査状況説明 ・A_1，A_4フォーム発出手続協力依頼 （移動）
11	24	日			（帰国）

5. 主要面会者

A．インドネシア側関係者

1. Agency for Research and Development（ARD）, Ministry of Public Works（MPW）

Karman Somawidjaja　Director General

2. Institute of Human Settlements（IHS）, ARD, MPW.

Sahat Mulia Ritonga　Director
Ir. A. Abdurachim Idris, M. Sc.
Head of Building Materials Division
Zulkarnaen Aksa Chief of Administration Division
Supranggono
Alexander TH. Lumaauw
Chief of Publication and Library Sub Division

3. Agency for Industrial Research and Development（AIRD）, Department of Industry（DOI）

Garjito Pringgo Sudirjo, Secretary
Drs. Soedarmadji

4. Institute for Research and Development of Cellulose Industries（IRDCLI）, AIRD, DOI.

Soetrisno T. Sudirjo, Director
Iman Waluyo, Head of Cellulose Technology Development Division
Tri Priyadi Basuki, Researcher at Paper Research Division
Gatot Ibnusantosa, Researcher at Pulp Research Division
Soemardi, Researcher at Cellulose Technology Development Division
Rasimin Sujono, Researcher at Pulp Research Division

B．日本側関係者

1. 在インドネシア日本国大使館
   福島　　章　二等書記官
2. ＪＩＣＡインドネシア事務所
   北野　康夫　所長
   松岡　和久　次長
   石塚　準次　所員
3. 派遣専門家
   Tatsuo, Narafu, ＪICA expert, IHS
4. PT. SEMEN NUSANTARA
   Kiyoaki Yahiro, Director, General Plant Manager
   S. Yuasa, Director, Deputy Plant Manager

II　アフターケア協力計画の策定

1. 日本側対処方針

本調査団の派遣に際し、我が方としては「イ」側に事前にQuestionnaire（資料２）により質問事項を提示しておいた。

最終的にQuestionnaire の回答を「イ」側より受領したのは現地に到着後であったこともあり、各省会議（昭和63年３月28日）等を通じて策定された対処方針は総括的な目安レベルのものであった。

主な方針は以下の通り。

１－１　総　　論

本プロジェクトは協力機関２ケ所、協力分野３分野、パイロットプラント３ケ所と組織的にも内容的にも複雑多岐に渡っているため、他のプロジェクトに比べてまとまりがつきにくいと思われる。

とりわけ、以下の点に注意すべきである。

(1)　３分野のバランス

ａ．パルプセメントボード（ＰＣＢ）

ｂ．パルプ（ＰＵＬＰ）

ｃ．人工軽量骨材（ＡＬＡ；Artificial　Lightweight　Aggregate）

後述するように、アフターケアは期間的にも予算的にも制約があるので、上記３分野のいずれかに重きを置いた方が良いと思われる。

(2)　「イ」側の真のニーズの把握

本件アフターケア実施の要因の１つに「会計検査院の指摘（海外受検の際、ＰＣＢプラントが稼動していないことが指摘された。）」が掲げられる。

一方、「パイロットプラントが稼動していないのは単に故障の為だけではない。」というサイドインフォメーションも入手している。

従って、本件アフターケアは、「イ」側の真のニーズに基づいて実施されるよう注意を払う必要がある。

１－２　協 力 分 野

(1)　既供与機材の整備補修並びに保守管理指導

(2)　既協力分野についての補完的技術指導（ｃｆ．ノンアスベスト他）

１－３　協 力 期 間

昭和64年３月31日まで（昭和63会計年度）

１－４　専門家派遣

(1)　人　　数　　４名

⑵ 期　　間　　2～3ケ月

⑶ 分　　野　　ＰＣＢ及びパルプ（機械修理・メンテナンス）

ＰＣＢ及びパルプ（技術指導）

人工軽量骨材（機械修理・メンテナンス）

人工軽量骨材（技術指導）

1－5　機材供与

既供与機材に係る修理用部品及び消耗品等既協力分野関連機材

1－6　研修員受入れ

実施しない。

2. 協議内容

「イ」側とのアフターケア協力計画策定に係る協議は、上記日本側対処方針に基づき、ＰＣＢ及びＡＬＡについては公共事業省研究開発庁人間居住研究所（Institute of Human Settlements, Agency for Research and Development, Ministry of Public Works；以下ＩＨＳ）を、パルプについては工業省産業研究開発庁セルローズ研究所（Institute for Research and Development of Cellulose Industries, Agency for Industrial Reserch and Development, Ministry of Industry；以下IRDCLI）を相手側として、バンドン及びチラチャップで行なわれた。その概要は以下の通りである。

2－1　協力分野

アフターケアの協力期間が昭和64年3月31日までと限られているため、日本側は新たな分野は加えず、前回協力時のＲ／ＤのScope of Work の範囲内での補完的技術指導及び既供与機材のメンテナンス・修理に限ることを主張した。

Ａ．ＰＣＢ及びＡＬＡ

これに対し、ＩＨＳ側はＰＣＢ・ＡＬＡに関し、各々次の分野について協力を要請してきた。

⑴ ＰＣＢ

「イ」側は、「現在、製作しているＰＣＢは彩色・装飾が施されておらず、他の建材と比べて魅力に乏しく、市場での競争力が弱いこと並びに安価な原料として期待されていた農産廃棄物（バガス等）自体の価格が上昇し、価格面での競争力も弱いこと。」を説明し、マーケティング部門の協力を要請してきた。

⑵ ＡＬＡ

ＰＣＢ同様、「イ」側は、「市場競争力を高めるため、ＡＬＡ製造のためのキルン用の燃料を石油から安価な石炭に転換し、製造価格を下げること。」を要望し、エネルギー転換部門（包括的にはマーケティング部門）の協力を要請してきた。

調査団としては、「イ」側の要望は理解できるが、アフターケア協力の Scope of Work 中に収まりきらない可能性が大きいと考えられるので、「イ」側の要望として受け入れ、日本に持ち返り、関係当局と協議した結果を「イ」側に通報することを提案し「イ」側もこれに同意した。

B．パ ル プ

IRDCLI側は、「日」側の提案に概ね同意した。

2－2 協力期間

IHS、IRDCLI とも我が方案の通り、昭和 64 年 3 月 31 日までということで合意に至った。

（但し、「イ」側に対し、機材購送スケジュールの進捗状況に拠っては、専門家の派遣期間が一部、昭和 64 年度にかかることを示唆した。）

2－3 専門家派遣

専門家派遣に関する「イ」側最終要請及び調査団の対応は以下の通りである。

インドネシア側要請	調査団の対応	協議結果
専門家分野： 1）PCB ◦マーケティング専門家 ◦機材修理・メンテナンス専門家 2）ALA ◦マーケティング専門家 3）パルプ ◦機材修理・メンテナンス専門家	2－1 協力分野の項でも触れた通り、今回の協力はあくまでも既協力分野及び既供与機材を対象とした協力であることを主張した。 調査結果をも勘案して、下記の専門家が必要と判断した。 1）PCB ◦機材修理・メンテナンス専門家 ◦既協力分野の補完的技術指導専門家 2）ALA ◦派遣しない 3）パルプ ◦機材修理・メンテナンス専門家	専門家分野・人数・期間： 1）PCB ◦機材修理・メンテナンス専門家 1名×1ケ月程度 ◦既協力分野の補完的技術指導専門家 1名×2ケ月程度 2）ALA ◦派遣しない。 3）パルプ ◦機材修理・メンテナンス専門家 1名×1ケ月程度 尚、PCB及びALAのマーケティングに係る専門家については、予算上の制約及びリクルートの可能性の点から実現の可能性が低いことを示唆すると同時に、帰国後、「イ」側が上記分野の専門家派遣を強く要望していることを関係当局に報告することを約束した。

2－4　機材供与

機材供与については、現地にて入手した「イ」側の要請を勘案し、調査団としては既供与機材の刷新・修理及びスペアパーツの購入に協力範囲を限定し、調査を行った。その結果は、後述 Ⅲ. 調査結果　3. 既供与機材の現状に記載されている。

これを踏まえて協議を実施した結果、以下の合意に達し、これを日本側関係者に提言することとした。（表1参照）

但し、予算状況・機材価格・納期等の関係で変更が生じる旨、「イ」側に説明し、了承を得た。

表1.　既供与機材に対する機材及びスペアパーツ供与の要請及び調査団の対応

※A：当然必要　　B：必要
C：どちらでも良い　D：不要

1）PCB

優先度	装置名	スペアパーツ仕様	数量		調査団見積額(千円)及び対応等
			要請	調査団の対応	
B	Screen refiner	220 V、120 A 1.970 R.P.M	1 set	－	不具合状況について、短期専門家派遣時に調査し、対処することとした。
B	White Water Pump	150φ×150φBS（274） 架台型 2.6 ㎥ × 15 m（50Hz） モーター 15kW×4P－FEF 配管	1 set	1 set	500
A	Cylinder Vat	アヂテーター－45φ×3050ℓ 羽根付 アヂテーターグランドパッキン部 チェーンカップリング CR6018 軸受ピローブロック UCP×0.9 スプロケットホイル RS80×18TB RS80ローラーチェーン	2 set	2 set	1,400

優先度	装置名	スペアパーツ仕様	数量		調査団見積額(千円)及び対応等
			要請	調査団の対応	
A	Cutting Machine (ブレードのみ)	ダイヤソー φ 12″ スピンドル φ 25.4 mm	5 pcs	5 pcs	200
C	Cutting Table	テーブル小切切断機 モーター 2.2 kW×2p−FEF	1 set	1 set	400
A	Felt	PCB用ウェットフェルト ニードル品質K7830 (緯線モノフィラメント)	1反	1反	600
B	Wire Mesh	12 × 60 mesh(SuS304) 14 × 80 mesh(SuS304)	各3組	各3組	450
A	Spray gun	高圧ワッシャー スプレーガン 1/2″	1 pc	1 pc	20
A	Flexible hose	高圧ワッシャーフレキシブルホース	25 m	30 m	50
B	Chain block	2.5 t Capacity 揚程 4 m	1 set	1 set	70

2) パルプ

優先度	装置名	スペアパーツ仕様	数量		調査団見積額(千円)及び対応額
			要請	調査団の対応	
B	Cutter blade	既供与機材のCutterに取り付け可能なもの	1 set (6 pcs)	−	Grinder を供与するので今回は見あわせる。
A	Grinder for Cutter blade	Outside dia. 25 cm Inside dia. 2 cm Width dia. 1.5 cm	5 pcs	5 pcs	130
A	Conveyor belt	0.3 × 47 × 250 cm 0.5 × 47 × 121 cm 0.7 × 50 cm	2sets 1 set 1 set	2sets 1 set 1 set	150
A	Wet Machine Felt	1.275 × 14,100 mm	1 set	1 set	300

優先度	装置名	スペアパーツ仕様	数量		調査団見積額(千円)及び対応等
			要請	調査団の対応	
A	Blower	ダスター集塵機 型式　KMR(L)−30＃3 静圧　10 ～ 80 mmAq 風量　113 ～ 230 m^3/min ダスター集塵機用モーター 5.5 kW×4 p−FEF 集塵機用ダクト PL 2.3 t角・丸型 集塵機用サイクロン	1 set	1 set	1,300
A	Vacuum pump	シートマシンブレード 東芝精機GSL−400 motor 0.75 kW 380 V 14 W / rpm	1 set (2 pcs)	1 set (2 pcs)	60
A	Control Valve	バルブ用パッキン Tsubakimoto Chain Co. 型式：tt−EGB Frame:SG Motor:380V 50Hz 4 pole rotor:D	1 set	1 set	50
A	Temperature Detector for Rotary Digester	Temperature range of 0−300 ℃	1 台	1 台	70
A	Crank shaft	Nissan Patrol Van Diesel Model:VRG160GSUC	1 set	1 set	50
A	Refiner blade	№1, №2, №5, №6	各 2sets	各 2sets	800

3）ALA

優先度	装置名	スペアパーツ仕様	数量		調査団見積額（千円）
			要請	調査団の対応	
A	ベルトフィーダ	ベルト　400 W	1台分	1台分	100
A	ミキサー	インペラーMTC 12型	1台分	1台分	300
A	ブロックマシン	油圧ホース	1台分	1台分	200
		モーターブレーキBM 224	5台	5台	160
		整流器　三木プーリ BEM−A−27 AC 400 V − DC 190	10台	10台	40
A	電気関係操作盤	電磁接触器 PAK 10 U（戸上）	10台	10台	90
		電磁接触器 PAK 20 U（戸上）	5台	5台	70
B	モールドボックス	ブロック 100 W × 390 L × 190 D × 3個／ボックス ブロック 150 W × 390 L × 190 D × 2個／ボックス	各1台	各1台	3,000 （但し、納期が長い場合は見送る場合もある。）
B	ハンドリフトトラック	600 W × 1,897 L × 254 H	2台	2台	600
B	運搬車	600 W × 900 L × 300 H	2台	2台	350
A	マッフル炉	サーモカップル 1,200 ℃ 1,500 ℃	各1台	各1台	400
B	シリンダーモールド	C − 19 A φ 150 × 300 H （MARUTO）	20台	20台	2,000
B	キュービックモールド	150 ㎜ × 150 ㎜	20台	20台	2,000
B	移動式エアーコンプレッサー		1式	1式	300 （現地調達）

表 2. 新規要請機材の要請及び調査団の対応

※A：当然必要　　B：必要
C：どちらでも良い　D：不要

1) PCB

優先度	機材名	仕様	要請	用途	調査団の対応（参考見積額；千円）
A	Drying machine	150 枚 / hour	1	For drying PCB	必要性は認められるが価格面からみて本件アフターケアでは対応しかねる。（45,000）
A	Laminating machine	400 × 600 ㎜	1	For laminating PCB products	必要性は認められるが価格面からみて本件アフターケアでは対応しかねる。（15,000）
A	Printing machine	400 × 600 ㎜	1	For Printing PCB Products	予算状況を勘案し、検討したい旨表明した。（2,000）
B	Making roll	φ 700 ㎜ 1,250 ㎜ length	1	For making PCB	予算状況を勘案し、検討したい旨表明した。（1,000）
B	Sinchronizer apparatus for generator set	270 KVA， 220 V 3 phase	1	For using Generator Set I or Generator Set II alternatively	現地で調達・据付可能とのことなので、専門家派遣時に現地調達することとした。（1,000） （現地調達）
A	Sanding machine	2,400 × 1,000 ㎜	1	For sanding PCB	必要性は認められるが価格面からみて本件アフターケアでは対応しかねる。（10,000）

優先度	機材名	仕様	要請	用途	調査団の対応（参考見積額；千円）
B	Hydrolic press (manual)	4t capacity Table; 400 mm Stroke; 100 mm	1	For making PCB in the laboratory	予算状況を勘案し、検討したい旨、表明した。 (5,000)
B	Change length apparatus	Type DG 328 linear gauge 0.01 − 1.0 mm Width frame: 450 × 60 mm (小野精器)	1	For measuring shrinkage and swelling	予算状況を勘案し、検討したい旨、表明した。 (250)
B	Stirrer	Length 800 mm 0.5 kW 220 V, 50 Hz	1	For mixing polyacrylamide	予算状況を勘案し、検討したい旨、表明した。 (200)

2) パルプ

優先度	機材名	仕様	要請	用途	調査団の対応（参考見積額；千円）
B	Bursting Strength Meter	Mullen Type Bursting Tester :High Pressure Type Pressure Gauge 0−50 kgf/cm² 0−70 kgf/cm² Pressure speed 170 ± 20mℓ/min Motor 200 W, 220 V	1 set	For testing the bursting strength of pulp	予算状況を勘案し、検討したい旨、表明した。

優先度	機材名	仕様	要請	用途	調査団の対応（参考見積額；千円）
B	Bending Tester	Strograph Type Load range : max 500 kgf Load indicating accuracy :1.0 % Cross head Stroke: approx. 1, 100 mm Cross head speed :0.5 ～ 500 mm/min Recorder :X−T Type Recorder chart width :250 mm × 15 m Electric source :220 V、50 Hz	1 set	For testing the bending strength of Pulp Cenent Board	本件については、人間居住研究所が本来的にＰＣＢの研究を所管しているので、セルローズ研究所の方に当該試験機を設置するのは難しい旨表明した。
B	Kenaf fiber cutter	ベルトコンベア用インバーター フィダー用インバーター	1 1	enable to vary the speed of cutter or the speed of feeder to produce kinaf fiber of 50 mm length	予算状況を勘案して対応する旨、表明した。（300）
B	Water meter	金内直読式 メーター立形 ウォルトマン副管式	1	To measure the frech water quantity used for pulping process	予算状況を勘案して対応する旨、表明した。（300）
B	Bagasse Shredder	持注 （図面有）	1	For shredding bagasse	予算状況を勘案して対応する旨、表明した。（200）

3）ＡＬＡ

なし

2－5　研修員受入れ

本件に関しては、我が方が研修員受入れは今回の協力の対象外であることを説明したところ、「イ」側（ＩＨＳ・ＩＲＤＣＬＩ）は了承した。

2－6　実施スケジュール

本件アフターケア技術協力の実施スケジュールについては、「イ」側と協議の上、Minutes of Discussions Annex Ⅰ に示す暫定実施計画の内容で合意した。

尚、調査団は「イ」側へ正式ルートによるＡ１（専門家派遣要請）及びＡ４（機材供与要請）フォームの可及的速やかな発出並びに機材引き取りに係る適切な予算措置及び迅速な引き取り手続を依頼し、「イ」側からの了承を得るとともにＡ１・Ａ４フォームの Signed Copy （資料４）を取り付け、これにより日本側手続きの早期化をはかることとした。

これに対し、「イ」側からは、「機材の送付にあたっては、引き取り手続きの円滑化のため機材名・数量・価格等について早期通報願いたい』というコメントが寄せられた。

3. 協議結果

本件アフターケア技術協力に関する協議結果を以下に示す通りMiutes of Discussionsとして取りまとめ、４月21日、日本側　林健太郎団長、インドネシア側人間居住研究所長 Ritonga 氏並びにセルローズ研究所長 Soetrisno 氏との間で署名・交換を行なった。

4. ミニッツ

MINUTES OF DISCUSSIONS ON THE AFTERCARE PROGRAM FOR THE TECHNICAL COOPERATION PROJECT ON THE DEVELOPMENT OF BUILDING MATERIALS BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS IN THE REPUBLIC OF INDONESIA

APRIL 21, 1988

MINUTES OF DISCUSSIONS ON THE AFTERCARE PROGRAM FOR THE TECHNICAL COOPERATION PROJECT ON THE DEVELOPMENT OF BUILDING MATERIALS BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS IN THE REPUBLIC OF INDONESIA

The Japanese Aftercare Survey Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (JICA) and headed by Mr. Kentaro Hayashi, has visited the Republic of Indonesia from April 14 to 24, 1988 for the purpose of working out the details of the aftercare program for the Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia (hereinafter referred to as "the Program").

During its stay in the Republic of Indonesia, the Team has conducted a field survey and held a series of discussions with the authorities concerned of the Government of the Republic of Indonesia in respect of the desirable measures to be taken by both Governments for the succesful implementation of the above-mentioned Program.

As a result of the survey and discussions, the Team and the authorities concerned of the Government of the Republic of Indonesia agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Bandung, April 21, 1988

Mr. Kentaro Hayashi
Leader,
Aftercare Survey Team,
Japan International Cooperation Agency

Mr. Sahat Mulia Ritonga
Director of Institute of
Human Settlements

Mr. Soetrisno T. Sudirjo
Director of Institute
for Research and Development
of Cellulose Industries

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of the Republic of Indonesia will cooperate with each other in implementing the Program, for the purpose of furthering the effect of Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials through the aftercare technical cooperation and thus contributing to the Low-Cost Housing Construction Program and the promotion of Building Materials Industry in the Republic of Indonesia.

2. The Program will be implemented in accordance with the Tentative Schedule of Implementation which is given in Annex I.

II. DISPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Technical Cooperation Scheme of the Government of Japan.

2. The Japanese experts referred to in 1. above will be granted in the Republic of Indonesia the priveleges, exemptions and benefits no less favourable than those accorded to experts of third countries or of other international missions working in the Republic of Indonesia.

III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Program as listed in Annex III through the normal procedures under the Technical Cooperation Scheme of the Government of Japan.

2. The Equipment will become the property of the Government of the Republic of Indonesia upon being delivered c.i.f. to the Indonesian authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively for the implementation of the Program in consultation with the Japanese experts referred to in Annex II.

IV. TRAINING OF INDONESIAN PERSONNEL IN JAPAN

Training of counterparts in Japan is not included within the scope of the Program.

V. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

1. The Government of the Republic of Indonesia should make necessary arrangement for requesting the dispatch of Japanese experts and the provision of the Equipment as mentioned III. above by submitting the application forms (A-1 Form and A-4 Form) as soon as possible through the proper channel.

2. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia should take necessary measures to provide at its own expense supply or replacement of machinery, equipment, instrument, vehicles, tools, spare parts, and any other materials necessary for the implementation of the Program other than those provided through JICA under III above.

3. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia should take necessary measures for tax exemption, custom clearance, and internal transportation of the Equipment as mentioned III. above as soon as it arrives at the ports of disembarkation.

4. In accordance with the laws and regulations in force in the Republic of Indonesia, the Government of the Republic of Indonesia should take necessary measures to meet all running expenses necessary for the implementation of the Program.

5. The Government of the Republic of Indonesia should allocate the necessary number of suitably qualified personnel corresponding to each Japanese expert to be dispatched by the Government of Japan as specified in Annex II for the effective and succesful transfer of the technology under the Program.

6. The Government of the Republic of Indonesia should make any other necessary arrangement to contribute positively to the convenience of the successful implementation of the Program.

VI. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Republic of Indonesia undertakes to bear claims, if any arises, against the Japanese experts engaged in the Program resulting from, occuring in the course of, or otherwise connected with the discharge of their official functions in the Republic of Indonesia except

for those arising from the willful misconduct or gross negligence of the Japanese experts.

VII. TERM OF COOPERATION

The technical cooperation for the Program mentioned in this Attached Document will be implemented before the end of March 1989 (within the Japanese fiscal year 1988).

ANNEX I TENTATIVE SCHEDULE OF IMPLEMENTATION

YEAR	1988									1989		
MONTH	4	5	6	7	8	9	10	11	12	1	2	3
DISPATCH OF THE SURVEY TEAM	-											
DISPATCH OF JAPANESE EXPERTS											[1].....	
											[2]_____	
PROVISION OF THE EQUIPMENT		.....										

JAPANESE EXPERTS; ...[1] = EXPERT ON REPAIR AND MAINTENANCE

---[2] = EXPERT ON SUPPLEMENTAL TECHNICAL GUIDANCE

Dispatch of the experts on Supplemental Technical Guidance will be decided subject to the conditions of budget and the possibility of the recruitment of the experts.

ANNEX II JAPANESE EXPERTS

In order to implement the Program, the following Japanese experts will be dispatched to render such technical guidance as follows.

1. Short-term experts in the field of:

   (a) Repair and maintenance of the Equipment provided by the Government of Japan

   (b) Supplemental technical guidance if both sides agree its necessity.

2. Scope of technical guidance:

   (a) Repair and maintenance
   To train Indonesian counterparts and transfer necessary technology for the operation, maintenance, check-up and repair of the Equipment provided by the Government of Japan.

   (b) Supplemental Technical Guidance within the scope of R/D
   To train Indonesian counterparts and transfer necessary technology in the above field for supplementing the technology transfer during the term of cooperation of the Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia.

ANNEX III PROVISION OF THE EQUIPMENT

The Equipment to be provided by the Government of Japan through JICA will be as follows:

1. Equipment for Supplemental Technical Guidance

2. Spareparts and Accessories for the machinery and equipment provided by Japan

The provision of the above Equipment may be changed subject to the conditions of budget and delivery of the Equipment.

III 調 査 結 果

1. 協力機関の現状

1－1 組織及び分掌事務

(1) 人間居住研究所（Institute for Human Settlements：以下 IHS）

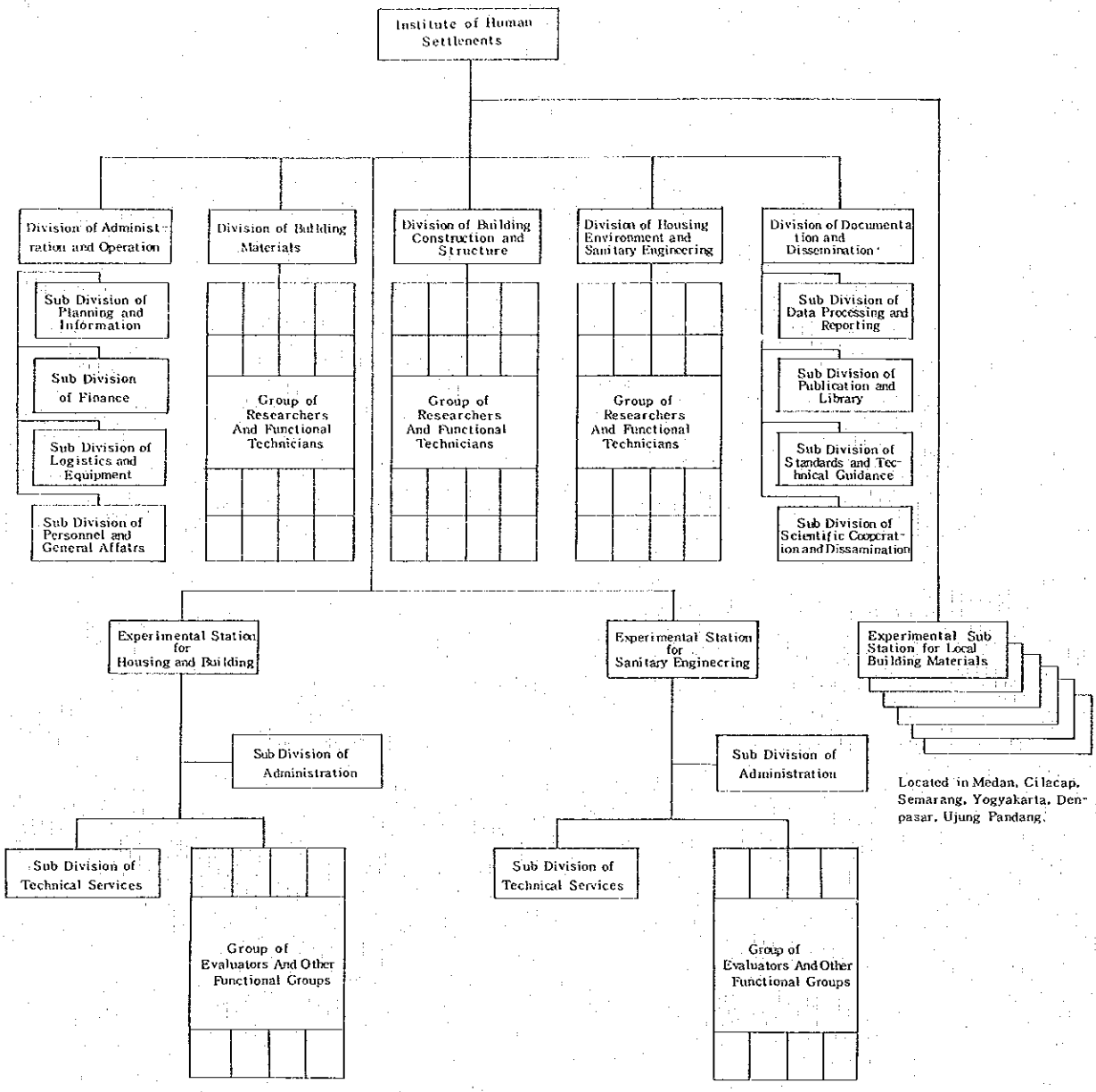
PCB・AILAの2つのパイロットプラントを所管しているIHSは、前回協力時には建築研究所（Directorate of Builduig Research：以下DBR）という名称であったが、1984年の大統領令により公共事業省（Ministry of Public Works）研究開発庁（Agency for Research and Development）の一機関となっている。

しかしながら、本研究所における2つのプラントの占る位置は変化していないことを確認した。

主な目的、所掌業務は次の通りである。

1. Administration Division has the same task as the division in the afore-mentioned institutes, only in this case the human settlement aspect is stressed.
2. Building Materials Division conducts research and development in the field of building materials for example research on concrete for concrete blocks, paving blocks and tiles. For wall components, research has been conducted on particle board, pulp cement board. The use of sand and volcano ejection were also a research objects.
3. Building Construction and Structure Division conducts amongst others research and development on earthquake resistant construction of houses/buildings, cyclone resistant houses, roof trusses construction, research on building fire safety, schools, buildings for transmigration areas, footpath construction, construction of water reservoirs, etc.
4. Environment and Sanitation Engineering Division conducts among others research and development on designs of storeyed houses, such as maisonettes, flats, etc. including houses built by Perumnas (National Urban Development Corporation). Other activities conducted were the cconstruction of water purifying installation, models, such as the "Cikapayang" mini type drinking water installation, individual installation for the purification of peat water in Kalimantan, the use of worms for refuse disposal, construction of double pit toilet etc.
5. Technology Dissemination Division conducts the same activities as those of the other Institutes.
6. The Institute of Human Settlements has two experimental stations in its organisation namely Experimental Station for Housing and Building and Experimental Station for Sanitary Engineering, and in addition Experimental Sub Stations for local building materials located in Medan, Cilacap, Semarang, Yogyakarta, Denpasar, and Ujungpandang. Their function is the same as those in the two former mentioned Institutes.

現在の組織は以下の通りである。



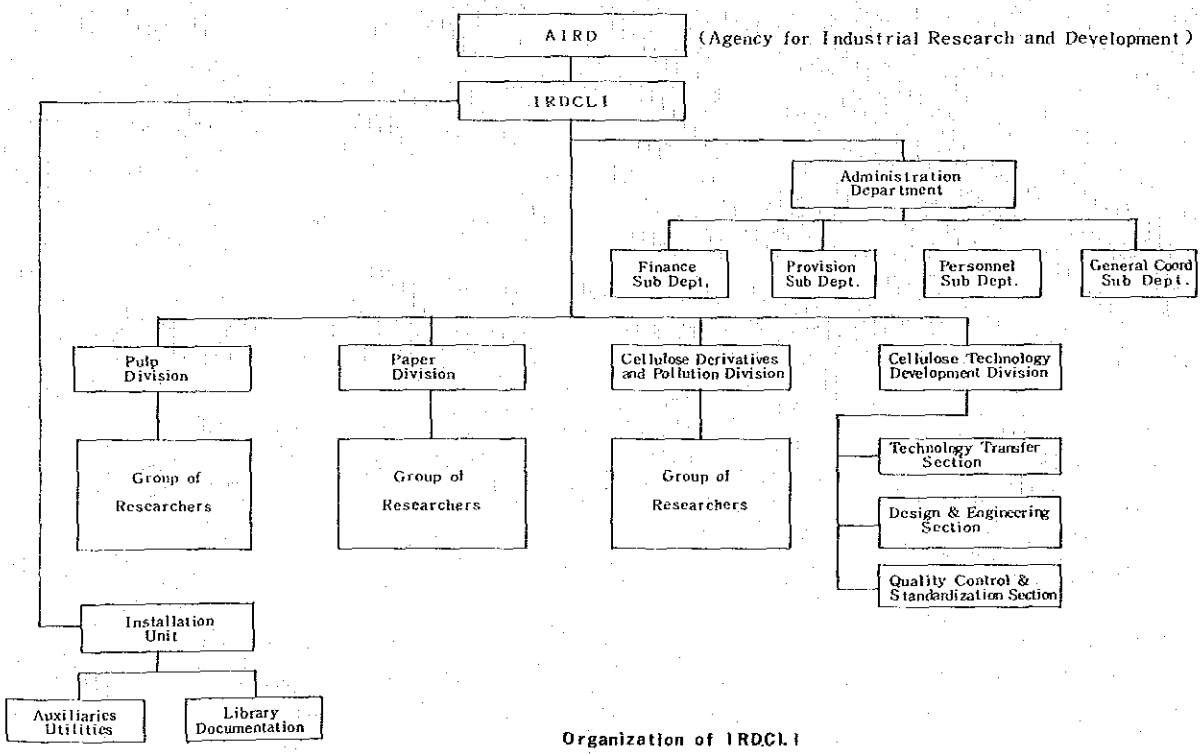
(2) セルローズ研究所（Institute for Research and Development of Cellulose Industries：以下 IRDCLI）

パルププラントを所管するIRDCLIは前回協力時と同様、工業省（Ministry of Industry）工業研究開発庁（Agency for Industrial Research and Development）に属している。

主な目的・所掌業務は次の通りである。

1. To conduct applied research, development and engineering activities on utilization of Indonesian fibrous resources including its residues as raw materials for cellulose industries
2. To conduct studies on pollution abatement caused by cellulose industries
3. To furnish engineering and consulting services to the cellulose industries
4. To conduct training for technical staffs of the cellulose industries
5. To promote cellulose technology by cooperating with other agencies both national and international
6. To prepare the draft and to promote Indonesian Industrial Standar in the field of cellulose industries.

現在の組織は以下の通りである。



Organization of IRDCLI

1－2　人員配置（カウンターパート確保状況）

(1)　ＰＣＢ

エバリュエーション調査団の報告書に拠れば、前回協力終了時には21名のカウンターパートが確保されていた。

これに対し、ＩＨＳ側は今回のアフターケアのために、以下の６名を確保していることを表明した。

今回の協力のメインは機材の修理・メンテナンスであることを考えると十分な人数が確保されていると言える。

Mr. Abdurachim Idris
Mr. Budi　：Technician of PCB plant（Mechanical）
Mr. Tumino　：Technician of PCB plant（Mechanical）
Mr. Hery　：Technician of PCB plant（Management）
Mr. Sudiono　：Technician of PCB plant（Mechanical）
Mr. Edi Supendi　：Technician of PCB plant（Electrical）

(2)　パルプ

エバリュエーション調査団の報告書に拠れば、前回協力終了時には13名のカウンターパートが確保されていた。

これに対し、ＩＲＤＣＬＩ側は今回のアフターケアのために以下の５名を確保していることを表明した。

今回の協力の規模を勘案すると十分な人数が確保されていると言える。

Mr. Imam Waluyo　：Head of Cellulose Technology Development Division, IRDCLI
Mr. Tri Priyadi Basuki　：Researcher at Paper Research Division, IRDCLI
Mr. Gatot Ibnusantosa　：Researcher at Pulp Research Division, IRDCLI
Mr. Soemardi　：Researcher at Cellulose Technology Development Division, IRDCLI
Mr. Rasimin Sujono　：Researcher at Pulp Research Division, IRDCLI

(3)　ＡＬＡ

エバリュエーション調査団の報告書に拠れば、前回協力終了時には、19名のカウンターパートが確保されていた。

これに対し、ＩＨＳ側は今回のアフターケアのために以下の５名を確保していることを表明した。

今回の協力のメインは機材の修理・メンテナンスであることを考えると十分な人数が確保されていると言える。

Mr. Nasiin　：Technician of ALA plant（Electrical）
Mr. Suratno　：Technician of ALA plant（Mechanical）
Mr. Samsir　：Technician of ALA plant（Mechanical）
Mr. Pitoyo　：Technician of ALA plant（Mechanical）
Mr. Sukirno　：Technician of ALA plant（Mechanical）

1－3　予算措置

各パイロットプラントに対する「イ」側の予算措置状況は以下の通りである。

(1)　IHS

（単位：Rp）

予算年度	IHS全体	Building Materials Division
1986／1987	1,509,013,000	394,790,000
1987／1988	1,154,875,000	171,600,000
1988／1989	1,714,597,000	171,000,000

Building Materials Division予算のうち、60%が人件費であり、20%がPCB及びALAプラントの運営に使用されている。

(2)　IRDCLI

（単位：Rp）

予算年度		IRDCLI	Pulp Plant
1986／1987	Research Project	209,834,000	25,633,500
	Maintenance	18,750,000	1,875,000
1987／1988	Rseasch Project	40,683,000	9,430,000
	Maintenance	18,750,000	675,000
1988／1989	Reseasch Project	50,296,000	5,159,000
	Maintenance	18,750,000	375,000

2. カウンターパートの現状

前回の協力期間中に来日したC／Pは14名であるが、その氏名と近況は以下の通りである。（但し、近況については今回の調査で判明した分のみである。）

PRESENT CONDITION OF INDONESIAN COUNTERPART PERSONNEL

NAME	DURATION	PRESENT WORKING CONDITION		REMARKS	
		PLACE	POSITION	FORMER POSITION	FIELD OF TRAINING
1978 Japanese Fiscal Year				準高級2名	
Mr. Darubroto	1979.03.29～1979.04.15	不明		Director, CRI	Administration
Mr. S. Ritonga	1979.03.29～1979.04.15	IHS	Director	Deputy Director, DBR	Administration
1979 Japanese Fiscal Year				一般3名	
Mr. Utarya	1979.04.07～1980.02.05	Building Material Division	Researcher	Mechanical Engineer, DBR	P. C. B. Manufacture
Mr. Domiri Suramihardja	1979.04.07～1980.02.05	不明		Industrial Engineer, DBR	P. C. B. Manufacture
Mr. Rizwan Lutfi	1979.12.10～1980.02.05	不明		Applied Physicist, DBR	P. C. B. Manufacture
1980 Japanese Fiscal Year				一般3名	
Mr. Syarif Hidayat	1980.12.09～1981.03.25	不明		Mechanical Engineer, DBR	P. C. B. Process Engineering
Mr. Dudung Kusmara	1980.12.09～1981.03.25	Building Material Division	Researcher	Chemical Engineer, DBR	
Mr. Rasimin Sujono	1980.12.13～1981.03.25	Pulp Research Division	Researcher	Mechanical Engineer, IRDCLI	PULP-PULPING Tech
1981 Japanese Fiscal Year				準高級2名・一般4名	
Mr. Karman Somawidjaja	1981.10.19～1981.11.03	Agency for Research & Development	Director	Director, DBR	Administration
Mr. R. B. Sular	1981.10.19～1981.11.03	Building Construction & Structure Div	Head	Chief, DBR	Administration
Mr. Sumardi	1982.01.07～1982.04.04	不明		Mechanical Engineer, IRDCLI	PULP-M/C Maintenance
Mr. Gatoto Ibunu Santosa	1982.01.07～1982.04.04	Pulp Research Division	Researcher	Chemical Engineer, IRDCLI	PULP-Process Eng'ing
Mr. Nasroen Rivai	1982.01.28～1982.04.27	Experimental Station	Head	Mechanical Engineer, DBR	A. L. A. Product D'ment
Mr. Purwito	1982.01.28～1982.04.27	Building Material Division	Researcher	Civil Engineer, DBR	A. L. A. Application

3　既供与機材の現状

3－1　機材名・使用頻度・保守状況

既供与機材の運転状況は以下の通りである。

(1)　ＰＣＢ

既供与機材に関する運転状況

※　Ａ：当然必要　　Ｂ：必要　　Ｃ：どちらでも良い　　Ｄ：不要

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
昭和54年度分 原質部	原料パルプポンプ 125㎜ø×100㎜ø	○			2日／週 8時間／日		
	原料同上架台Ｖベルト	○			〃		
	原料同上用モーター 11ＫＷ、４Ｐ	○			〃		
	マシンチェスト 水車式 3,000W×3,000H×2,800L	○			〃		
	マシンモーター ギヤモーター1/30×5.5KW	○			〃		
抄造部	ウエットマシン本体 1,730W㎜×9,640L㎜ 最高抄造速度 50㎜in	○			〃		
	シリンダー 1,320㎜×905㎜ø	○			〃		
	バット			シリンダーバット アジテーター　一式	〃	Ａ	
	サクションボックス	○			〃		
	シリンダー洗浄 シャワークーチロール	○			〃		
	スクイズロール毛布送りロール	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
抄造部	メイキングロール取替用ジョイント	○			2日／週 8時間／日		
	鉄枠チェーンブロック			チェーンブロック 2.5 t 揚程 4 m	〃	A	
	ウェットマシン本体用 モーター VSモーター15KW4P 減速機 1／20	○			〃		
	アジテーター用モーター VSモーター7.5KW4P 減速機 1／20	○			〃		
	ホイッパー用モーター 1.5 KW×4P 減速ギアモーター	○			〃		
	バキュームポンプ 100㎜φナッシュタイプ架台 Vベルト一式 600 ㎜Hg	○			〃		
	同上用モーター 1.5 KW×4P	○			〃		
	メーキングロール 3×6 2枚取カッター付	○			〃		
	リフラー 鉄板 6㎜×300㎜×300㎜ ×15 m桶式	○			〃		
	ミキシングボックス 鉄板 6㎜×730㎜×730㎜	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
生板受台	受台コンベア 1,200 W㎜× 3,000 L㎜ 手動クラッチ	○			2日／週 8時間／日		
	クロスカッター 自動生切カッター取付台付	○			〃		
	同上用カッター 0.75KW 4P 1／30減速機付	○			〃		
	リタンコンベア 1,200W㎜× 1,200 L㎜ 手動クラッチ上下動操作	○			〃		
	生板台 1,200W㎜× 2,400 L㎜ レール付	○			〃		
用排水循環タンク	セットリングタンク 鉄板 45㎜T×2,700㎜ø× ×5,400H㎜ フレーム踊場	○			〃		
	同上付属白水ポンプ 125㎜ø×125㎜ø 揚程 10 m			150ø×150ø 1台 揚程 15 m	〃	B	
	同上用モーター 11KW×4P 1,450R.P.M			15KW×4P	〃	B	
	同上用架台 モーターポンプ取付架台 Vベルト			同上用架台 モーターポンプ取付架台 Vベルト	〃	B	

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
用排水循環タンク	フエルト洗浄ポンプ 0.25 m³／min 4 Kg／cm² Vベルト付			高圧用フレキシブルホース 高圧用スプレーガン	2日／週 8時間／日	A	
	同上用モーター 7.5 KW×4 P	○			〃		
	用水ポンプ 40 ㎜φ OSGM	○			〃		
	同上用モーター 7.5 KW×4 P	○			〃		
仕上部	裁断機 2×8／3×6 板両用丸鋸 ダイヤリー 225 ㎜φ 鉄枠モーター架台付	○		ダイヤリー 225 φ×5枚	4日／週 8時間／日	A	
	同上モーター 1.5 KW×2 P 鋸付	○			〃		
配管部	配管一式			白水ポンプ 150 φ×150 φ用 配管一式	〃	A	
配線部	配線一式			予備品			
副資材	セミニードルフエルト			フエルト 一反	〃	A	
	水切デッケル	○			2日／週 8時間／日		
	シリンダー金網メッシュ 12 mesh 14 mesh			12 mesh（3組） 14 mesh（3組）	〃	A	
	シリンダー用キャンバス	○			備品	D	

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
副資材	台　秤　300 Kg	○			不定期		
工具類	電気溶接機	○			〃		
	ガス溶接機	○			〃		
	シリンダー金網 締工具	○			〃		
	シリンダーつり金具	○			〃		
	パイプレンチ ねじ切盤 バルブレンチセット スパナ ハンマー ドライバー	○			〃		
付属設備	メーキングロール 移動装置	○			2日／週 8時間／日		
	バット泡剤 アジテーター	○			〃		
	フエルトロール 自動調芯装置 110 ø × 1,600 L mm	○			〃		
	スタン製ロールブラケット	○			〃		
	毛布用タッチローラ 60 ø × 180 mm	○			〃		
	電気ドリル 10 mm ø 及び 13 mm ø	○			不定期		
	ディスクグラインダー 100 mm ø 及び 180 mm ø	○			〃		
	3 mm チェーンブロック 2 t 、1.5 t	○		チェーンブロック 2.5 t 揚程　4 m	〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
付属設備	スレート用丸のこ 外径　305㎜ø 厚さ　3㎜ 刃数　100			ダイヤソー	2日／週 8時間／日	A	
	水中ポンプ 揚水量　5.5 m 600 ℓ／min 80A、1.5KW、2HP	○			〃		
	フォークリフト	○			〃		
集塵装置	集塵機（裁断機用） 220V、50HZ、2P	○			〃		
	集塵機（パルパー用） 2.3KW、220V、50HZ、2P	○			〃		
	パルプポンプ 口径ø125×100 モーター 11KW、220V、50HZ、4P 架台、Vベルト	○			〃		
	サクションポンプ 口径ø100㎜ モーター 15KW、220V、50HZ、4P 架台ベッド Vベルト	○			〃		

(2) パルプ

既供与機材に関する運転状況

※ A：当然必要　B：必要　C：どちらでも良い　D：不要

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
パルププラント	ベルトコンベア 500W×4,000L㎜	○			2日／週 8時間／日		
	同上用モーター 2.2KW×4P 1／30GM	○			〃		
	インクラインドコンベア 500W×2,500L㎜	○			〃		
	同上用モーター 7.5KW×4P 1／30GM	○			〃		
	地球釜 φ3,050㎜ 容量　14.5㎥ 最高常圧　10㎏／㎠ 材質　SS－41	○			〃		
	ブローチェストアジテーター チェスト　80㎥ ランナー　800φ スクリュー式	○			〃		
	同上用モーター 15KW×6P	○			〃		
	特殊パルプポンプ φ150×10㎜ 1.2㎥／m	○			〃		
	用上用モーター 7.5KW×4P 380V、50HZ	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
パルププラント	長谷川リファイナー 700HD シングルディスクリファイナー 主電動機 150KW×4P、3,000V、 50HZ ディスクφ700㎜ 1,500rpm スーパーファイブレーター 原料送り込み用 スクリューフィーダー			ブレード　40枚	2日／週 8時間／日	A	
	同上用モーター FEK 150KW×4P、50HZ	○			〃		
	レファイナー用 チェストアジテーター スクリュー式 30㎥／m ランナー　630φ	○			〃		
	同上用モーター 7.5KW×6P	○			〃		
	パルプポンプ 口径　125φ×100㎜ Vベルト架台	○			〃		
	同上用モーター 11KW×4P	○			〃		
	ヤンソンスクリーン 有効　900W×1,800L バット付 プレート　SUS304 丸孔型	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
パルププラント	同上用モーター 2.2 KW×4 P 回転数 1,300 ～ 1,450 r pm	○			2日／週 8時間／日		
	パルプポンプ φ 125 × 100 ㎜ Vベルト架台	○			〃		
	同上用モーター 3.7 KW×6 P 1／30 GM	○			〃		
	エクストラクター シリンダー φ915×1,500W×3本	○			〃		
	同上用モーター 3.7KW×6 P 1／30 GM	○			〃		
	パルプポンプ φ80 × 100 ㎜ 1.2 ㎥／m Vベルト架台	○			〃		
	同上用モーター 5.5KW×6 P ウエットラップマシン 768 W×φ700 ㎜ 0.5 t／h MC 70 ～ 75 %	○		フェルト 1反	〃 〃	A	
	同上用モーター フィルターポンプ 3.7KW×4 P 1／30 GM	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
パルププラント	同上用モーター サクションポンプ 2.2KW×4P	○			2日／週 8時間／日		
	ソーダータンク用 アジテーター 5㎥用スクリュー式	○			〃		
	同上用モーター 1.5KW×4P 380V、50HZ	○			〃		
	ギアポンプ 25φ(セントル型)	○			〃		
	同上用モーター 1.5KW×4P	○			〃		
	ダストファン マルチファンタイプ			マルチファンタイプ 3#丸ダクトサイクロン付 モーター5.5K×4P	〃	A	
	ストローカッター用刃研磨機 左右ラックギア方式 スライド研磨手動式 砥石モーター直線型			砥石 16t×20×255 5枚	〃	A	
	ストローカッター用スペア刃 12枚入			スペア刃　12枚	〃	A	
	配管一式	○			備品		
	配線一式	○			〃		
	発電機	○			2日／週 8時間／日		
	ベルトコンベア 500W㎜×700L㎜			ベルト	〃	A	

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
パルププラント	ストローカッター スターナイフ型　3枚刃 1.5t×1H			スターナイフ型	2日／週 8時間／日	A	
	同上用モーター 7.5K、6P 1／30GM	○			〃		
	同上用モーター 3.7K、4P 1／30GM	○			〃		
	ロータリーダスター ø1,500㎜×2,800L㎜	○			〃		
	同上用モーター 3.7K、4P 1／30GM	○			〃		
	ベルトコンベア 500W×4,500L㎜	○			〃		
	同上用モーター 2.2K、6P 1／30GM	○			〃		
	計量機 7.5t／h 連続計量メーター 久保田MP型積算計	○			〃		
	ベルトコンベア 500W×9,000L㎜	○			〃		
	同上用メーター 2.2K、6P 1／30GM	○			〃		

(3) ＡＬＡ

既供与機材に関する運転状況

※　A：当然必要　　B：必要　　C：どちらでも良い　　D：不要

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
ＡＬＡプラント	ホッパー 能力　2 t	○			2日／週 8時間／日		
	ベルトフィーダ 能力　2.5 t／h 400 W× 2,000 L			ベルト	〃	A	
	ベルトコンベア 能力　2.5 t／h 300 W× 7,000 L	○			〃		
	クラッシャー 能力　2.5 t／h	○			〃		
	ベルトコンベア 能力　2.5 t／h 300 W× 7,000 L	○			〃		
	振動篩 能力　2.5 t／h 600 W× 1,800 L	○			〃		
	ベルトコンベア 能力　2.5 t／h 300 W× 4,000 L	○			〃		
	ベルトコンベア 能力　2.5 t／h 300 W× 4,000 L	○			〃		
	ベルトコンベア 能力　2.5 t／h 300 W× 11,000 L	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
ALAプラント	クーラ 能力 0.25 t／h 350 W× 3,800 L	○			2日／週 8時間／日		
	クーラ用ファン 40 ㎥／min×100㎜Aq	○			〃		
	サイクロン φ 800	○			〃		
	サイクロン用ファン 60 ㎥／min×150㎜Aq	○			〃		
	煙突及びダクト φ 320 × 4,000 H	○			〃		
	バンコンベア 能力 0.25 t／h 300 W× 5,650 L	○			〃		
	ベルトコンベア 能力 0.25 t／h 300 W× 14,000 L	○			〃		
	振動篩 能力 0.25 t／h 500 W× 1,500 L	○			〃		
	ベルトコンベア 能力 0.25 t／h 300 W× 7,000 L	○			〃		
	ベルトコンベア 能力 0.25 t／h 300 W× 7,000 L	○			〃		
	ベルトコンベア 能力 0.25 t／h 300 W× 7,000 L	○			〃		
	電気関係操作盤	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
コンクリートブロックプラント	コンクリートミキサー MTC 能力 0.333 ㎥			インペラー	4日／週 8時間／日	A	
	ベルトコンベア 能力 50 t／h 350 W× 1,000 L	○			〃		
	コンクリートホッパー 能力 0.45 ㎥ 1,159W× 1,109 L× 840H	○			〃		
	ブロックマシン			油圧ホース モータブレーキ 整流器	〃	A	
	電気関係操作盤			電磁接触器	〃	A	
	モールドボックス			10 ㎝厚ブロック 15 ㎝厚ブロック	〃	A	
	パレット	○			〃		
	ラック	○			〃		
	ハンドリフトトラック			完備品と取替	〃	A	
	運搬車			完備品と取替	〃	A	
試験器具	コンクリート練り板 800W×1,200 L×100 H㎜				不定期		
	供試体つかみ具 100 ø × 200 L ㎜				〃		
	キャンピング用グラス 200W×200 L×10 H ㎜				〃		
	キャンピング用押板 200W×200 L× 0.6 H ㎜				〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
	骨材破砕試験装置 ＢＳ装置	○			不定期		
	電気マッフル炉 200W×125H×300L㎜ ＭＡＸ 1,500 ℃			サーモカップル 1,500 ℃	〃	A	
	デシケーター Ｓ 33−3	○			〃		
試験器具	磁製ルツボ 容量　30 ㎖	○			〃		
	磁製ルツボ 容量　100 ㎖	○			〃		
	ルツボばさみ ステンレス鋼　300 L㎜	○			〃		
	ルツボばさみ ステンレス鋼　200 L㎜	○			〃		
	匙	○			〃		
	鉄製乳鉢 （乳棒 150 L㎜付）	○			〃		
	焼鉱皿 磁製　1,279 ㎜	○			〃		
	手練スコップ	○			〃		
	こね混ぜ用匙及び鉢	○			〃		
	ハンドスコップ　角型	○			〃		
	ハンドスコップ　丸型	○			〃		
	ワイヤーブラシ Ｃ－114	○			〃		
	ストレートエッジ 三角形及び丸型	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
試験器具	篩掃除用ブラシ	○					
	ボトル 容量 40 ℓ	○			不定期		
	コンクリート運搬車		不能	完備品	〃	A	
	圧縮強度試験機 PHC－100 E Max 100 t	○			〃		
	コンクリートミキサー 380 V、3 相、 1.5 KW	○			〃		
	養生水槽恒温水循環装置 CE－1011C 2,000W×5,000L×500H㎜	○			〃		
	エアメーター C 13 X	○			〃		
	シリンダーモールド 100 ø × 200H㎜	○		シリンダーモールド 100 ø × 200 H㎜	〃		
	スランプ試験機 C－21	○			〃		
	キャッピングセット C－129 220 V、1 ø、1 KW	○			〃		
	篩セット 200 ø × 60 ㎜ 篩目の開き 0.074、0.15、0.3、0.6、1.2、2.5、5、10、12.7、15、20、25 ㎜	○			〃		
	手篩セット C－31 2.5、5、10、15、20 ㎜	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
試験器具	篩振とり器 ロータップ型 220V、半相、0.2KW	○			不定期		
	電気乾燥機 AL－15S、"ISUZU" 220V、50HZ、1φ	○			〃		
	骨材用桝 10ℓ及び2ℓ	○			〃		
	電気マッフル炉 200W×125H×300L㎜ Max 1,100℃			サーモカップル1,200℃	〃	A	
	骨材安全性試験用具 C 117－2 金網の網目 2.5㎜	○			〃		
	白金ルツボ 容量 30㎖	○			〃		
	ブロック試験用アタッチメント C－32	○			〃		
	ブロック透水試験器	○			〃		
	軽量骨材用ピクノメーター	○			〃		
	化学天秤（直示） 秤量200g、感量0.1g 200V、単相	○			〃		
	天秤（直示） 秤量2,000g、感量0.1g 200V、単相	○			〃		
	卓上台秤 秤量20Kg、最小目盛2g	○			〃		

区分	機材名	運転状況			利用度	優先順位※	備考
		問題なし	改善されるべき点				
			修理	スペアパーツ等			
試験器具	台秤 秤量50㎏、最小目盛20ℊ	○			不定期		
	粗骨材比重測定装置 C 158－B	○			〃		
	オルサットガス分析装置	○			〃		
	輻射高温計 オプティカルタイプ	○			〃		
	電気設備 分電盤 形式 屋内自立型 380 V回路 5台 220 V回路 3台 トランス 単相 380／220 V 5KVA	○			〃		

3－2　スペアパーツの過不足状況

協力期間終了後、設備上のトラブルはほとんど無く3プラントとも実験プラントとして順調に稼動していたようである。

スペアパーツについては、インドネシアでの調達が困難な鋳物類（ブレード・ワイヤーメッシュ）や互換性が要求されるため「日本」製に限定される物（モールドボックス・クランクシャフト・モーター）に不足を生じている。

実験プラントという性格上、いわゆる実用プラントと比べて機器材の消耗度は少ないと考えられるが、今後のプラントの円滑な操業の継続及び利用頻度の増大を図るには、少なくとも前述の事情で「イ」国独自の調達が困難なスペアパーツについては供与が必要と考えられる。

3－3　メンテナンスの現状

(1)　PCB

a．機材メンテナンス担当者名

Mr．Budi

Mr．Hery

Mr．Sudio

Mr．Edi　Supendi

b．レベル

運転機械の回転部分への給油は良く行なわれていて給油不足による異音の発生は稼動中の機材についてはなかった。

(2)　パルプ

a．機材メンテナンス担当者名

主任　Mr．Imam Waluyo

b．レベル

運転機械の回転部分への給油は良く行なわれていて給油不足による異音の発生は稼動中の機材についてはなかった。

しかしながら、スペアパーツの不足によるブレード類、レファィナー類の摩耗・電磁弁の水漏れ等が散見された。

(3)　ALA

a．機材メンテナンス担当者名

主任　Mr．Supranggono

b．レベル

主任は、ALAパイロットプラント建設当時から本プラントに従事しており、機械の現状は非常に良く把握している。

運転機械の回転部分への給油は良く行なわれていて、給油不足による異音の発生は稼

動中の機械についてはなかった。

コンクリートブロックプラントは休止中であったが、コンクリートミキサーのインペラーが取替えを要する程度まで摩耗していた。ブロックマシンは、現在のところ問題なく運転出来ているが、予備品の在庫がなくなっているので早急にスペアパーツを補充する必要がある。

機械の日常の点検・給油・清掃等は良く行なわれていて運転管理に関するレベルは建設当時のレベルと同等のものだと推定される。

また、機械まわりの環境整備や整理整頓も良く行なわれていて仕事の環境としては申し分ないと言える。

機械の整備や補修等は、カウンターパートのメンテナンスに関する理解が深く、予備品・消耗品さえあれば、十分対応可能であると言える。

4. パイロットプラントの稼動状況

4－1 PCBプラント

日本の協力期間終了後も、様々な農業廃棄物を用いて試作が行われ、PCBの品質向上に努めてきている。

また、地場産業に従事する人々や第3国に対するデモンストレーションプラントとしての役割も果たしてきている。主な実績は次の通りである。

a. Staff of Dodoma-Tanzania project (1982)
b. Team of the Technical Cooperation from the Developing Countries ; Ceylon, Bangladesh and Papua New Guinea(1982)
c. Prof Dr. Csorba, UNIDO, Vienna(1983)
d. Mr.A.R.Kadolonra, Assistant Directon General, UNESCO, Paris (1983)
e. Manager staff of Cement Factory, PT Tiga Roda(1983)
f. TCDC Program. Training course on Building Material Development and Human Settlements(1984&1986)
g. OJT RENAS from Philippines and Thailand(1985－1986)
h. Cooperation with some other private companies

現在までのＰＣＢプラントにおけるＰＣＢの生産は以下の通りである。

RESULT OF PCB PRODUCTION

Date	Total PCB	Total hours	Date	Total PCB	Total hours
27- 5-1981	40	8	13-10-1982	78	8
30- 5-1981	34	8	6-10-1982	49	8
2- 6-1981	47	8	14-10-1982	120	8
3- 6-1981	45	8	21-10-1982	40	8
4- 6-1981	45	8	25-10-1982	126	8
8- 6-1981	45	8	26-10-1982	40	8
9- 6-1981	—	8	27-10-1982	22	8
10- 6-1981	28	8	13-11-1984	82	8
11- 6-1981	29	8	14-11-1984	91	8
15- 6-1981	66	8	15-11-1984	72	8
16- 6-1981	78	8	23- 9-1986	169	8
18- 6-1981	70	8	24- 9-1986	114	8
25- 6-1981	52	8	27- 9-1986	175	8
27- 6-1981	70	8	29- 9-1986	104	8
29- 6-1981	50	8	3-10-1986	235	8
16- 7-1981	46	8	4-10-1986	225	8
18- 7-1981	46	8	9-10-1986	228	8
3- 8-1981	44	8	10-10-1986	287	8
4- 8-1981	28	8	11-10-1986	143	8
13- 8-1981	28	8	2-11-1986	103	8
19- 8-1981	46	8	11-11-1986	155	8
24- 8-1981	46	8	12-11-1986	230	8
29- 9-1981	34	8	13-11-1986	144	8
30- 9-1981	30	8	14-11-1986	128	8
1-10-1981	36	8	18-11-1986	107	8
2-11-1981	26	8	19-11-1986	134	8
4-11-1981	28	8	20-11-1986	126	8
9-11-1981	18	8	21-11-1986	164	8
11-11-1981	16	8	22-11-1986	128	8
15-11-1981	34	8	13- 8-1987	75	8
4-10-1982	32	8	15- 9-1987	—	8
5-10-1982	18	8	27- 2-1988	35	8
6-10-1982	18	8	16- 4-1988	38	8
9-10-1982	76	8		3,514	264
	1,349	272			

本件プラントの使命がいわゆる生産を第1目標とした商業プラントならば、いささか少ない数字であるが、本プラントはあくまでも実験プラントであることを考えると、十分な稼動状況である。

4－2　パルププラント

日本の協力期間終了後もＰＣＢの原料となるパルプを製造し、その品質向上に努めてきている。

とりわけ、安価で高品質のパルプを製造することに主眼が置かれ、当初使用されていた稲ワラ・バガス・松材チップ・ラワン材チップやKenaf等を原料として実験を行なってきている。

主な実績は次の通りである。

1. Research on the use of straw and pine as raw materials of Pulp Cement Board production, by using soda or sulfite process on pulping (1983/1984)
2. The influence of the kind of pulp and the pulp freeness on the quality of Pulp Cement Board (1984/1985)
3. The develoment of raw materials and processes for Pulp Cement Board making at small scale industries (1986/1987)
4. Research cooperation on the use of nonwood material for Pulp Cement Board production which has been carried out between IRDCLI and Pulp Cement Board Factory at Gresik, Surabaya, East Java (1987/1988)
5. Pulp making experiment by using meranti (wood waste from plywood factories), with NSSC process : 10 batches for producing PCB and fluting medium
6. Pulp making experiment by using rice straw(agricultural waste), with soda process : 6 batches for PCB and fluting medium
7. Pulp making experiments by using corn stalk, with soda processes : 10 batches for PCB
8. Pulp making experments by using bagasse(waste from sugar cane factories)by using soda process : 17 batches for PCB
9. Experimennt of degumming process of haramay : 1 batch for textile manufacturing
10. Waste paper refining by using refiner for PCB
11. Pulp making experiment by using kenaf fibre, with soda process : 3 batches for PCB and special paper
12. Pulp making experments by using kenaf stem, with soda process

：2 batches for PCB and paper

13. Supplying long fibre pulp to PCB factories at Jakarta and Gresik, East Java.

4－3　ＡＬＡプラント

日本の協力期間終了後も他の研究機関（Road Engineering Institute 等）との協力により、ＡＬＡの品質向上に努めてきた。

また、地場産業に対するデモンストレーションプラントとしての役割も果たしてきている。主な実績は次の通りである。

a. PT. EPTCO Cilacap －Sand and coarse aggregate testing
b. PT. Alam Daya sakti Semarang－Lime testing
c. IECA－Japanese team
d. PT. Arsenco Cilacap－Concrete testing
e. PT. Triaji Cilacap－Concrete testing
f. PT. Sumber Teknik Cilacap－Conerete testing
g. PT. Manunggai Cilacap－Concrete testing
h. CV. Agung Fegal－Concrete cube testing
i. PT. Semen Gresik－Disussion & taking samples
j. PT. Cesa－Concrete cube testing
k. Department of Public Works Cilacap－Asking the information about Mix design of ALA concrete
l. CV. Farminar Cilacap－Sand and coase aggregate testing
m. PT. Hataka Building－buying ALA about 10 ㎡ for wall component
n. Wadas litang Projects－ALA survey for light weight concrete
o. Cleaning Water Project－Asking the information about concrete block
p. PT. Amertz Karyz－Consultion about concrete block for Cleaning water projects
q. PT. Alam Daya Santi－Consultation about ALA
r. CV. Lancak Purwonerto－Sand and coarse aggregate testing
s. CV. Wadnyu Kencanz－Concrete cube and Cylinder testing
t. PT. Tiksuri Cilacap－Concrete cube testing
u. Cooperation with some other private companies

現在ＡＬＡ（人工軽量骨材）の原料はパイロットプラント所在地であるチラチャップの近郊で採取される膨張頁岩を使っている。

現在のパイロットプラントの利用度は

ALAプラント　　：2日／週　8時間／日

コンクリートブロックプラント：4日／週　8時間／日

また現在の生産量は

ＡＬＡ　　：64 ㎥／月

コンクリートブロック：24,000個／月

である。既供与機材については、建設当時から現在に至る迄、大したトラブルもなく順調に稼動しているとのことである。

製品の用途としては、公共施設、中でも建物が主体である。1988年度のパイロットプラントによる生産量は、ＡＬＡ：750 ㎥／年、コンクリートブロック：288,000個／年を予定しているとのことである。

ＡＬＡの消費が伸びないのは競合品（普通の砕石）との価格差が主たる原因（現在のところ　ＡＬＡ：25,000 RP／㎥，競合品：20,000 RP／㎥）であるというが、パイロットプラントはコマーシャルプラントではないので製造コストが割高になるのは止むを得ない。

また、インドネシア側はコマーシャルサイズプラントの建設に対して意欲を持っている。但し、ＩＨＳとしては技術面でのサポートを行い、事業化は民間企業に行なわせる方針である。

実際、各地の原料サンプルをパイロットプラントでテストし、原料の適否判断の結果、インドネシア側は南スマトラ、カリマンタン、イリアンジャヤの3地域を事業化の候補地として考えている。これらの地域では天然骨材がとれずジャワ島から運んでいるのが現状である。

従って、これらの地域で供給可能な原料を使ってＡＬＡを製造することは資源の有効利用及び地域開発の点からインドネシア政府方針と合致するものである。

また、ＩＨＳは高架道路、高層ビル等ＡＬＡの用途開発を目指した研究も行なっている。

Ⅳ 今後の留意事項

今回の調査により3プラントとも実験プラントとしては十分に機能していることを確認出来た。

しかしながら、協力期間中には安価な原材料とされていた農業廃棄物がその後の経済情勢の変化により、価格が上昇し、ＰＣＢ・パルプの価格にもはねかえり、製品の市場競争力を弱めていることが確認できた。

我が方としては、大々的に市場競争性を強める為の協力を行なうには(1)アフターケアのＴ／Ｒを逸脱すること (2)インドネシアの建材市場を洗い直して、ＰＣＢ・ＡＬＡのＦ／Ｓを行なう必要があることという2つの理由から、スペアパーツの供与と専門家からのアドバイスの提供という程度で留めるべきだと考える。

また、実際の協力に当っては、本件アフターケアの協力期間が昭和64年3月末日までと非常に限られたものである為，スペアパーツ・消耗品等の購送、各種機材の修理・調整・操作指導を行なう短期専門家並びに補完的技術指導を行なう短期専門家の派遣に係るスケジュール策定・実施に際しては、各々の分野の関係・進捗状況を十分に把握し慎重に行なうべきだと考える。

V 資　料　編

1. 各省会議資料

インドネシア共和国
建材開発技術協力事業
アフターケア調査団派遣計画（案）

昭和６３年４月

鉱工業開発協力部
鉱工業開発技術課

1．プロジェクトの経緯

2．アフターケア調査団の派遣目的

3．派遣期間（予定）

4．日程（案）

5．調査員構成

6．調査内容

7．調査団T／R

8．調査時の注意事項

9．今後のスケジュール

1．プロジェクトの経緯

我が国は、昭和53年～58年にかけて、「イ」政府が推進中のLOW COST HOUSINGの供給に貢献すべく「イ」国内に豊富に存在する農産廃棄物（廃材・バガス他）及び膨張粘土等未利用資源を利用したパルプセメントボード、パルプ及び人工軽量骨材の研究開発（製造）を行なうことを目的として、原料の試験分析、パイロットプラントを使用して製造・利用技術の移転を通じて、「イ」国の人材養成を実施してきた。

（詳細　別添　プロジェクト概要表　参照）

2．アフターケア調査団の派遣目的

パイロットプラントの建設の遅れ等により、若干当初計画とずれを生じる部分もあったが、初期の目標は、達成したとして昭和58年１１月末日をもって本プロジェクトは終了した。

しかしながら、終了後４年半を経過しているため、供与機材の故障・部品の不足が予想され、また前回協力時に十分で無かったと思われる分野についてカウンターパートに対する補完的技術指導を行なう必要が有ると考えられる。

また、昭和61年度海外会計検査において、ＰＣＢ部門のパイロットプラントが稼動していないことが指摘されており、その原因についても調査する必要が有る。

以上のような事情に鑑み、当年度事業として本件プロジェクトに対しアフターケアを実施することとし、

１）本件協力に係る「イ」国側の現状を調査し、

２）「イ」国関係機関と協議の上、協力計画を策定すること

を目的として、アフターケア調査団を派遣することとする。

3．派遣期間（予定）

昭和63年 4月14日～昭和63年 4月24日（11日間）

4．日程（案）

月　日	行程	宿泊地	調査内容
4／14 （木）	東京→ジャカルタ	ジャカルタ	■（移動）
4／15 （金）	ジャカルタ →バンドン	バンドン	■ＪＩＣＡインドネシア事務所打合せ ■在インドネシア日本国大使館表敬 ■公共事業省及び工業省表敬 ■（移動）
4／16 （土）		バンドン	■建築研究所表敬・打合せ ■セルローズ研究所表敬・打合せ

	パルプセメントボード及びパルプ		人工軽量骨材	
	宿泊地	調査内容	宿泊地	調査内容
4／17 （日）	バンドン	■資料整理	チラチャップ	■（移動） バンドン→チラチャップ
4／18 （月）	バンドン	■サイト 調査	チラチャップ	■サイト 調査

4／19 （火）	バンドン	■サイト 調査	チラチャップ	■サイト 調査
4／20 （水）	バンドン	■サイト 調査 ■合流 ■団内打合せ	バンドン	■サイト 調査 ■（移動） チラチャップ→バンドン ■合流 ■団内打合せ

月　日	行程	宿泊地	調査内容
4／21 （木）		バンドン	■関係機関との協議（技術協力計画策定） ■M／Mドラフト作成
4／22 （金）	バンドン→ジャカルタ	ジャカルタ	■M／M署名・交換 ■（移動）
4／23 （土）	ジャカルタ →東京	機中泊	■大使館・事務所に報告 ■（移動）
4／24 (日)			■（帰国）

5．調査団構成

団長	（ＪＩＣＡ）
パルプセメントボード及びパルプ	（松本鉄工所）
人工軽量骨材	（小野田エンジニアリング）
業務調整	（ＪＩＣＡ）

6．調査内容

1）本プロジェクトの現状

a．パイロットプラントの現状

b．カウンターパートの現状

c．協力終了後のパイロットプラント稼動状況

2）アフターケア実施に係る「イ」側の受入体制・要望

a．建築研究所・セルローズ研究所の現状

イ．所掌業務

ロ．人員配置

ハ．アフターケア実施の際の両機関のデマケーション

ニ．他の政府機関との関連

b．カウンターパート確保の見込み

c．予算措置

（詳細　別添ＱＵＥＳＴＩＯＮＮＡＩＲＥ　参照）

7．調査団Ｔ／Ｒ

本プロジェクトは、協力機関２ヶ所、協力分野３分野、パイロットプラント３ヶ所であるため、他のプロジェクトと比べてまとまりがつきにくいと思われる。従って、アフターケア調査実施に際し、以下の点に注意すべきである。

1）３分野のバランス

a．パルプセメントボード

b．パルプ

c．人工軽量骨材

「イ」側の要請次第では、いづれかに重きを置くことも有り得る。

2）「イ」側のニーズ

パイロットプラントが稼動していないのは、単に故障だけの為ではないというサイドインフォメーションを入手している。

従って、本件アフターケアの実施については真の「イ」側のニーズに基づくよう注意を払う必要がある。

以上のような注意事項を勘案し、以下の事項につき「イ」側と協議し、その内容をＭ／Ｍに記録する必要が有る。

1）協力分野

ａ．既供与機材の整備補修並びに保守管理指導

ｂ．既協力分野についての補完的技術指導

（注　ノンアスベスト化）

2）機材供与

ａ．規模　３，０００万円（予定）

ｂ．種別　既供与機材の修理用部品・消耗品等

１）－ｂに必要と思われる機材

3）専門家派遣

ａ．人数　４名

ｂ．期間　２～３ケ月

ｃ．分野　ＰＣＢ及びバルブ（機材）

ＰＣＢ及びバルブ（技術）

人工軽量骨材　（機材）

人工軽量骨材　（技術）　各１名

派遣時期・期間は機材到着時期等を勘案する。

4）研修員受入れ

実施しない。

8．調査時の注意事項

1）　アフターケアは、単年度主義であることを「イ」側に納得させる。協力実施時に必要な相手側の履行義務条項（予算措置・A1、A4フォームの早期送付・必要なC／Pの確保及び配置・機材の早期引き取り等）を確認し、必要とあらば、ミニッツに記載する。

2）　単年度主義の原則を踏まえ、A1、A4フォームのSIGNED COPYを取付け、手続きの迅速化を図る。

3）　既供与機材の状況確認後、調査団にて対応可能な機材については、整備・修理を行なうと共に、調査団資機材購送費にて対応可能な部品・消耗品の供与を行なう。

9．今後のスケジュール

1）4月中旬　調査団派遣
　a．M／M署名・交換
　b．A1、A4フォームSigned　copy取付け
2）4月中旬　～　6月中旬
　a．帰国報告会
　b．機材検討
3）6月中旬
　a．実施協議
4）6月中旬～7月中旬
　a．機材購送請求
5）7月中旬～1月下旬
　a．機材調達
　b．機材送付
6）1月下旬～3月下旬
　a．専門家派遣
　b．協力終了

<インドネシア共和国>　　（日付：58. 11. 30終了）

建　材　開　発
(Development of Building Materials)

1．R／D等署名日　：５３・　７・１９

2．協力期間　：（R／D）５３．　７．１９～５７．１１．１８
（延　長）５７．１１．１９～５８．１１．３０

3．所在地　：　バンドン（パルプ製造及びパルプセメントボード分野）
チラチャップ（人工軽量骨材分野）

4．先方関係機関　：公共事業省建築研究所（窓口）及び工業省セルロース研究所
(Directorate of Building Research, Ministry of Public Works & Directorate of Cellulose Research Institute, Ministry of Industry.)

5．我が方協力機関　：通商産業省、福岡県福島工業試験所

6．要請の背景　：「イ」政府は第２次経済開発５ヵ年計画においてLow-Cost-Housing計画を進めており、その一環として従来から特に地場資源を利用した建材の開発に力を入れている。しかしながら「パルプセメントボード（PCB)」、「人工軽量骨材(ALA)」については未だ技術と資金の不足から開発が遅れており小規模な実験研究等が行われているに過ぎず、他方、インドネシアにはPCB，ALAの主要原料が豊富に存在することからこれら建材の本格的な開発に取組むため我が国に技術協力を要請して来た。

7．目的・内容　：「イ」政府が推進中のLow-Cost-Housingの供給に貢献すべく豊富に存在する農産廃棄物（廃材、バガス他）及び膨張粘土等未利用資源を利用した PCB（パルプ製造含む）及び ALAの研究開発（製造）を行うことを目的としこれら建材の原料の試験分析、パイロットプラントを使用しての製造・利用技術の移転及び人材養成。

8．現状・目標達成　：(1)PCB部門：現地カウンターパートのみによる PCB製造が可能となり数多くの試作品が広報普及用として広く利用され始めている。
(2) パルプ製造部門：パルプ製造技術はまだ初期的開発の段階であるが PCB向パルプの製造工程条件は明らかになった。
(3)ALA部門：人工計量骨材の品質は向上し実際の用地建設計画に試験的に応用されている。
以上の成果を踏まえ、本プロジェクトは　58年11月末日をもって終了した。

9．問題点　：パルプパイロットプラント据付の遅れにより、本運転期間が短かくPCB 向けバルブ製造につき運転試験を続ける必要がある。又 PCB部門、 ALA部門において企業化のための調査が要望されている。

10．対処方針　：右要望等、要請こした場合には、専門家等の派遣につき検討する。

11．専門家派遣
研修員
コスト負担
（L・C）

年　度	～5'4	55	56	57	58	合　計
長　期	－	2	1	3	2	8
短　期	4	6	3	10	2	25
研修員	3	3	6	4	2	18
機　材	52	30	202	18	11	313
L・C	－	－	－	－	－	－

（注）専門家・研修員は延人員、機材は金額で単位百万円。

12．他の経済協力との関係（無償・有償・個別専門家派遣・その他）
：　なし

13．評価　：

14．調査団　：1)事前調査　52.12.11～52.12.27
2)実施協議　53. 7. 5～53. 7.21
3)計画打合　55. 2.14～55. 2.29
4)巡回指導　56. 3.21～56. 4. 4
5)エヴァリュエーション　57. 5.25～57. 6. 8

15．国内支援　：国内支援体制整備費：
視聴覚等教材整備費：

2．アフターケアプログラムに関するインドネシア側への質問表
(Questionnaire)

(1) 人間居住研究所（ＩＨＳ）宛〔但し、この時点では名称変更は伝わっていなかった為建築研究所（ＤＢＲ）という名称を使用している。〕

QUESTIONNAIRE ON THE AFTERCARE PROGRAMME FOR THE TECHNICAL COOPERATION ON THE DEVELOPMENT OF BUILDING MATERIALS BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS IN THE REPUBLIC OF INDONESIA

March 28, 1988

To: the Authorities Concerned of the Government of the Republic of Indonesia

From: the Authorities Concerned of the Government of Japan (JICA)

I. Concept of the Aftercare Programme

The Aftercare Programme is one of the Technical Cooperation Programmes implemented by JICA in order to promote the effects of the JICA projects which have been already finished by extending supplementary technical cooperation within the following scope;

1. Taking additional care of the machinery and equipment provided by Japan
   1) by dispatching short-term experts for repair and maintenance
   2) by providing necessary spare parts and expendables

2. Supplementary technical cooperation on the subjects which are estimated that technical transfer was not fully conducted
   1) by dispatching short-term experts
   2) by providing necessary machinery and equipment

3. Training counterpart personnel in Japan is not included within the scope of the Aftercare Programme.

4. The duration of the Aftercare Programme is one Japanese fiscal year(April 1 - March 31).

The Government of Japan plans to implement the Aftercare Programme for the Technical Cooperation on the Development of Building Materials by the effective use of locally available raw materials (hereinafter referred to as "the Project") in the Japanese fiscal year 1988, and to send an Aftercare Survey Team at the middle of April. The purpose of the Team is to survey the present situation of the Project and to work out the details of the Aftercare Programme on the Project through a series of discussions with the authorities concerned of the Government of the Republic of Indonesia.

In order to make the activities of the Survey Team as effective as possible, the Government of Japan would like to get relevant data and information on the present situation of the Project by asking some questions mentioned below. It would be much appreciated if the authorities concerned of the Government of the Republic of Indonesia send the answers back to JICA as early as possible so that the authorities concerned of the Government of Japan could give a careful consideration before sending the Survey Team.

II. Questions on the Implementation of the Aftercare Programme for the Project

1. Request for taking additional care of machinery and equipment provided by Japan

1) Request for repair of the machinery and equipment provided by Japan and for providing spare parts and consumables.

a. Name of the machinery and equipment needed to be repaired by the Japanese experts. Present condition of the machinery and equipment.

b. Name of the spare parts and the consumables needed to be provided.

c. Other relevant information.

2) Request for supplementary technical cooperation

a. Themes within the scope of R/D which need supplementary technical cooperation by the Japanese short-term experts and the contents of the task of the experts.
b. Name of the machinery and equipment needed to be provided in order to transfer the technology on the theme.
c. Plan for assignment of the counterpart personnel for the Aftercare Programme: Number, name and age, sex, their present position and their qualification.

2. Organization in charge of implementation of the Aftercare Programme

1) Present organization chart, function and staff assignment of the Directorate of Building Research (DBR)
2) Present activities of DBR [c.f. 3-3)]
3) Relations with other governmental organizations, which will support the Aftercare Programme
(especially the relation with Institute for Research and Development of Cellulose Industry)

3. Other Related Items

1) Budgetary condition of DBR and perspective of its defrayal of local cost expenses for the implementation of the Aftercare Programme.
(e.g. expenses for the internal transportation for the machinery and equipment to be provided by Japan; expenses for the supply of the machinery, the equipment, and other materials necessary for the Aftercare Programme other than those provided by Japan; and other running expenses for the Aftercare Programme.)
2) Present positions and activities of the former counterpart personnel of the Project
3) Activities of DBR since the end of the Project [c.f. 2-2)]
(including the results of the Pilot Plant)

(2) セルローズ研究所（IRDCLI）宛

QUESTIONNAIRE ON THE AFTERCARE PROGRAMME FOR THE TECHNICAL COOPERATION ON THE DEVELOPMENT OF BUILDING MATERIALS BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS IN THE REPUBLIC OF INDONESIA

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1) Request for repair of the machinery and equipment provided by Japan and for providing spare parts and consumables.

a. Name of the machinery and equipment needed to be repaired by the Japanese experts. Present condition of the machinery and equipment.
b. Name of the spare parts and the consumables needed to be provided.
c. Other relevant information.

2) Request for supplementary technical cooperation

a. Themes within the scope of R/D which need supplementary technical cooperation by the Japanese short-term experts and the contents of the task of the experts.
b. Name of the machinery and equipment needed to be provided in order to transfer the technology on the theme.
c. Plan for assignment of the counterpart personnel for the Aftercare Programme: Number, name and age, sex, their present position and their qualification.

2. Organization in charge of implementation of the Aftercare Programme

1) Present organization chart, function and staff assignment of Institute for Research and Development of Cellulose Industry (IRDCI)
2) Present activities of IRDCI [c.f. 3-3)]
3) Relations with other governmental organizations, which will support the Aftercare Programme
(especially the relation with Directorate of Building Research)

3. Other Related Items

1) Budgetary condition of IRDCI and perspective of its defrayal of local cost expenses for the implementation of the Aftercare Programme.
(e.g. expenses for the internal transportation for the machinery and equipment to be provided by Japan; expenses for the supply of the machinery, the equipment, and other materials necessary for the Aftercare Programme other than those provided by Japan; and other running expenses for the Aftercare Programme.)
2) Present positions and activities of the former counterpart personnel of the Project
3) Activities of IRDCI since the end of the Project [c.f. 2-2)]
(including the results of the Pilot Plant)

3．質問表(Questionnaire)に対する
インドネシア側回答

(1) 人間居住研究所分

THE TECHNICAL COOPERATION ON THE DEVELOPMENT OF BUILDING MATERIALS BY "THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS IN THE REPUBLIC OF INDONESIA"
(SUPPLEMENTARY REMARKS)

The main purpose of this project is to transfer the production techniques with using local materials.

The production activities of PCB and ALA plant the capacity are designed as a pilot plant, not a comercial plant.

The purpose of the PCB plant is to utilizes agroforestry waste for building materials on the ways to support housing development.

ALA plant is intend to develop light weight building materials especially for the area where the natural aggregat not available and for unstable soil structure area.

Some efforts have been done by IHS for transfering and promoting of these technology through several ways likes trainning course were followed by local participant and foreign participant in in the frame works of Technical Cooperation between Developing Country (TCDC).

Many exhibition concerning Housing and Building Materials were participated on promoting the PCB and ALA by IHS besides the products already implemented for experimental houses and mass housing project ie. Perumnas in Bandung, Ciamis, Cibunut etc.

The other ways are to introduce PCB and ALA to interested private company through production demontration and show them how to implement the products for Building and Housing projects.

For time being the pilot plant could be expected by fully

be repaired by Indonesian technician because the spare parts and technical skill were not available. so the technical assistance Japannese side still needed.

For full capacity production of PCB plant until now. we still have constrained because the drying system depend on the weather, so the quality of the board can not comply with the standard.

Here with we proposal the Japannese side provide the drying machine. pressing machine to improvement the quality and to get high density the PCB.

The improvement of the apperance of PCB are still needed for making competision with the other similar products like plywood, particle board etc.

The laminated and printing machine and equipment very imported provided to solve the problem mention above.

Mean while the PCB and Al.A were new product in Indonesia. to promoted this product to the market we need to study marketing system in supporting building and housing construction development.

To support this activities we need experts in the field of marketing and distribution system.

KTA.18 PROJECT

ON THE DEVELOPMENT OF BUILDING MATERIALS

BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS

IN THE REPUBLIC OF INDONESIA

I.1. Request for repair of the machinery and equipment provided by Japan and for providing spare parts and consumables.

a. Name of the machinery and equipment needed to be repaired by the japanese experts :

- Screen refiner (unsatisfied).
- White water pump (the capasity of pump is too small).
- Cylinder vat (damaged by corrosion).

b. Name of the spareparts and the consumables needed to be provided :

- Cutting machine : Saw blade and Cutting table.
- Wet machine : felt, Cylinder vat, Wire mesh, High pressure pump and chain block (capasity 2,5 ton).

c. Those spareparts is not available in Indonesia and also needed specialized repaired.

For instance : The present condition of the machinery and equipment mostly in still good condition, but some parts of them not yet completely running because not yet fully installed , such as circular saw and

2. Request for supplementary technical cooperation.

a. Themes which need supplementary technical cooperation by the Japanese shosrt-term experts and the contents of the task of the experts as follows :

- Expert for repairing.
- Experts for marketing and implementation of PCB product.

b. Name of the machinery needed to be provided in order to transfer the technology on the theme as follows :

- Drying machine.
- Laminating machine.
- Printing machine.
- Making roll.
- Sanding machine.
- Sinchronizer apparatus for generator set.
- Hydrolic press (manual) 4 ton capasity.
- Change length apparatus.
- Stirrer for mixing polyacrylamide.

c. The counterpart personel for the aftercare programme as follows :

Pulp Cement Board (PCB) plant :

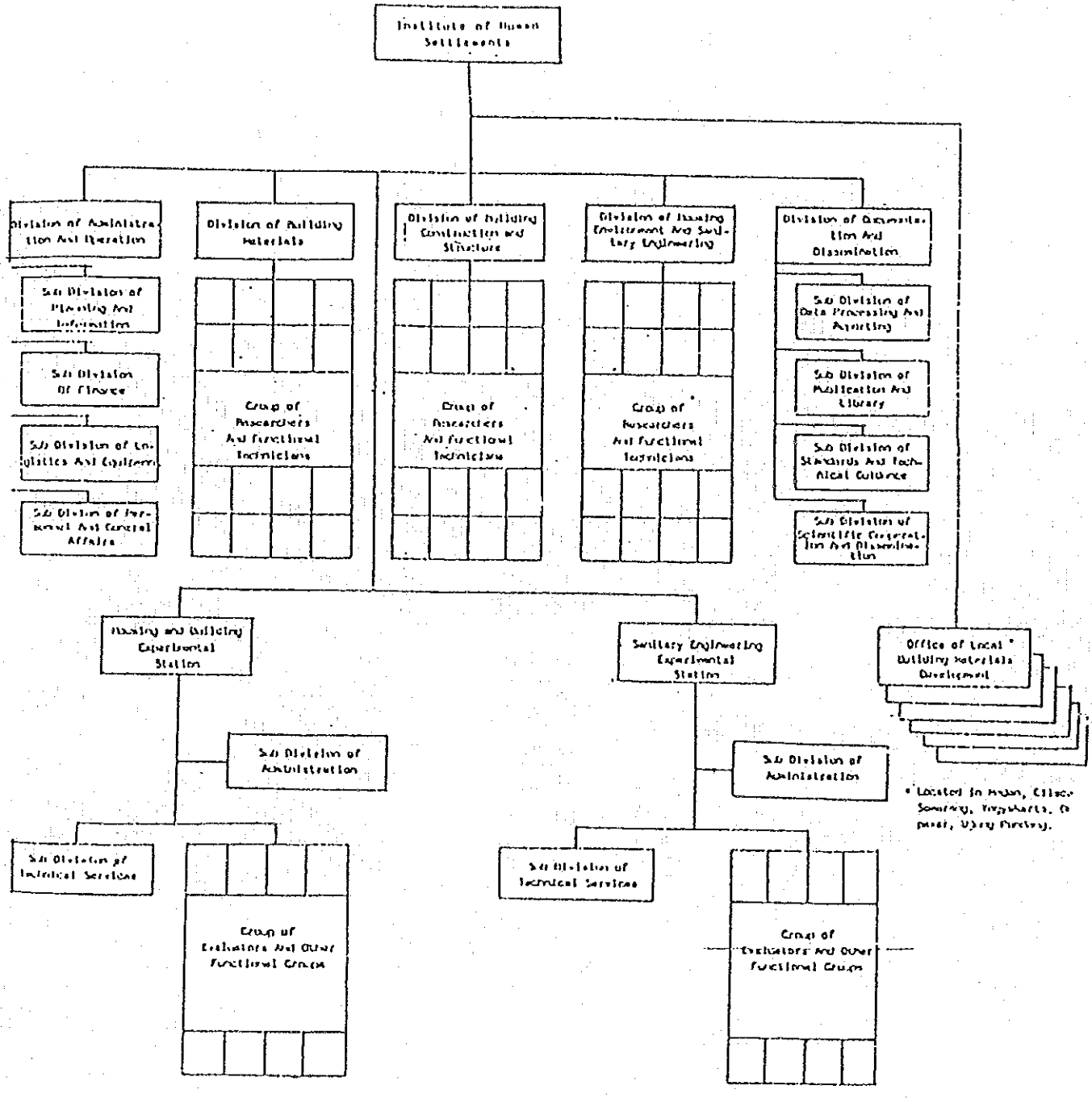
- Mr. Dudung K. 42 years, Male. Researcher of B.M.
- Mr. Utarya , 43 years, Male. Researcher of B.M.
- Mr. Budi , 38 years, Male. Technician.
- Mr. Tumino , 39 years. Male. Technician.

Artificial Light Weight Aggregate (ALWA) plant :

- Mr. Supranggono. 39 years, Male. Researcher of B.M.
- Mr. Purwito. 38 years. Male. Researcher of B.M.
- Mr. Subardjo. 44 years. Male. Researcher of B.M.

II. Organization in charge of implementary of the aftercare programme.

1. The organization chart of the Institutes of Human Settlements as supporting Institute to the Agency of Research and Development, the Ministry of Public Work are as follows:



2. The present activity of Institutes of Human settlements is primarily derived from the National Guidelines Policy, 1983 and yearly targets defined from the Five Years development Plan (Repelita).

The fields of research are as follows:

- Building materials.
- Structure and construction techniques.
- Housing : financing system and land provicion.
- Building safety.
- Building methode.
- Building management.
- water supply.
- Environmental sanitation.
- Man power planning.

3. The relations with other organization, which will support the after care programme:

To conduct a series of experiments on making Pulp Cement Board using various waste raw materials to obtain optimum process condition and production cost and to decide suitable raw materials, the IHS cooperated with the Institutes for Research and Development Cellulose Industry and Forest Product Research Institute.

III. Other related items.

1. Budgetary condition of Institute of HUman Settlement and perspective of its defrayal of local cost expences for the implementation of the aftercare programme.

   All of expences provided by Institute of Human Settlement.

2. The present positions and activities of the former counterpart perssonel of the project as follows:

   - Mr. Duduing K : Researcher of B.M.Division.
     Daily activities : To coordinate PCB production activities and to do R & D of agrowasteforestry materials.
   - Mr. Utarya : Researcher of B.M. Division.
     Daily activities : To coordinate on maintaining the PCB plant machine and technician of water meter testing
   - Mr. Budi : Technician of Experimental Station for Buildings and housing Division.
     Daily activities : Operator of PCB plant and watermeter testing machine.
   - Mr. Tumino : Technician of Experimental Station for Buildings and Housing Division.
     Daily activities : Operator of PCB plant and watermeter testing machine.
   - Mr. Supranggono : Chief of Experimental Sub Station for local building materials in Cilacap.

- Mr. Purwito : Researcher of Building Materials Division.
  Daily activities : To do R & D and also to application of research result for component and Building element..
- Mr. Subardjo : Researcher of Building Materials Division.
  Daily activities : To do R & D and the quality improvement of concrete and PVC pipe testing.

3. The activities of IHS since the end of the project as follows :

   a. PCB plant.

   To conduct research and development of PCB plant on quality control of PCB using different kind of waste materials through cooperation research between IHS and CRI by using agrowaste materials.

   PCB plant also utilized for demonstration plant (especially for local expert and foreign expert) among other things:

   - Staff of Dodoma - Tanzania project (1982).
   - Team of the cooperation Technical Development Country from Ceylon , Bangladesh and Papua New Guinea (1982).
   - Prof. DR. Csorba from UNIDO. Vienna (1983)
     Mr. A. R. Kadolonra. assistant of Director General of Unesco. Paris (1983).
   - Manager staff of Cement Factory PT Tiga Roda (1983).

- On TCDC programme, trainning course on Building Materials Development and Hlman Settlements (1984 & 1986).
- Job trainning (OJT) RENAS from Philipine and Thailand (1985 - 1986).
- Cooperation with some other private company.

b. Ala plant

The activities of ALA plant are: to conduct research and development of ALA plant on quality control through cooperation with other Institute (Road Engineering Institute for bridge structure and Perumnas for Concrete panels).

ALA plant also utilized for demonstration plant and materials testing from the private company among other things :

- PT. EPTCO Cilacap (Sand and coarse aggregate testing).
- PT. Alam Daya sakti Semarang (Lime testing).
- IECA (Japanese team).
- PT. ARSENCO Cilacap (concrete testing).
- PT. TRIAJI Cilacap (concrete testing).
- PT. SUMBER TEKNIK Cilacap (concrete testing).
- PT. MANUNGGAL Cilacap (concrete testing).
- Cooperation with some private company for Job Trainning.

(2) セルローズ研究所分

AFTERCARE PROGRAMME FOR THE TECHNICAL COOPERATION ON THE DEVELOPMENT OF BUILDING MATERIALS BY THE EFFECTIVE USE OF THE LOCALLY AVAILABLE MATERIALS IN THE REPUBLIC OF INDONESIA

1. Request for taking additional care of machinery and equipment provide by Japan.

   1). Request for repair of the machinery and equipment provided by Japan and for providing spare parts and consumables.

   a. Name of machinery and equipment needed to be repaired :

      1. Duster in the raw material preparation unit operates in lower capacity and should be modified to have higher capacity of dust removing.
      2. Control valve of water level control at fresh water tank is not in good operation. A new control valve chould be provided.
      3. Vacuum pump of wet machine is damaged by corrosion and should be repaired.

   b. Name of spare parts and the consumables needed to be provided :

1. Refiner blade for defiberation	3 sets	(3 blades/set)
2. Refiner blade for febrilization	3 sets	(3 blades/set)
3. Grinder for cutter blades	2 sets	
4. Wet machine felt	1 set	
5. Conveyor felt	1 set	
6. Temperature detector for digester	1 set	
7. Crank shaft for Nissan motor car	1 set	

   c. Other relevant information

      In the utilization of the equipments, modification and maintenance have been performed by IRDCLI :

      1. Reparation of agitator
      2. Reparation of steam piping system
      3. Reparation of vacuum pump and motor
      4. Reparation of sludge pump
      5. Reparation on incline conveyor
      6. Reparation of automatic regulation valve
      7. Reparation of chain conveyor
      8. Reparation of chain conveyor
      9. Painting of all machine and equipemnts
      10. To apply piping system for black liquor outlet

2). Request for supplementary technical cooperation

a. Themes which need supplementary technical cooperation by the Japanese short-term experts and the contents of the task of experts are as follows :

One expert for repairing, modification and installation of new machineries and equipments which will be possibly carried out in the pulp plant for having a proper operation of the plant.

b. Name of the machinery needed to be provided in order to transfer the technology on the themes are as follows :

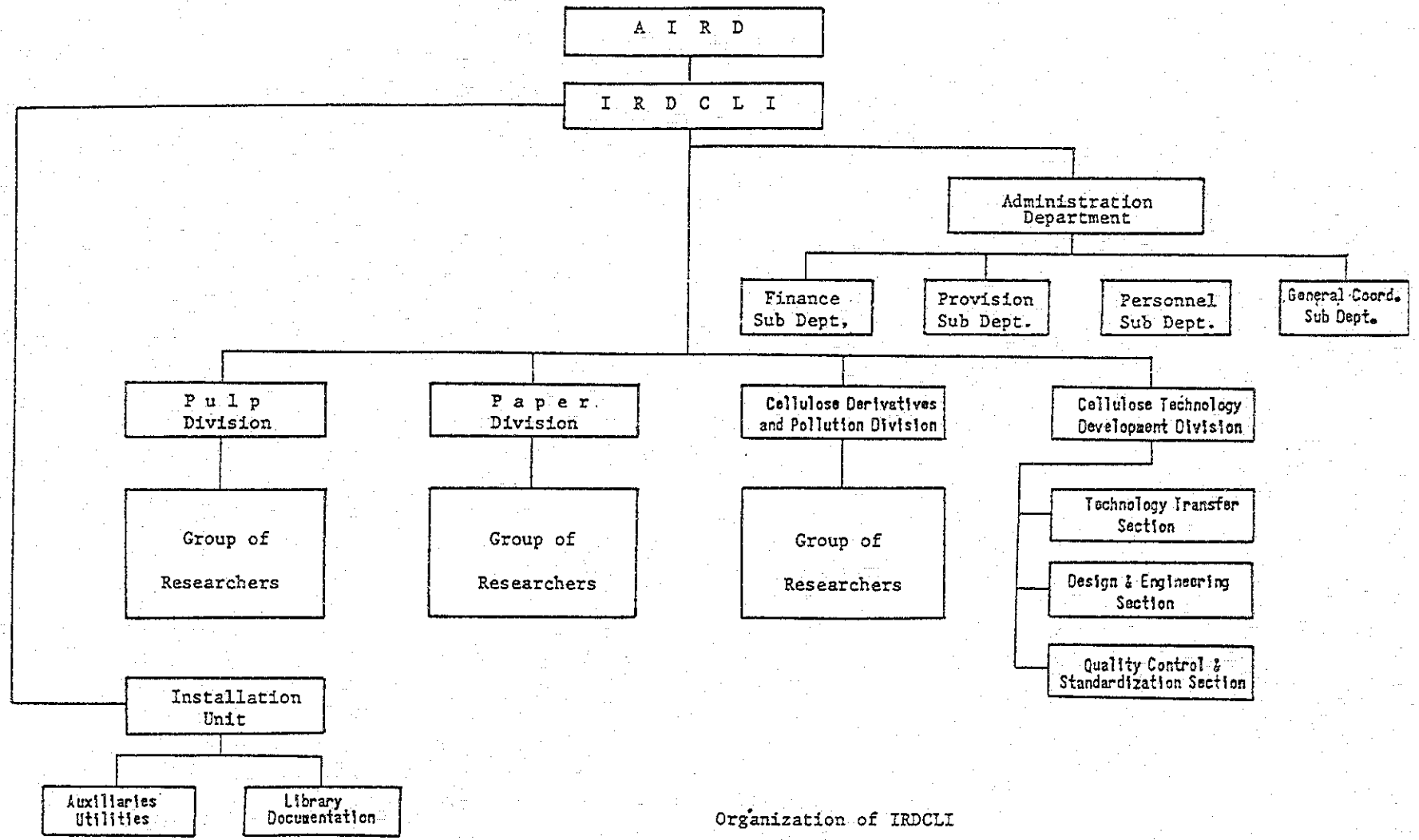
1. Bursting strength tester, for testing the bursting strength of pulp
2. Bending tester, for testing the bending strength of PCB
3. Shredder as attachment of raw material cutting machine that can be used for bagasse shredding
4. Special cutting apparatus as attachment of raw material cutting machine that can be used for kenaf fibre cutting
5. Temperature indicator and recorder should be installed stationary for controlling the heating process in the rotary digester
6. Water flow meter for fresh water supply should be provided to observe the water consumption for pulp production

2. Organization in charge of implementation of the aftercare progamme

1). The present organization chart of IRDCLI are as shown on page 3.

2). The function and staff assignment of IRDCLI are as follows :

1. To conduct applied research, development and engineering activities on utilization of Indonesian fibrous resources including its residues as raw materials for cellulose industries
2. To conduct studies on pollution abatement caused by cellulose industries
3. To furnish engineering and consulting services to the cellulose industries
4. To conduct training for technical staffs of the cellulose industries
5. To promote cellulose technology by cooperating with other agencies both national and international
6. To prepare the draft and to promote Indonesian Industrial Standar in the field of cellulose industries.



Organization of IRDCLI

3). Relation with other governmental organization, which will support the aftercare programme :

Relation and cooperation will be continued with the Institute of Human Settlement, Department of Public Works, to conduct a series of experiments on making Pulp Cement Board by using various waste raw materials. A programme being prepared to use low grade (C grade) kenaf fibre for making long fibre pulp and furthermore an experiment will be conducted to produce Pulp Cement Board by using kenaf pulp.
The C grade kenaf fibre are found as agricultural waste, which amount about 30 % of total kenaf fiber production in Indonesia. Relation will be also performed with a State owned Estate at Semarang, Central Java, which will supply the C grade kenaf fibre.

3. Other Relation Items.

1). Budgeting condition of IRDCLI and perspective of its defrayal of local cost expenses for the complemntation of the Aftercare Programme :

All expenses will be requested to the Department of Industry.

2). Present position and activities of the former counterpart personnels of the project are as follows :

1. Ir. Imam Waluyo	: Head of Cellulose Technology Development Division, IRDCLI
2. Ir. Tri Priyadi Basuki	: Researcher at Paper Research Division, IRDCLI
3. Ir. Gatot Ibnusantosa	: Researcher at Pulp Research Division, IRDCLI (He is now being abroad to follow Post Graduate Programme)
4. Soemardi	: Researcher at Cellulose Technology Development Division, IRDCLI
5. Rasimin Sujono	: Researcher at Pulp Research Division, IRDCLI

All of the former counterpart personnels are always involved in the studies and research activities concerning the use of waste raw material for Pulp Cement Board production.

The researches which have been carried out, are as follows :

1. Research on the use of straw and pine as raw materials of Pulp Cement Board production, by using soda or sulfite process on pulping (1983/1984).

2. The influence of the kind of pulp and the pulp freeness on the quality of Pulp Cement Board (1984/1985)

3. The development of raw materials and processes for Pulp Cement Board making at small scale industries (1986/1987)

4. Research cooperation on the use of nonwood material for Pulp Cement Board production which has been carried out between IRDCLI and Pulp Cement Board Factory at Gresik, Surabaya, East Java (1987/1988)

3). Activities of IRDCLI since the end of the project (since 1984 with regard to the operation of Pulp Pilot Plant) :

1. Pulp making experiment by using meranti (wood waste from plywood factories), with NSSC process : 10 batches for producing PCB and fluting medium

2. Pulp making experiment by using rice straw (agricultural waste), with soda process : 6 batches for PCB and fluting medium

3. Pulp making experiments by using corn stalk, with soda processes : 10 batches for PCB

4. Pulp making experiments by using bagasse (waste from sugar cane factories) by using soda process : 17 batches for PCB

5. Experiment of degumming process of hemp or haramay : 1 batch for textile manufacturing

6. Waste paper refining by using refiner for PCB

7. Pulp making experiment by using kenaf fibre, with soda process : 3 batches for PCB and special paper

8. Pulp making experiments by using kenaf stem, with soda process : 2 batches for PCB and paper

9. Supplying long fibre pulp to PCB factories at Jakarta and Gresik, East Java.

4．専門家派遣要請書(A１フォーム)
及び機材供与要請書(A４フォーム)
signed copy

(1) 人間居住研究所分

a. A1フォーム

Form A.1
(1962 Revision)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA
APPLICATION FOR EXPERT

to the

By the Government of the Republic of Indonesia Government of Japan in respect of the application for experts in the field of Building Materials Development

NOTES (a) This form has been devised for the general guidance of cooperating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical assistance required. Full and accurate completion of this application form will avoid much reference back and lead to speedier action.

(b) The requisite number of copies of the Form A1, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

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1. Background Information
This section should show as precisely as possible the general nature of the project for which the expert is required, stating whether it comes within the Government's development programme It is important to indicate whether the project is a new enterprice or whether it was started previously. In the latter case, any assistance received under other technical co-operation programmes (e.g. under United Nations auspices) should be stated. With regard to industrial enterprices, some impression of the size is important and the output and number of workers to be employed are usefull indications. The type of process, make and age of industrial or scientific equipment with which the expert will be concerned should be specified. In the case of academic establishments, it is an advantage to know the number of annual intake of students, their level of attainment, numbers and status of existing staff and details of any research facilities and the level of research being undertaken.

(Copies of brochures, annual reports, financial statements, calenders, syllabus of instruction etc. should be attached where applicable).

The Technical Cooperation Project on the Development Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both government on July, 9, 1978 for a period of 4 years and was extended for 1 year under the Record of Discussions signed by both Governments on June 2, 1982.

After the technical assistance from the Japanese Government terminated, same of equipment provided by the Japanese Gover ment were not in good condition especial for PCB plant and still needed additions equipment and machinary both either PCB plant or ALA plant.

For promotion of ALA products by mean t improving the technology e.g. changing oil burner system to coal as a fuel to achieve marketing competation with othe material.

In the framework of the above mentioned we would like to request the dispatch o short term experts for repair, maintena and for technology transfer in the fiel of PCB and ALA plant.

2. Specification for the post : (a) post title (b) duties of which the expert will be responsible. These should preferably be listed, and it is important to give as much detail as possible. (c) authority to whom expert will be responsible (d) qualification and experience required and approximate age limits (e) number of personnel required.	a. Expert for after care program b. Expert in the field of : - To repair and maintenance of PCB plant - To install of requested equipment and mechinery. - To develope the existing ALA plant by looking energy alternatif. c. The Institute of Human Settlements. d. Qualified e. 3 experts
3. In the case of continuous projects, give name and particulars of understudy or counterpart who is to work with the expert.	A. Abdurachim Idris Head of Building Materials Division Institute of Human Settlements
4. Terms and conditions of appointment : (a) duration (b) actual place of employment, nearest town and post office (c) if living accomodation to be provided, state whether furnished or unfurnished, and whether suitable for married man with family : (i) daily allowance for food if accomodation only provided (ii) daily rate for accomodation and food if neither are provided in kind (d) daily and nightly rates of subsistence payable when away from base on duty (e) are cost of internal travel paid or car provided ? (f) what leave arrangements are suggested ? (g) extent to which free hospital and medical treatment is to be provided for the expert and his accompanying dependents, if any (h) is expert free from income tax ? (i) will personal effects imported on first arrival be cleard	a. 1 - 3 months b. Institute of Human Settlements, Bandung, Indonesia c. none none none d. none e. yes, IHS will provide car for official purpose f. none g. In accordance with the regulation applied to the officials of the Government of the Republic of Indonesia h. yes i. yes

(j) does host government undertake to indemnify expert in respect of damages awarded against him for actions performed in the course of his official duties ?	yes. except for those arising from willful misconduct on gross negligence the experts.
(k) approximate date on which the expert is required to arrive in receiving country	Feb.1979
(l) any other information	
5. Proposals apportionment of costs of salary and allowance and passages	Not yet
6. Previous steps, if any, to fill the post :	-
If any previous attempt has been made to fill the post under the Colombo Plan (including ICA) or from any external source (UN, Specialised Agency or other) please indicate	
(a) to whom application was addressed with date	-
(b) result or present stage of negotiations	-
(c) are other experts working in this area in assiciated projects or in this field previously ? If so, are any reports by these experts available ?	-
7. Correspondence : Name, postal and telegraphic address of official to whom correspondence regarding this application should be forwarded	Sahat Mulia Pitonga Director of the Institute of Human Settlement Jl Tamansari 54 Bandung Indonesia Telex:28327 DBR ID ta

DEPARTEMEN PEKERJAAN UMUM DAN PENGEMBANGAN PERUMAHAN BADAN PUSAT PENELITIAN DAN PENGEMBANGAN PENUKIMAN

on behalf of the Government of the Republic of Indonesia

For use only Donor Government

b. A4フォーム

Form A. 4
(1962 Revision)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA
Equipment for Training or Research Institutes and for Equipment accompanying Experts

APPLICATION

By the Government of the Republic of Indonesia
from
(Country)

Notes.—(a) This Form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical cooperation required. The careful completion of this application form will avoid much reference back and lead to speedier action. Separate forms A 4 should be used for requests for equipment for each individual institute or project.
(b) The requisite number of copies of the Form A 4, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Background Information Please describe as concisely as possible the general outlines of the project for which the equipment is required, indicating whether the latter is (*a*) for use by an expert in the performance of his duties (*b*) for a training scheme of institution or (*c*) for a research institution. If either (*b*) or (*c*) please say whether the equipment is for the establishment of a new institution or the expansion or re-organisation of an existing one (e.g., by the provision of a new department, &c.). The name and exact location of the institution, its approximate cost and the authority responsible for it should be stated. Where appropriate details should be given of the availability of any services required for the operation of the equipment. This would include operation by electricity (i.e. type of current, periodicity, voltage and any variations, phases, frequency etc. and if D.C. is the only current available please give full details), water reticulation or steam gas etc. Details of similar equipment already in use should be given.	The Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both Governments on June, 2, 1982. After the technical assistance from the Japanese Government terminated, some of the equipments provided by the Japanese Government were not in good condition. We would like to request the dispatch of short term experts for repair and maintenance and for the technology transfer in the field.
2. Description of equipment required. Please give a full description of each item and general specifications where possible. The manufacturer and estimated cost of each item if known together with details of the proposed end use of item should be given. Where applicable, give details of any special packing or tropic proofing required and indicate whether handbooks or instruction data supplied in English will suffice. If appropriate, please indicate any required priorities or phasing of deliveries and advise whether adequate facilities exist for maintenance and servicing of the type of equipment requested. (If lengthy, detailed lists should be annexed: it would be convenient to have separate annexures for (*a*) films, (*b*) books and (*c*) other equipment.)	As in Annex III of Discussions on the Aftercare Program for the Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia. As all equipments are deeply connected with the equipments provided formerly by the Government of Japan. The equipments will be provided by Japanese Government.
3. Has this equipment request already been directed to any other Agency of Colombo Plan country and if so to whom was it addressed an with what result ?	Not yet
4. Has the list of equipment already been discussed with representatives of the supplying country/ies ? If so, please indicate what stage the discussions have reached	Yes, with the aftercare survey team from April 14 to 24 April, 1988.
5. Furnish full particulars in respect of— (*a*) Consignee; (*b*) Official to receive documents and enquiries; and (*c*) Clearing agent at port of entry.	(a) IHS, Jl. Tamansari 84, Bandung, Indonesia. (b) Director of IHS. (c) Will be arranged by the Government of the Republic of Indonesia

6. Where equipment is required for use by an expert Please indicate– (a) The country or agency from which the expert has been requested or obtained. (b) His duties and length of secondment (a reference to the relative Form A. 1 will suffice when the expert is being provided by the country to whom the equipment request is addressed). (c) What use is proposed for the equipment when the expert's period of secondment terminates? (d) By what date is the equipment required?	(a) JICA JAPAN. (b) As statedin form A.1. (c) As training and research facilities, especially in the field of PCB and ALA. (d) in 1988.
7. Where equipment is required for Training or Research Institutions Please indicate– (a) Nature and standard of training or research to be undertaken (b) Total number of students to be accommodated from within the country or from elsewhere in the Region, the qualifications for admission, the duration of courses, and the annual output of trainees (c) Whether there is already a similar institute(s) in existence in the country. If so, please give details (d) Whether buildings are already available. If not has construction started and when is it expected to be completed? (e) Whether qualified staff to handle the equipment has been recruited or is proposed to be recruited locally. If not is it proposed:– (i) to recruit foreigners under aid-programmes? (ii) to train locally recruited personnel abroad in handling equipment? (the reference numbers of any Forms A. 1 or A. 2 relating to such requests should be quoted) (f) Taking into account the answers to (d) and (e) above, what is the date by which the equipment is required and the date on which training or research work is to commence. (g) Whether any assistance in drawing up the Scheme has been obtained from outside experts? (Any specialist reports or Government surveys (e.g., Educational Committee Reports, etc.), bearing on the request should be provided if possible)	(a) Equipments will be used as research facilities to develop PCB & ALA by the effective use of locally available raw materials. (b) --- (c) No. (d) Yes. (e) Yes.
8. Correspondence Name, Postal and Telegraphic Address of official to whom correspondence regarding this proposal is to be forwarded	Institute of Human Settlements, Agency for Research and Development, Department of Public Works, for the attention of the Director of Institute of Human Settlements, Jalan Tamansari 84, Bandung, Indonesia.

Date: .....

on behalf of the Government of the Republic of Indonesia

Signed .....

For use only by Donor Government

Proposal accepted/rejected/withdrawn

Date: .....

on behalf of the Department of .....

(2) セルロース研究所

a. A1フォーム

Form A 1.
(1962 *Revision*)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA

APPLICATION FOR EXPERT

By the Government of the Republic of Indonesia to the Government of Japan

for an expert in the field of maintenance and repair

Notes.— (*a*) This form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical assistance required. Full and accurate completion of this application form will avoid much reference back and lead to speedier action.

(*b*) The requisite number of copies of the Form A 1, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Back ground Information This section should show as precisely as possible the general nature of the project for which the expert is required, stating whether it comes within the Government's development programme. It is important to indicate whether the project is a new enterprise or whether it was started previously. In the latter case, any assistance received under other technical co-operation programmes (e.g. under United Nations auspices) should be stated. With regard to industrial enterprises, some impression of the size is important and the output and number of workers to be employed are useful indications. The type of process, make and age of industrial or scientific equipment with which the expert will be concerned should be specified. In the case of academic establishments, it is an advantage to know the number of annual intake of students, their level of attainment, numbers and status of existing staff and details of any research facilities and the level of research being undertaken (Copies of brochures, annual reports, financial statements, calendars, syllabus of instruction etc. should be attached where applicable).	The Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both government on July 9, 1978 for a period of 4 years and was extended for 1 year under the Record of Discussions signed by both Governments on June 2, 1982. After the tecnical assistance from the Japanese Government terminated, some of the equipments provided by the Japanese Government were not in good condition and the Institute for Research and Development of Cellulose Industries would like to request the dispatch of short term experts for repair and maintenance and for the technology transfer in the field.
2. Specification for the post.* (*a*) post title	Expert for the aftercare programme
(*b*) duties for which the expert will be responsible. These should preferably be listed, and it is important to give as much detail as possible.	Experts in the field of : - repair and maintenance - technology transfer in the field of repair and maintenance
(*c*) authority to whom expert will be responsible	Institute for Research and Development of Cellulose Industries.
(*d*) Qualification and experience required and approximate age limits	Qualified expert in the field of repair and maintenance with long period of industrial experience.
(*e*) number of personnel required.	1 (one)
3. In the case of continuous projects, give name and particulars of understudy or counterpart who is to work with the expert	- Mr. Imam Waluyo, Head of Cellulose Technology Dev.Div., IRDCLI. - Mr. Tri Priyadi Basuki, Researcher - Mr. Gatot Ibnusantosa, Researcher - Mr. Soemardi, Researcher - Mr. Rasimin Sujono, Researcher
4. Terms and condition of appointment: (*a*) duration	1 ~ 3 months
(*b*) actual place of employment, nearest town and post office	Bandung
(*c*) If living accommodation to be provided, state whether furnished or unfornished, and whether suitable for married man with family:	none
(i) daily allowance for food if accommodation only provided	none
(ii) daily rate for accommodation and food if neither are provided in kind	none

* It is essential that full particulars should be given. If the space provided is inadequate, they should be given on a separate sheet.

4. Terms and conditions of appointment (*Cont'd.*)	
(*d*) daily and nightly rates of subsistence payable when away from base on duty	none
(*e*) are costs of internal travel paid or car provided?	yes
(*f*) what leave arrangements are suggested?	none
(*g*) extent to which free hospital and medical treatment is to be provided for the expert and his accompanying dependents, if any	In accordance with the regulation applied to the officials of the Government of the Republic of Indonesia
(*h*) is expert free from income tax?	yes
(*i*) will personal effects imported on first arrival be cleared free of custom duty?	yes
(*j*) does host government undertake to indemnify expert in respect of damages awarded against him for actions performed in the course of his official duties?	yes. Except for those arising from willful misconduct on gross negligence of the experts.
(*k*) approximate date on which the expert is required to arrive in receiving country	February 1989
(*l*) any other information	-
5. Proposals for apportionment of costs of salary and allowance and passages	-
6. Previous steps, if any, to fill the post: If any previous attempt has been made to fill the post under the Colombo Plan (including ICA) or from any external source (UN, Specialised Agency or other) please indicate:	-
(*a*) to whom application was addressed, with date	- -
(*b*) result or present stage of negotiations	- -
(*c*) are other experts working in this area in associated projects or have there been reports by these experts experts working in this field previously? If so, are any available?	none
7. Correspondence: Name, postal and telegraphic address of official to whom correspondence regarding this application should be forwarded	Agency for Industrial Research and Development, Department of Industry, for the attention of the director of Institute for Research and Development of Cellulose Industries, Jln. Raya Dayeuhkolot 158, Bandung, Indonesia.

Signed _____

Date: April 21, 1988 on behalf of the Government of the Republick of Indonesia

DEPARTEMEN PERINDUSTRIAN * BALAI BESAR SELULOSA * BANDUNG

For use only by Donor Government

Application accepted/rejected/withdrawn

on behalf of the Department of _____

Date: _____

b. A4フォーム

Form A. 4
(1962 Revision)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA
Equipment for Training or Research Institutes and for Equipment accompanying Experts

APPLICATION

By the Government of the Republic of Indonesia
from
(Country)

Notes—(*a*) This Form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical cooperation required. The careful completion of this application form will avoid much reference back and lead to speedier action. Separate forms A 4 should be used for requests for equipment for each individual institute or project.
(*b*) The requisite number of copies of the Form A 4, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Background Information Please describe as concisely as possible the general outlines of the project for which the equipment is required, indicating whether the latter is (*a*) for use by an expert in the performance of his duties (*b*) for a training scheme of institution or (*c*) for a research institution. If either (*b*) or (*c*) please say whether the equipment is for the establishment of a new institution or the expansion or re-organisation of an existing one (e.g., by the provision of a new department, &c.). The name and exact location of the institution, its approximato cost and the authority responsible for it should be stated. Where appropriate details should be given of the availability of any services required for the operation of the equipment. This would include operation by electricity (i.e. type of current, periodicity, voltage and any variations, phases, frequency etc. and if D.C. is the only current available please give full details), water reticulation or steam gas etc. Details of similar equipment already in use should be given.	The Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both governments on July 9, 1978, for a period of 4 years and was extended for 1 year under the Record of Discussions signed by both Governments on June 2, 1982. The Technical Cooperation Projects is purposed mainly as training and research facilities. After the technical assistance from the Japanese Governme terminated, some of the equipments provided by the Japanese Government were not in good condition. The Institute for Rese and Development of Cellulose Industries (IRDCLI) would like to request the dispatch of short term experts for repair and mai tenance and for the technology transfer in the field. The equipments will be used with the available power supply as follows : Alternating current, 3 phase, 50 c/s, 380 V between phase lines. Clear process water and heating steam of 12 kg/c are also available.
2. Description of equipment required. Please give a full description of each item and general specifications where possible. The manufacturer and estimated cost of each item if known together with details of the proposed end use of item should be given. Where applicable, give details of any special packing or tropic proofing required and indicate whether handbooks or instruction data supplied in English will suffice. If appropriate, please indicate any required priorities or phasing of deliveries and advise whether adequate facilities exist for maintenance and servicing of the type of equipment requested. (If lengthy, detailed lists should be annexed: it would be convenient to have separate annexures for (*a*) films, (*b*) books and (*c*) other equipment.)	As in Annex III of Discussions on the Aftercare Program for the Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia. As all equipments are deeply connected with the equipments provided formerly by the the Government of Japan. The equipments will be provided by Japanese Government.
3. Has this equipment request already been directed to any other Agency of Colombo Plan country and if so to whom was it addressed an with what result ?	No
4. Has the list of equipment already been discussed with representatives of the supplying country/ies ? If so, please indicate what stage the discussions have reached	Yes, with the Aftercare Survey Team from April 14 to 24, 1988.
5. Furnish full particulars in respect of— (*a*) Consignee ; (*b*) Official to receive documents and enquiries ; and (*c*) Clearing agent at port of entry.	a. IRDCLI, Jl. Raya Dayeuhkolot 158, Bandung, Indonesia b. Director of IRDCLI c. Will be arranged by the Government of the Republic of Indonesia.

6. Where equipment is required for use by an expert Please indicate– (a) The country or agency from which the expert has been requested or obtained. (b) His duties and length of secondment (a reference to the relative Form A. 1 will suffice when the expert is being provided by the country to whom the equipment request is addressed). (c) What use is proposed for the equipment when the expert's period of secondment terminates? (d) By what date is the equipment required?	a. JICA, Japan b. As stated in Form A 1. c. As training and research facilities, especially in the field of Pulp Cement Board d. In 1988
7. Where equipment is required for Training or Research Institutions Please indicate– (a) Nature and standard of training or research to be undertaken (b) Total number of students to be accommodated from within the country or from elsewhere in the Region, the qualifications for admission, the duration of courses, and the annual output of trainees (c) Whether there is already a similar institute(s) in existence in the country. If so, please give details (d) Whether buildings are already available. If not has construction started and when is it expected to be completed? (e) Whether qualified staff to handle the equipment has been recruited or is proposed to be recruited locally. If not is it proposed:– (i) to recruit foreigners under aid-programmes? (ii) to train locally recruited personnel abroad in handling equipment? (the reference numbers of any Forms A. 1 or A. 2 relating to such requests should be quoted) (f) Taking into account the answers to (d) and (e) above, what is the date by which the equipment is required and the date on which training or research work is to commence. (g) Whether any assistance in drawing up the Scheme has been obtained from outside experts? (Any specialist reports or Government surveys (e.g., Educational Committee Reports, etc.), bearing on the request should be provided if possible)	a. Equipments will be used as research facilities to develop Pulp Cement Board by the effective use of locally available raw materials. b. – c. No d. Yes e. Yes f. In 1988
8. Correspondence Name, Postal and Telegraphic Address of official to whom correspondence regarding this proposal is to be forwarded	Agency for Industrial Research and Development, Department of Industry, for the attention of the director of Institute for Research and Development of Cellulose Industries, Jln. Raya Dayeuhkolot 158, Bandung, Indonesia.

Signed .....

Date: April 21, 1988 on behalf of the Government of the Republic of Indonesia

For use only by Donor Government

Proposal accepted/rejected/withdrawn

on behalf of the Department of .....

Date: .....

５．専門家派遣要請書(Ａ１フォーム)
及び機材供与要請書(Ａ４フォーム)

SEKRETARIAT NEGARA
SEKRETARIAT KABINET RI

Jakarta, 17 June 1988

No. KL.02.00/ANCP/630

Mr. Toshiro Nakagaki
First Secretary
Embassy of Japan
JAKARTA

Dear Mr. Nakagaki,

KTA-18: DEVELOPMENT BUILDING MATERIALS BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS

I would like to submit a technical assistance request for the services of three experts in Building Materials Development and the provision of equipment to the project KTA-18: Development Building Materials by the Effective Use of Locally Available Raw Materials as after care assistance.

For your perusal I enclose the Colombo Plan Application Forms A1 and A4 for the provision of experts and equipment respectively.

I would highly appreciate your kind assistance in forwarding this request to your Government for their favourable consideration and approval.

Thank you for your continued cooperation.

Sincerely yours,

M. Moersalin Parindury
NIP. 180001267
for Head,
Bureau of Technical Cooperation

cc:

1. Setjen. Departemen Pekerjaan Umum.
2. Balitbang Departemen Pekerjaan Umum.
3. Biro KELN, BAPPENAS.
4. JICA Indonesia Office di Jakarta.

JUN 21 1988 RECEIVED Embassy of Japan, Indonesia

JICA RECEIVED JUN. 22. 88 Japan International Cooperation Agency Indonesia 114

(1) 人間居住研究所分

a. A1フォーム

Form A.1
(1962 Revision)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA
APPLICATION FOR EXPERT

By the Government of the Republic of Indonesia to the Government of Japan in respect of the application for experts in the field of Building Materials Development

NOTES (a) This form has been devised for the general guidance of cooperating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical assistance required. Full and accurate completion of this application form will avoid much reference back and lead to speedier action.

(b) The requisite number of copies of the Form A1, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Background Information This section should show as precisely as possible the general nature of the project for which the expert is required, stating whether it comes within the Government's development programme It is important to indicate whether the project is a new enterprice or whether it was started previously. In the latter case, any assistance received under other technical co-operation programmes (e.g. under United Nations auspices) should be stated. With regard to industrial enterprices, some impression of the size is important and the output and number of workers to be employed are usefull indications. The type of process, make and age of industrial or scientific equipment with which the expert will be concerned should be specified. In the case of academic establishments, it is an advantage to know the number of annual intake of students, their level of attainment, numbers and status of existing staff and details of any research facilities and the level of research being undertaken. (Copies of brochures, annual reports, financial statements, calenders, syllabus of instruction etc. should be attached where applicable)	The Technical Cooperation Project on the Development Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both government on July, 9, 1978 for a period of 4 years and was extended for 1 year under the Record of Discussions signed by both Governments on June 2, 1982. After the technical assistance from the Japanese Government terminated, same of equipment provided by the Japanese Gover ment were not in good condition especial for PCB plant and still needed additiona equipment and machinary both either PCB plant or ALA plant. For promotion of ALA products by mean t improving the technology e.g. changing oil burner system to coal as a fuel to achieve marketing competation with othe material. In the framework of the above mentioned we would like to request the dispatch o short term experts for repair, maintena and for technology transfer in the fiel of PCB and ALA plant.

2. Specification for the post :	
(a) post title	a. Expert for after care program
(b) duties of which the expert will be responsible. These should preferably be listed, and it is important to give as much detail as possible.	b. Expert in the field of ; - To repair and maintenance of PCB plant - To install of requested equipment and mechinery. - To develope the existing ALA plant by looking energy alternatif.
(c) authority to whom expert will be responsible	c. The Institute of Human Settlements.
(d) qualification and experience required and approximate age limits	d. Qualified
(e) number of personnel required.	e. 3 experts
3. In the case of continuous projects, give name and particulars of understudy or counterpart who is to work with the expert.	A. Abdurachim Idris Head of Building Materials Division Institute of Human Settlements
4. Terms and conditions of appointment :	
(a) duration	a. 1 - 3 months
(b) actual place of employment, nearest town and post office	b. Institute of Human Settlements, Bandung, Indonesia
(c) if living accomodation to be provided, state whether furnished or unfurnished, and whether suitable for married man with family :	c. none
(i) daily allowance for food if accomodation only provided	none.
(ii) daily rate for accomodation and food if neither are provided in kind	none
(d) daily and nightly rates of subsistence payable when away from base on duty	d. none
(e) are cost of internal travel paid or car provided ?	e. yes, IHS will provide car for official purpose
(f) what leave arrangements are suggested ?	f. none
(g) extent to which free hospital and medical treatment is to be provided for the expert and his accompanying dependents, if any	g. In accordance with the regulation applied to the officials of the Government of the Republic of Indonesia
(h) is expert free from income tax ?	h. yes
(i) will personal effects imported on first arrival be cleard	i. yes

(j) does host government undertake to indemnify expert in respect of damages awarded against him for actions performed in the course of his official duties ?	yes. except for those arising from willful misconduct on gross negligence the experts.
(k) approximate date on which the expert is required to arrive in receiving country	Feb.1979
(l) any other information	
5. Proposals apportionment of costs of salary and allowance and passages	Not yet
6. Previous steps, if any, to fill the post :	–
If any previous attempt has been made to fill the post under the Colombo Plan (including ICA) or from any external source (UN, Specialised Agency or other) please indicate	
(a) to whom application was addressed with date	–
(b) result or present stage of negotiations	–
(c) are other experts working in this area in assiciated projects or in this field previously ? If so, are any reports by these experts available ?	–
7. Correspondence : Name, postal and telegraphic address of official to whom correspondence regarding this application should be forwarded	Karman Somawidjaja, Agency for Research and Development, Ministry of Public Works, Jl. Pattimura 20, phones : 736062, 715083, telex : 87254 DEPPU JKT Kebayoran Baru, Jakarta Selatan, Indonesia.

Biro Kerja Sama Teknik Luar Negeri
Bagian Antar Negara
Drs. Wahid Salim

DEPARTEMEN PEKERJAAN UMUM
BADAN PENELITIAN DAN PENGEMBANGAN PU

Signed: Karman Somawidjaja
Director General
on behalf of the Government of Indonesia.

For use only Donor Government

b. A4フォーム

Form A. 4
(1962 Revision)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA
Equipment for Training or Research Institutes and for Equipment accompanying Experts

APPLICATION

By the Government of the Republic of Indonesia

from ..... (Country)

Notes.—(*a*) This Form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical cooperation required. The careful completion of this application form will avoid much reference back and lead to speedier action. Separate forms A 4 should be used for requests for equipment for each individual institute or project.

(*b*) The requisite number of copies of the Form A 4, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Background Information Please describe as concisely as possible the general outlines of the project for which the equipment is required, indicating whether the latter is (*a*) for use by an expert in the performance of his duties (*b*) for a training scheme of institution or (*c*) for a research institution. If either (*b*) or (*c*) please say whether the equipment is for the establishment of a new institution or the expansion or re-organisation of an existing one (e.g., by the provision of a new department, &c.). The name and exact location of the institution, its approximate cost and the authority responsible for it should be stated. Where appropriate details should be given of the availability of any services required for the operation of the equipment. This would include operation by electricity (i.e. type of current, periodicity, voltage and any variations, phases, frequency etc. and if D.C. is the only current available please give full details), water reticulation or steam gas etc. Details of similar equipment already in use should be given.	The Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both Governments on June, 2, 1982. After the technical assistance from the Japanese Government terminated, some of the equipments provided by the Japanese Government were not in good condition. We would like to request the dispatch of short term experts for repair and maintenance and for the technology transfer in the field.
2. Description of equipment required. Please give a full description of each item and general specifications where possible. The manufacturer and estimated cost of each item if known together with details of the proposed end use of item should be given. Where applicable, give details of any special packing or tropic proofing required and indicate whether handbooks or instruction data supplied in English will suffice. If appropriate, please indicate any required priorities or phasing of deliveries and advise whether adequate facilities exist for maintenance and servicing of the type of equipment requested. (If lengthy, detailed lists should be annexed: it would be convenient to have separate annexures for (*a*) films, (*b*) books and (*c*) other equipment.)	As in Annex III of Discussions on the Aftercare Program for the Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia. As all equipments are deeply connected with the equipments provided formerly by the Government of Japan. The equipments will be provided by Japanese Government.
3. Has this equipment request already been directed to any other Agency of Colombo Plan country and if so to whom was it addressed an with what result ?	Not yet
4. Has the list of equipment already been discussed with representstives of the supplying country/ies ? If so, please indicate what stage the discussions have reached	Yes, with the aftercare survey team from April 14 to 24 April, 1988.
5. Furnish full particulars in respect of— (*a*) Consignee; (*b*) Official to receive documents and enquiries; and (*c*) Clearing agent at port of entry.	(a) IHS, Jl. Tamansari 84, Bandung, Indonesia. (b) Director of IHS. (c) Will be arranged by the Government of the Republic of Indonesia

6. Where equipment is required for use by an expert Please indicate– (a) The country or agency from which the expert has been requested or obtained. (b) His duties and length of secondment (a reference to the relative Form A. 1 will suffice when the expert is being provided by the country to whom the equipment request is addressed). (c) What use is proposed for the equipment when the expert's period of secondment terminates? (d) By what date is the equipment required?	(a) JICA JAPAN. (b) As statedin form A.1. (c) As training and research facilities, especially in the field of PCB and ALA. (d) in 1988.
7. Where equipment is required for Training or Research Institutions Please indicate– (a) Nature and standard of training or research to be undertaken (b) Total number of students to be accommodated from within the country or from elsewhere in the Region, the qualifications for admission, the duration of courses, and the annual output of trainees (c) Whether there is already a similar Institute(s) in existence in the country. If so, please give details (d) Whether buildings are already available. If not has construction started and when is it expected to be completed? (e) Whether qualified staff to handle the equipment has been recruited or is proposed to be recruited locally. If not is it proposed:– (i) to recruit foreigners under aid-programmes? (ii) to train locally recruited personnel abroad in handling equipment? (the reference numbers of any Forms A. 1 or A. 2 relating to such requests should be quoted) (f) Taking into account the answers to (d) and (e) above, what is the date by which the equipment is required and the date on which training or research work is to commence. (g) Whether any assistance in drawing up the Scheme has been obtained from outside experts? (Any specialist reports or Government surveys (e.g., Educational Committee Reports, etc.), bearing on the request should be provided if possible)	(a) Equipments will be used as research facilities to develop PCB & ALA by the effective use of locally available raw materials. (b) --- (c) No. (d) Yes. (e) Yes.
8. Correspondence Name, Postal and Telegraphic Address of official to whom correspondence regarding this proposal is to be forwarded	Director General, Agency of Research and Development Ministry of Public Works. Jl. Pattimura 20 Kebayoran Baru – Jakarta Selatan, Indonesia Telex : 47340 SJ DPU

Kepala Bagian Antar Negara
Biro Kerja Sama Teknik Luar Negeri

Date:

Drs. Wahid Salim

Signed: Karman Somawidjaja
Director General
On behalf of the Government of Indonesia.

For use only by Donor Government

Proposal accepted/rejected/withdrawn

on behalf of the Department of .....

Date: .....

SEKRETARIAT NEGARA
SEKRETARIAT KABINET RI

Jakarta, 7 July , 1988

No. KL.02.00/ANCP/705

Mr. Toshiro Nakagaki
First Secretary
Embassy of Japan
JAKARTA

Dear Mr. Nakagaki,

KTA-18: THE DEVELOPMENT OF BUILDING MATERIALS BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS

I would like to submit a technical assistance request for the services of two experts to the project KTA-18: The Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia as after care assistance.

The experts required are:
- ~~One~~ two in Repair and Maintenance
- One in Technology Transfer in Repair and Maintenance.

For your perusal I enclose the Colombo Plan Application Form A1 for the prvision of experts.

I would highly appreciate your kinds assistance in forwarding this request to your Government for their favourable consideration and approval.

Thank you for your continued cooperation.

Sincerely yours,

Moh. Widodo Gondowardojo
NIP. 180001398
Head,
Bureau for Technical
Cooperation.

cc:
1. Setjen. Departemen Perindustrian.
2. Badan Litbang Industri, Dep. Perindustrian.
3. Biro KELN, BAPPENAS.
4. JICA Indonesia Office di Jakarta.

JUL. 9. 1988 RECEIVED Embassy of Japan, Indonesia

JICA RECEIVED JUL. 11. 88 Japan International Cooperation Agency Indonesia 136

(2) セルロース研究分

a. A1フォーム

Form A 1.
(1962 Revision)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA

APPLICATION FOR EXPERT

By the Government of the Republic of Indonesia to the Government of Japan

for an expert in the field of maintenance and repair

Notes— (a) This form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical assistance required. Full and accurate completion of this application form will avoid much reference back and lead to speedier action.

(b) The requisite number of copies of the Form A 1, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Back ground information This section should show as precisely as possible the general nature of the project for which the expert is required, stating whether it comes within the Government's development programme. It is important to indicate whether the project is a new enterprise or whether it was started previously. In the latter case, any assistance received under other technical co-operation programmes (e.g. under United Nations auspices) should be stated. With regard to industrial enterprises, some impression of the size is important and the output and number of workers to be employed are useful indications. The type of process, make and age of industrial or scientific equipment with which the expert will be concerned should be specified. In the case of academic establishments, it is an advantage to know the number of annual intake of students, their level of attainment, numbers and status of existing staff and details of any research facilities and the level of research being undertaken (Copies of brochures, annual reports, financial statements, calendars, syllabus of instruction etc. should be attached where applicable).	The Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both government on July 9, 1978 for a period of 4 years and was extended for 1 year under the Record of Discussions signed by both Governments on June 2, 1982. After the tecnical assistance from the Japanese Government terminated, some of the equipments provided by the Japanese Government were not in good condition and the Institute for Research and Development of Cellulose Industries would like to request the dispatch of short term experts for repair and maintenance and for the technology transfer in the field.
2. Specification for the post.* (a) post title	Expert for the aftercare programme
(b) duties for which the expert will be responsible. These should preferably be listed, and it is important to give as much detail as possible.	Experts in the field of : - repair and maintenance - technology transfer in the field of repair and maintenance
(c) authority to whom expert will be responsible	Institute for Research and Development of Cellulose Industries.
(d) Qualification and experience required and approximate age limits	Qualified expert in the field of repair and maintenance with long period of industrial experience.
(e) number of personnel required.	1 (one)
3. In the case of continuous projects, give name and particulars of understudy or counterpart who is to work with the expert	- Mr. Imam Waluyo, Head of Cellulose Technology Dev.Div., IRDCLI. - Mr. Tri Priyadi Basuki, Researcher - Mr. Gatot Ibnusantosa, Researcher - Mr. Soemardi, Researcher - Mr. Rasimin Sujono, Researcher
4. Terms and condition of appointment; (a) duration	1 - 3 months
(b) actual place of employment, nearest town and post office	Bandung
(c) If living accommodation to be provided, state whether furnished or unfurnished, and whether suitable for married man with family:	none
(i) daily allowance for food if accommodation only provided	none
(ii) daily rate for accommodation and food if neither are provided in kind	none

* It is essential that full particulars should be given. If the space provided is inadequate, they should be given on a separate sheet.

4. Terms and conditions of appointment (*Cont'd.*) (*d*) daily and nightly rates of subsistence payable when away from base on duty	none
(*e*) are costs of internal travel paid or car provided?	yes
(*f*) what leave arrangements are suggested?	none
(*g*) extent to which free hospital and medical treatment is to be provided for the expert and his accompanying dependents, if any	In accordance with the regulation applied to the officials of the Government of the Republic of Indonesia
(*h*) is expert free from income tax?	yes
(*i*) will personal effects imported on first arrival be cleared free of custom duty?	yes
(*j*) does host government undertake to indemnify expert in respect of damages awarded against him for actions performed in the course of his official duties?	yes. Except for those arising from willful misconduct on gross negligence of the experts.
(*k*) approximate date on which the expert is required to arrive in receiving country	February 1989
(*l*) any other information	–
5. Proposals for apportionment of costs of salary and allowance and passages	–
6. Previous steps, if any, to fill the post: If any previous attempt has been made to fill the post under the Colombo Plan (including ICA) or from any external source (UN, Specialised Agency or other) please indicate:	–
(*a*) to whom application was addressed, with date	–
(*b*) result or present stage of negotiations	–
(*c*) are other experts working in this area in associated projects or have there been reports by these experts experts working in this field previously? If so, are any available?	none
7. Correspondence: Name, postal and telegraphic address of official to whom correspondence regarding this application should be forwarded	Agency for Industrial Research and Development, Department of Industry, for the attention of the director of Institute for Research and Development of Cellulose Industries, Jln.Raya Dayeuhkolot 158, Bandung, Indonesia.

Signed: _____

Date: _____ on behalf of the Government of the Republick of Indonesia

Biro Kerja Sama Teknik Luar Negeri

Drs. Wahid Salim

For use only by Donor Government

Application accepted/rejected/withdrawn

Date: June 16, 1988 on behalf of the Department of Industry

A.S. Siagian

Head, Bureau for International Relations
Ministry of Industry

SEKRETARIAT NEGARA
SEKRETARIAT KABINET RI

Jakarta, 3 August 1988

No. KL.05.12/ANCP/823

Mr. Toshiro Nakagaki
First Secretary
Embassy of Japan
JAKARTA

Dear Mr. Nakagaki,

KTA-18: DEVELOPMENT OF BUILDING MATERIALS BY THE EFFECTIVE USE OF LOCALLY AVAILABLE RAW MATERIALS IN THE REPUBLIC OF INDONESIA

I would like to submit a technical assistance request for the provision of suplementary equipment and spareparts for the project KTA-18: Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia.

For your perusal I enclose 4 copies of the Colombo Plan Application Form A4 for the provision of equipment.

I would highly appreciate your kind assistance in forwarding this request to your Government for their favourable consideration and approval.

Thank you for your continued cooperation.

Sincerely yours,

M. Moersalin Parindury
NIP. 180001267
for Head,
Bureau for Technical Cooperation

cc:

1. Setjen. Departemen Perindustrian.
2. Badan Penelitian dan Pengembangan Industri, Departemen Perindustrian.
3. Biro KELN, BAPPENAS.
4. JICA Indonesia Office di Jakarta.

b. A4フォーム

Form A. 4
(1962 Revision)

THE COLOMBO PLAN
COUNCIL FOR TECHNICAL CO-OPERATION IN SOUTH AND SOUTH-EAST ASIA
Equipment for Training or Research Institutes and for Equipment accompanying Experts

APPLICATION

By the Government of the Republic of Indonesia
from
(Country)

Notes—(a) This Form has been devised for the general guidance of co-operating countries in order to facilitate the supply of relevant information and data necessary to afford an adequate appreciation of the nature of the technical cooperation required. The careful completion of this application form will avoid much reference back and lead to speedier action. Separate forms A 4 should be used for requests for equipment for each individual institute or project.
(b) The requisite number of copies of the Form A 4, including a copy for the Colombo Plan Bureau, duly endorsed by the appropriate Foreign Aid Department of the requesting government should be forwarded to the donor government concerned through the appropriate channels.

1. Background Information Please describe as concisely as possible the general outlines of the project for which the equipment is required, indicating whether the latter is (*a*) for use by an expert in the performance of his duties (*b*) for a training scheme of institution or (*c*) for a research institution. If either (*b*) or (*c*) please say whether the equipment is for the establishment of a new institution or the expansion or re-organisation of an existing one (e. g., by the provision of a new department, &c.). The name and exact location of the institution, its approximate cost and the authority responsible for it should be stated. Where appropriate details should be given of the availability of any services required for the operation of the equipment. This would include operation by electricity (i. e. type of current, periodicity, voltage and any variations, phases, frequency etc. and if D. C. is the only current available please give full details), water reticulation or steam gas etc. Details of similar equipment already in use should be given.	The Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia was implemented by the assistance of Japanese Government under the Record of Discussions signed by both governments on July 9, 1978, for a period of 4 years and was extended for 1 year under the Record of Discussions signed by both Governments on June 2, 1982. The Technical Cooperation Projects is purposed mainly as training and research facilities. After the technical assistance from the Japanese Government terminated, some of the equipments provided by the Japanese Government were not in good condition. The Institute for Researc and Development of Cellulose Industries (IRDCLI) would like to request the dispatch of short term experts for repair and maintenance and for the technology transfer in the field. The equipments will be used with the available power supply as follows : Alternating current, 3 phase, 50 c/s, 380 V between phase lines. Clear process water and heating steam of 12 kg/cm^2 are also available.
2. Description of equipment required. Please give a full description of each item and general specifications where possible. The manufacturer and estimated cost of each item if known together with details of the proposed end use of item should be given. Where applicable, give details of any special packing or tropic proofing required and indicate whether handbooks or instruction data supplied in English will suffice. If appropriate, please indicate any required priorities or phasing of deliveries and advise whether adequate facilities exist for maintenance and servicing of the type of equipment requested. (If lengthy, detailed lists should be annexed: it would be convenient to have separate annexures for (*a*) films, (*b*) books and (*c*) other equipment.)	As in Annex III of Discussions on the Aftercare Program for the Technical Cooperation Project on the Development of Building Materials by the Effective Use of Locally Available Raw Materials in the Republic of Indonesia. As all equipments are deeply connected with the equipments provided formerly by the the Government of Japan. The equipments will be provided by Japanese Government.
3. Has this equipment request already been directed to any other Agency of Colombo Plan country and if so to whom was it addressed an with what result ?	No
4. Has the list of equipment already been discussed with representatives of the supplying country/ies ? If so, please indicate what stage the discussions have reached	Yes, with the Aftercare Survey Team from April 14 to 24, 1988.
5. Furnish full particulars in respect of— (*a*) Consignee ; (*b*) Official to receive documents and enquiries ; and (*c*) Clearing agent at port of entry.	a. IRDCLI, Jl. Raya Dayeuhkolot 158, Bandung, Indonesia b. Director of IRDCLI c. Will be arranged by the Government of the Republic of Indonesia.

6. Where equipment is required for use by an expert Please indicate– (a) The country or agency from which the expert has been requested or obtained. (b) His duties and length of secondment (a reference to the relative Form A. 1 will suffice when the expert is being provided by the country to whom the equipment request is addressed). (c) What use is proposed for the equipment when the expert's period of secondment terminates? (d) By what date is the equipment required?	a. JICA, Japan b. As stated in Form A 1. c. As training and research facilities, especially in the field of Pulp Cement Board d. In 1988
7. Where equipment is required for Training or Research Institutions Please indicate– (a) Nature and standard of training or research to be undertaken (b) Total number of students to be accommodated from within the country or from elsewhere in the Region, the qualifications for admission, the duration of courses, and the annual output of trainees (c) Whether there is already a similar institute(s) in existence in the country. If so, please give details (d) Whether buildings are already available. If not has construction started and when is it expected to be completed? (e) Whether qualified staff to handle the equipment has been recruited or is proposed to be recruited locally. If not is it proposed:– (i) to recruit foreigners under aid-programmes? (ii) to train locally recruited personnel abroad in handling equipment? (the reference numbers of any Forms A. 1 or A. 2 relating to such requests should be quoted) (f) Taking into account the answers to (d) and (e) above, what is the date by which the equipment is required and the date on which training or research work is to commence. (g) Whether any assistance in drawing up the Scheme has been obtained from outside experts? (Any specialist reports or Government surveys (e.g., Educational Committee Reports, etc.), bearing on the request should be provided if possible)	a. Equipments will be used as research facilities to develop Pulp Cement Board by the effective use of locally available raw materials. b. – c. No d. Yes e. Yes f. In 1988
8. Correspondence Name, Postal and Telegraphic Address of official to whom correspondence regarding this proposal is to be forwarded	Agency for Industrial Research and Development, Department of Industry, for the attention of the director of Institute for Research and Development of Cellulose Industries, Jalan Raya Dayeuhkolot 158, Bandung, Indonesia.

Date: April 21, 1988

Signed .....

on behalf of the Government of the Republic of Indonesia

For use only by Donor Government

Proposal accepted/rejected/withdrawn

Kepala Bagian Antar Negara
Biro Kerja Sama Teknik Luar Negeri

Date: .....

Adik Bantarso Bandoro

on behalf of the Department of .....

Ilchaidi Elias, SE
Head, Bureau of Planning
Ministry of Industry

EQUIPMENTS TO BE PROVIDED BY THE GOVERNMENT OF JAPAN
THROUGH JICA

Item	Name of Equipment	Specification	Amount	Purpose
1.	Equipment for Supplemental Technical Guidance			
1.1.	Bursting Strength Tester	Mullen Type Bursting Tester; High Pressure Type Pressure Gauge : 0 - 50 kgf/cm² 0 - 70 kgf/cm² Pressure Speed : 170 ± 20 ml/min Motor : 200 W.220V.	1 set	For testing the bursting strength of pulp
1.2.	Bending Tester	Strograph Type Load range : max. 500 kgf Load indicating accuracy : 1,0 % Cross head stroke : approx. 1100 mm Cross head speed : 0,5 - 500 mm/min Recorder : X-T type chart width : 250 mm x 15 m Electric source : 220 V 50 Hz	1 set	For testing the bending strength of Pulp Cement Board
1.3.	Kenaf fibre cutter	Enable to vary the speed of cutter or the speed of feeder, to produce kenaf fibre of 50 mm length	1 set	The existing motor drive : - Cutter drive : 7.5 Kw 380 V 6 pole - Feeder I drive : 2.2 Kw 380 V 4 hole - Feeder II drive 2.2 Kw 380 V 6 pole
1.4.	Water meter	To be installed for 4 in pipe	1 set	To measure the fresh water quantity used for pulping process
1.5.	Bagasse Shredder	see attached drawing	1 set (3 pcs)	For bagasse shredding

Item	Name of Equipment	Specification	Amount	Purpose
1.6.	Temperature indicator & recorder (Stationary installed)	For temperature range of 0 - 250°C		To measure and record the heating temperature in the rotating digester
2.	Spare Parts for the Machinery and Equipment			
2.1.	Cutter blades	Special size for cutting machine	1 set	For straw cutting
2.2.	Grinder for cutter blades	Outside dia. 25 cm Inside dia. 2 cm Width dia. 1.5 cm	2 sets	For cutter blades sharperner
2.3.	Conveyor belt	0.3 x 47 x 250 cm	2 sets	For feeder of cutting machine
		0.5 x 47 x 121 cm	1 set	For cutting machine.
		0.7 x 50 x cm	1 set	For conveyor
2.4.	Wet machine felt	1275 x 14100 mm	1 set	For wet machine
2.5.	Blower	To increase the blowing capacity of the duster	1 set	The existing blower motor : 3.7 Kw 380 V 4 pole
2.6.	Vacuum pump	Toshiba Seiki Co. GSL - 400 motor : 0.75 Kw 380 V 14 w rpm	1 set	For PCB sheet former apparatus
2.7.	Control Valve	Tsubakimoto Chain Co. Osaka Form : tt-EGB Frame : SG Motor : 380 V 50 Hz 4 pole rotor : D	1 set	For fresh water level control
2.8.	Temperature Detector	Temperature range of 0 - 300°C	1 set	For rotary digester
2.9.	Crane shaft	See attached drawing	1 set	For Nissan motor car
2.10.	Refiner blades	No. 1 and No. 2	2 sets	For defiberation
2.11.	Refiner blades	No. 5 and No. 6	2 sets	For fibrilization

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