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ITTO PROJECT PD 37/88 REV.3 (I)

INDUSTRIAL USE OF FOREST SPECIES IN PERU (PHASE I AND II)

EX-POST EVALUATION REPORT

Prepared for ITTO

by

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ITTO project PD 37/88 Rev.3 (I)
INDUSTRIAL USE OF FOREST SPECIES IN PERU (PHASE I AND II)

Ex-post evaluation Report

Part I. EXECUTIVE SUMMARY

1. Background Information

PD 37/88 Rev. 3 (I) Phase I and II «Industrial Utilisation of New Forest Species in Peru» was originally approved in 1989 as a two year project to total ITTO contribution of USD 910,000 and a Peruvian contribution (in kind) of USD 380,500. Financing was authorised later the same year and the project implementation started in April 1990. Later, the project was redefined in two phases with a lapse of six months between phases. Also, an additional USD 15,071 was granted by ITTO to ensure the completion of the project which ended in March 1993.

The total cost for this project was thus;

ITTO	USD	910,000
«	«	<u>15,071</u>
Sub total ITTO	«	925,071
GOT Peru	«	380,500

Grand total USD 1.305,571

The underlying aim (Development Objective) of the project was to increase the economic value of forests resources and improve the returns and productivity of tropical forest utilisation in Peru, while at the same time enhance conditions for sustainable forest management in the country.

The Specific Objectives included;

- incorporation of 20 New Tropical Forest Species into the forest industry in significant quantities
- develop a methodology for research on an industrial scale in co-operation with wood processing companies in order to solve technological problems in processing these species
- improve the technological level of the companies and achieve higher yields and productivity as well as quality of a range of products, both basic and value added
- ensure transfer of such technology to all wood industry companies in Iquitos and Pucallpa as well as to wood merchants in the country through a specific training programme
- promote the introduction of the species into the national as well as the international markets

The planned Outputs included;

- increased utilisation of tropical forest from the present 5 m³ pr ha. to at least 10 m³ pr ha.

- an increase in the use and commercialisation of the new species of no less than 10 % in Iquitos, Pucallpa and Lima, corresponding to a minimum of 60.000 m³ of these same species
- train at least 150 managers and other staff in the forestry and forest industry and trade sector in the use of the new species

2. Evaluation Purpose

The project has proved to be a complex and important one, with many activities, some of them unforeseen. It was therefore felt that an Ex-Post Evaluation would be in place. The project has a synergetic relationship to several other ITTO projects on Lesser Known or Lesser Used Species, as well as to other projects in Peru concerned with other aspects of forest management.

As mentioned above, the intended situation after project completion included a scenario where the timber industry of Pucallpa, Iquitos and Lima would have at least 10 % of their production made up of new (lesser used) species promoted by the project. The Ex-Post Evaluation has therefore concentrated on assessing to which degree this situation has been achieved in quantitative terms. Nevertheless qualitative data was also obtained in conversations, semi-structured interviews and also through the use of a questionnaire.

3. Scope of the Evaluation

The evaluation included a visit to Peru during the period 11- 27 March 1998 and interviews and meetings were conducted in Lima, Iquitos and Peru with a wide range of private companies, institutions and persons in the forestry sector.

3 universities, 2 research institutions and 5 private companies were visited. Discussions were also held with the central forestry authorities INRENA, including the Director General of Forestry, and also the private umbrella organisation, Camara Forestal Nacional (CFN)

The Terms of Reference for the evaluation is provided in Appendix 1 and an itinerary and list of persons and institutions met is found in Appendix 2.

During the evaluation mission, a questionnaire aimed at participants in training sessions realised by the project was developed and replies were collected from 11 such participants. Through a separate subsequent exercise, the questionnaire was distributed, and responses were obtained from 40 additional trainees.

Efficiency and Operational Aspects

Interviews with some 15 persons with a good knowledge of the project, including trainers, bureaucrats, academics and other resource persons, as well as project staff indicated that the project had been efficiently and competently implemented. Inputs were provided as planned and budgets seem to have been adequate. The same seems to have been the case in relation to staffing. Work schedules (to the degree that they existed) were however not observed. There were in fact, considerable weaknesses in the project proposal document, with the lack of a proper Workplan with an Outputs-Activities Schedule as one important flaw. Other shortcomings were apparent in the lack of a Logical Framework with corresponding

confusion between Specific Objectives, Outputs and Activities. Another important omission was the lack of Indicators and Means of Verification at most levels. This has in fact made it difficult to monitor the success of the new species by products in the markets, particularly for exports. Let it be said however that this is merely noted as a fact, not as a criticism as such. The fact of the matter is that the project was conceived and designed at a time when ITTO had not yet developed its manual for project Formulation. The project cannot therefore be judged retrospectively on standards developed at a later stage. Nevertheless it is evident that the project would have benefited greatly from a more rigorous project design, and in the respect perhaps particularly development of verifiable indicators. The project could therefore be seen as an illustration of the need and indeed wisdom to develop project formulation guidelines within ITTO.

The weak project proposal probably contributed, together with other factors, to vastly increased activities and to a subsequent extension of the project of 17 months for which however, problems related to the publication of project results were also responsible.

As for the activities, the number of species actually investigated almost tripled. The number of co-operating companies was twice the planned figure and the total volume of wood tested was one and a half times what was initially planned. The training increased a staggering ten fold in terms of persons trained.

The project proceeded in practice to follow a work programme comprising (at least) the following elements

- identification of potential industrial new species
- applied industrial testing of new forest species
- training of industrial and commercial staff
- establishment of a special Information and Technical Assistance Service for new species
- marketing and promotion of trade in the new species
- investigation and promotion into new opportunities for forest management of new species

It can safely be concluded that all these elements and the corresponding activities have been efficiently carried out and mostly far surpassed anything foreseen in the original planning of the project.

- identification of potential industrial new species

Based on prior knowledge already existing in wood technology laboratories in Peru as well as information from the T.N.O database (Delft) and other international sources, project staff and co-operating companies went ahead to identify potential species. The suggestions from the co-operating partners were so numerous that the final list included 50 different species, although far more species were in fact suggested by the industry.

- applied industrial testing of new species

The testing went ahead in 10 sawmills and factories using a total of some 5.500 cubic meters logged in various parts in the country. The tests followed well prescribed methodology and the results are very well documented. A number of interesting findings were produced as to

the sawing, drying and further elaboration of the species in question, and also to their potential in a wide range of products.

- training of industrial and commercial staff

In Pucallpa and Lima 24 different seminars and workshops with a total attendance of some 1500 persons, ten times the planned number were realised. The training sessions did not only include managers, but also workers, carpenters, architects, students etc. Interviews conducted during the evaluation reveal that the quality of the training sessions was very high, and that new knowledge was being shared widely in the forestry sector.

- the establishment of SIAT, the Special Information and Technical Assistance Service

This was an important measure which, perhaps unfortunately, only lasted for the duration of the project. The service carried out 10 of the project's workshops and seminars, published several publications and conducted hundreds of short term ad hoc consultancies, particularly for the wood industry to solve technical problems. The activities of SIAT was very highly regarded, and several interviewees during the evaluation expressed regret that this service was discontinued with the closure of the project.

- marketing and trade in new species

Activities in this field was carried out in both the domestic as well as in international markets. As for the domestic markets, SIAT was particularly instrumental in creating contacts with the end users of the wood and to spread information on its use.

As for the international markets, the project sponsored the work of international consultants in North America, Europe and Japan and trade mission were realised to Japan and Europe. This opened new opportunities for Peruvian wood products as well as giving access to information about new technology and trends in the global marketplace.

- the investigation and promotion of new opportunities for forest management of new species

This was mainly conducted as a desk study of forest inventories and other basic existing information. Material from other projects was also used, particularly the ITTO project PD 95/90 (F) «Management Plan for the National Forest Alexander von Humboldt»

Even though this study was mainly theoretical, a number of interesting findings are well worth noting. The species identified and promoted in the project show generally a very good abundance in the tropical forests of Peru.

Effectiveness

- The technical and scientific intrinsic merit of the project is sound, although the project proposal document suffers from obvious flaws as indicated above. This has to a certain degree hampered the effectiveness of the project. The lack of appropriate indicators has made the exact monitoring of the success of the new species in the export markets virtually impossible.

- On the level of outputs it is clear that achievements have largely been far in excess of the planned outputs, with the notable exception of an increase in forest utilisation in Peru from 5 m³ per ha. to 10 m³ pr ha. This was from the outset an entirely unrealistic output in its generalised nation wide interpretation. Nevertheless, indications are clear, based on the experience of this and other projects, notably PD 95/90, that such a goal is attainable given proper management plans and knowledge of the species. In fact the estimate is probably conservative, as indications from PD 95/90 seem to suggest a harvest of some 20-30 m³ pr ha and per cutting cycle.

- Instead of the 150 managers trained according to the planned output, some 1500 hundred persons representing a wider range in the forest sector has been through the training organised by the project. This in itself is an outstanding achievement as already mentioned above.

- The important planned output of at least a 10 % proportion of new species in the total volumes of wood produced, elaborated and commercialised in Iquitos, Pucallpa and Lima has been largely surpassed. Statistics from Pucallpa rendered in some detail below indicate a proportion of rising from 11% to 17 % for the year 1992-97. The increasing tendency here is particularly noteworthy. Nation-wide statistics of production of roundwood from 1996 suggests that the new species make up some 18 % of the total volume, nearly twice the planned figure.

-On the level of Specific Objectives, the introduction and continued and sustained utilisation of 20 new tropical forests species is probably the most outstanding. There is no doubt, perusing national statistics, that this goal has been achieved. For 1996, 36 of the species promoted by the project appear, and 22 of these species make up a volume of some 250 000 cubic meter, more than four times the planned volume of 60 000 cubic meter for the 20 planned new species.

- The other Specific Objectives like industrial investigation, improvement and transfer of technology as well as introduction to the markets, these also appear as activities and are briefly described above in the Executive summary. For more detail, and in order to avoid excessive repetition, please consult the main text below.

4. Conclusions of the Evaluation

i. The project has generally achieved its Objectives and Outputs and also largely surpassed some of them.

ii. The technologies and products promoted seem to have been appropriate for the state of the Peruvian industry at the time.

iii. The project has had a great and beneficial impact on the forest sector in the country. The consumption and export of lesser used species has increased significantly, almost twice the planned figures. Training activities have been extensive, in fact ten times the planned amount, and have yielded positive, documented results. Ref. Appendix 3.

iv. The lesser known species have been effectively introduced to markets through training, trade missions and other measures and the utilisation of these species are now a permanent

feature of the wood industry in Peru, in greater numbers and in greater volumes than had been anticipated in the project proposal. The goal that forest utilisation should generally be in the order of 10 cubic meter per ha for the country as a whole has however not been attained.

v. There have been no harmful effects, but rather unexpected beneficial effects both directly in the outreach and transfer of knowledge and technologies, and possibly also on the wider forestry milieu in the country, including forest policy.

vi. Implementation of the project was efficient and highly cost effective. However, changes in planning during project implementation lead to vastly increased activities (and Outputs) this lead to a necessary extension of the project of some 17 months. Progress reports and accounts seem to have been rendered in a timely and orderly fashion. The mid-term evaluation carried out in 1991 was in itself a very positive one, and recommendations made in the evaluation report seem to a large degree to have been taken onboard in further project implementation.

vii. PD 37/88 must be said to have been a success, despite great shortcomings in project formulation. There was no Logical Framework developed in the proposal, and many other features of project formulations were also lacking. Thus it is an example that in reality it is not the adherence to formalistic criteria that always counts, but the fact that the project was based on a sound intrinsic idea, and that willingness existed on the part of project staff as well as co-operating partners to see the project through.

5. Recommendations

General

- Lessons learned from this project prove that introduction of new wood species to the industry is not an easy matter, neither from a technological point of view nor as far as market acceptability is concerned. Nevertheless, the task is not impossible, and a major effort, such as has been undertaken in this case, is likely to yield result.
- Therefore, an overall recommendation is that if more similar projects should be undertaken elsewhere, they should be allowed a longer duration to due to the various, difficult and challenging activities, and ample budgets. More vigorous dissemination of results could prove an equally cost effective measure.

Specific recommendations

- Ensure the wider distribution of project results through the book « Utilisation Industrial de Nuevas Especies Forestales en el Peru», possibly in an abbreviated and more carefully edited version.
- Also, wide distribution of the results from PD 95/90, being a related project should be ensured, bringing knowledge of forest management opportunities to concessionaires and others.
- CFN should take an initiative, in co-operation with companies, forest- and export authorities to establish better statistics for monitoring of exports of new species by products.

- CFN should also endeavour to recreate the wood industry association in Pucallpa.
- Initiative should be taken, as capital earnings permit, to gradually modernise the Peruvian wood industry to allow for more production of a wider range of value added products.
- In this regard, the possible recreation of SIAT or a similar professional permanent body for advice to the forest industry should be considered.
- Peruvian forest authorities as well as the political establishment should be encouraged to enact a full overhaul of forestry and forest industry legislation, rules and regulations with a view to create an enabling environment for the forest industry as well as sustainable forest management. In this regard a well thought out system of long term cutting rights, (e.g. concessions) would seem crucial.
- ITTO should consider favourably any approaches Peruvian authorities might consider in asking for co-operation in the field of forest policy development.

Overall assessment

PD 37/88 Rev. 3(I) must be described as a success. Its accomplishments are many and the failures few. The one most outstanding achievement is the significant (almost 20 %) and growing increase in the proportion of the new, lesser known and lesser used forest species in the wood industry of the country, and also in exports. The major efforts in training and the results in improved knowledge are also lasting achievements.

As for lessons learned and general recommendations for the future, account must be taken of the complexity of such projects and of many unforeseen difficulties that may be encountered. Rigorous planning, development and application of viable indicators would seem crucial. Also, such projects must be given ample time and budgets for their execution. Much could probably be gained by more forceful dissemination of the results of projects that have already been completed.

PART II

1. Project context

PD 37/88 Rev. 3 (I) «Utilisation Industrial de Nuevas Especies forestales en el Peru» (Industrial Utilisation of New Forest Species in Peru, and hereafter referred to as the Project) was first approved by ITTO in May 1989, and authorised for financing in November of the same year.

Total budget	USD 1,305,571
Contribution by ITTO	USD 925,071
Contribution by Peru (in kind)	USD 380,500

The proposing and Implementing Agency was from the outset the General Directorate of Forests and Wildlife of the Ministry of Agriculture (DGFF) and Industrial Timber

Corporations of Pucallpa, Iquitos and Lima. DGFF has later changed name and is now known as INRENA. A subcontracting agency however, Camara Nacional Forestal (CNF) took over the implementation for all practical purposes. This implementing agency contracted Sr. Carlos Rincon as the National Director of the project and Sr. Enrique Toledo as the Principal Technical Adviser.

CNF is a non-governmental umbrella organisation comprising the private wood industry, timber extractors, foresters and environmental organisations in the country. CNF has supplied all administrative support to the project.

The implementation of the project started in July 1990 and was planned to last for 2 years. However, after the project had been running for a year it was redefined into two phases became clear that an extension was needed due to the many activities undertaken (See below). An extension was granted with a slight (USD 15,071) budget increase to a total of USD 1.305,571. With a lapse of some six months between Phase I and II the project ended 17 months after schedule in March 1993.

Project background and rationale.

Peru has some 70 million hectares of tropical forests, of which 46 million ha are deemed suitable for permanent forest production. Despite this enormous resource base, the Peruvian forest industry remains incipient and rational utilisation of the forest resources is spasmodic. On average no more than 3 to 5 m³ is extracted per ha (and per cutting cycle) in true forestry operations. At the same time some 260.000 ha of forests is lost each year to deforestation, mostly due to unplanned expansion of agriculture in the tropical lowlands. (slash and burn agriculture).

Statistics concerning wood production in Peru remains open to interpretation, but overall production for the years 1992-96 seems to have been in the order of 8.5 mill cubic meter including some 6.5 mill cubic meter of firewood. Thus only some 2 mill cubic meter remain for industrial use, either for straight sawnwood or more elaborated value added products. Taking finished sawnwood as a parameter for estimates, the volumes rise from approx. 0,5 million cubic meters in 1992 to 0,6 mill cubic meters in 1996.

It is therefore clear that the forests on the one hand are vastly underused for industrial forestry purposes, and on the other hand, and possibly for exactly that reason, are in constant danger of being converted to ill fitted and in the long run non-productive agriculture. In this respect Peru shows the typical scenario of so many tropical forested countries.

On the level of forestry policy, the situation in Peru leaves a lot to be desired. The current Forestry Law was passed in 1978 and is said not to be conducive to private forestry enterprise. One of the main problems in Peru is that cutting contracts tend to be short term and also cover very small areas (often only 1000 ha). There is therefore little or no incentive for forest companies to invest in forest management activities. Such planting activities as exist is normally carried out by the State Afforestation Committees which work exclusively with small scale farmers and in secondary forests.

One of the reasons for the under-utilisation of the forests for industrial purposes has been the very selective logging practises of only a few, highly valued species, in the past often

exported as round wood, and until recently with a very low degree of transformation and value added. Typical species have been Caoba (*Swietenia macrophylla*), Tornillo (*Cedrelinga cateniformis*), Cedro (*Cedrela odorata*) and a few others.

Table1. The 13 most used traditional species in order of diminishing volumes.

Common names	Scientific names
Caoba	<i>Swietenia macrophylla</i>
Tronillo	<i>Cedrelinga cateniformis</i>
Cedro	<i>Cedrela odorata</i>
Catahua	<i>Hura crepitans</i>
Diablo fuerte	<i>Podocarpus sp</i>
Eucalipto	<i>Eucalyptus globulos</i>
Lupuna	<i>Chorisia sp</i>
Copaiba	<i>Copaifera sp</i>
Moena rosada	<i>Aniba sp</i>
Cumala	<i>Virola sp</i>
Ishpingo	<i>Amburana cearensis</i>
Higuerilla	<i>Cunuria spruceana</i>
Cachimbo	<i>Brosimum alicastrum</i>

The rationale for introducing more species for general and industrial utilisation is therefore very strong and is expected to have a number of beneficial effects, economic, social and indeed ecological as a change from erratic selective extraction to permanent sustainable forest management giving silvicultural consideration to a wider range of species should also be expected.

Projects concerned with the problematique of Lesser Known or Lesser Used Species has been one of the main concerns of ITTO ever since its inception for the very reasons mentioned above, and some 14 such projects have been executed in various countries.

Development Objective

The development objective of the project is linked to the National Forest Action Plan for Peru (1998-2000) which stipulates a doubling of forestry production with an export of USD 190 millions and creation of 2000 new forestry related jobs by the year 2000. In Peru a large number of forest species have been studied with respect to their physical and chemical properties in wood technology laboratories. Of all these species only some 50 have traditionally been utilised to a certain degree, and only 10 in important volumes. It has therefore been a priority to carry out applied industrial trials in order to increase the number of species transformed and commercialised, both in the internal market as well as in the international market. This would have the effect of improving the forest utilisation as well as forest management, increase production generally, lower the per unit costs and improve the quality of products.

Specific Objectives

- To incorporate into the wood industry and timber trade of the country 20 new tropical timber species.
- To carry out industrial applied research in selected industrial plants in the following areas; sawnwood, structural timber, tongue-and groove joints, packing, dried and planed timber, plywood, decorative veneer, solid timber flooring, parquet, parts and components, and housing.
- Improve the technological level and knowledge in the co-operating plants and thus obtain improved quality and productivity in the utilisation of the forest species.
- Ensure transfer of technology and knowledge obtained to loggers, timber industrialists, carpenters and builders etc. through a comprehensive training programme.
- Promote the new timber species into the national and international markets.

Planned Outputs

The overall aim would be to increase the level of utilisation of the humid tropical forests in the country by introducing more intensive forest management systems, thus both ensuring a more rational management of the forests as well as higher yields, lower costs of operations, a wider use of forest products in local and international markets with concomitant economic and social benefits.

By introducing new species it is foreseen that the utilisation would increase from the actual approx. 5 m³ pr ha to at least 10 m³ or more per ha in average per cutting cycle.

After conclusion of the applied research, the training and the introduction of the species to the market it is expected that these new species should reach a proportion of not less than 10 percent of the wood production and processing in Pucallpa, Iquitos and Lima, which would be an equivalent of 60,000 m³ per annum, and also show sustained increasing volumes in the following years.

As for the training programme, it is foreseen that at least 150 managers and professionals will be trained in the knowledge and use of the new species.

Inputs.

One very important input in the project has been the planned active participation of the wood industry, both through the umbrella organisation CNF which supplied administrative support, and particularly the co-operating mills and factories for the actual practical research and tests of a planned volume of 3.500 m³ of timber.

The project document foresees co-operation with 5 factories altogether.

The mills and factories provided the labour and machine-hours for processing the test wood free of charge. This had been calculated to USD 210,000 on the basis of processing 3,500 m³. As for the raw material, the companies would provide the timber free of charge from the forests, whereas the logging and transport costs from the forests to the mills would be shared half and half between the industrial partners and ITTO external funds.

In terms of professional manpower, the Peruvian forest authorities assigned one forester as the National Director of the project and some further 8 field foresters full time. In addition the CNF assigned one administrator, 2 secretaries/auxiliary staff and one driver. Furthermore

offices, laboratories and other facilities were put to the project's disposal. The international (ITTO) budget covered the principal Technical Adviser, some 8 man months of international consultancies and 18 man months national consultancies.

The project conforms to a number of ITTA/ITTO objectives, criteria, Action Plan and priorities. Concretely, the project remains relevant to ITTA Objectives Article 1 b),c),d),e),g),and h). Also, the project conforms to all strategies (objectives/priorities) for the Committee of Forest Industry in the ITTO Action Plan.

The Project document does not contain a Work Plan as this is understood in the ITTO Project Formulation Manual. However, shortly after the project got underway, a work programme was indeed prepared through the services of an international consultant, Mr. H.J. Van der Slooten. This helped to start the project off on the right track. There were however, various shortcomings in the project planning, like for instance a lacking schedule for activities etc., which proved to have clear implications for project implementation. To a large degree however, such shortcomings are due to the fact that the project was one of the first ones implemented by ITTO, and at a time before the ITTO Manual for Project Formulation had been produced. Other shortcomings in project formulation will be pointed out below, not so much as criticism of the project, but more as a case to support the wisdom of assisting project implementors in formulating their projects.

The project proposal contains a number of activities although some of these activities are also described as specific objectives or outputs in the document.

The project document for Phase I goes on to list concretely 17 species with indications of the areas of investigation (product) for each species. No explanation is offered why the number selected has been reduced from 20 to 17.

Table 2 below gives the 17 species planned for investigation in the Phase I Project Proposal Document (also described as a specific objective).

Table 2

Common name	Scientific name
Panguana	<i>Brosimum utile</i>
Maquisapa	<i>Apeiba membranacea</i> *
Shimbillo	<i>Inga ruiziana</i> *
Cachimbo	<i>Cariniana domesticata</i> (Couratari?)
Shihuahuaco	<i>Coumarouna odorata</i> (Dipteryx?)
Castaña	<i>Bertholletia excelsa</i> *
Itauba	<i>Maxilarius</i> sp *
Machinga	<i>Brosimum alicastrum</i>
Sapote	<i>Quararibea cordorata</i> *
Sapotillo	<i>Quararibea</i> sp
Capriona	<i>Calycophyllum spruceanum</i>
Oje (Renaco)	<i>Ficus</i> sp

Caimito	Pouteira sp *
Machimango	Escheweilera sp *
Chimicua	Pseudolmedia leevis *
Moena	Nectandra sp *
Hualaja	Zanthoxylum sp *

(Species marked with * have not been followed up, but were dropped from the project)

Although no proper work plan was established in the project document as already mentioned, and although a great many changes have occurred as the project got underway, on hindsight it would appear that the project has followed a work programme which included at least the following elements:

- Identification of potential industrial new species
- Applied industrial testing of new forest species
- Training of industrial and commercial staff
- Promotion of trade in new species
- Establishment of a special Information and Technical Assistance Service for new species (SIAT)
- Investigation into new opportunities for forest management of new species

The Activities listed in the project document include, inter alia:

- Elaborate a definite list of 17 (revised to 16 in Phase II) species to be investigated taking into account usefulness and availability of the species (not less than a minimum of 0.7 m³ per ha of stems above 40 cm. DBH)
- Select the co-operating companies on the basis of their technological and other capacity as well as willingness to cooperate and contribute.
- Gather all information available as far as wood technological properties of the species are concerned.
- Define a standardised test and investigation methodology for each species and product. For instance, the sawmills and veneer equipment was set to a prescribed standards and angles to allow comparison of species as far as yield and productivity is concerned.
- Carry out the actual tests using a volume of 350 m³ per species
- Carry out on the spot and further training of at least 150 managers, technicians and workers in the wood industry on the transformation to a determined set of products of these species.
- Produce demonstration samples of each of the tested species with indications of their use
- Promote the species both in the national and international markets through demonstrations and trade missions to the United States, Canada and Europe.

2. Evaluation Scope and focus

The project is deemed sufficiently complex to make an Ex-Post Evaluation desirable. The specific purpose of the evaluation has been to properly assess the project contribution to

commercial introduction of lesser-used species in quantitative terms. The intended situation after project completion included a scenario whereby the timber industry of Pucallpa, Iquitos and Lima would have at least 10% of their production made up of lesser-used species researched and promoted by the project. This figure, described in the project document as an output, also becomes an overall indicator, in fact the project's single most important measure of success or failure.

More specifically, the TOR which is attached as Annex 1, included the following aspects, inter alia:

- relevance and appropriateness of technologies and products
- impact and relevance of project, both impact on use and impact of training
- effectiveness of market introduction
- recommendations of any follow up action

The focus of the evaluation has been on the quantitative aspects. How much has the use of the new species increased in the national and international market, and how much of this may be attributed to the project activities.

The evaluation lasted 6 weeks starting 11 March 1998, of which nearly 3 weeks (11-27 March 1998) were spent in Peru. In Iquitos, Pucallpa and Lima, project staff and collaborators as well as others who were not directly involved in the project, but who nevertheless are involved in the wood industry were interviewed.

The evaluation was carried out by Mr. Olav Bakken Jensen, Norwegian forester/social anthropologist, former member of panel of Experts to ITTO as well as a delegate to ITTA Council meetings for a number of years. Mr. Bakken Jensen has experience from Peru, having worked as professor in the Faculty of Forestry at the National University in Iquitos. (Universidad Nacional de la Amazonia Peruana).

Itinerary and people contacted is attached in Annex 2

3. Evaluation Methodology

A number of institutions and private companies in Iquitos, Pucallpa and Lima have been contacted by the consultant carrying out the evaluation in order to tease out peoples' perception of the project. Interviews were carried out with the use of a questionnaire and aimed at those who actually had attended some of the numerous seminars or other training sessions realised by the project.

It soon became clear that it was no easy task to locate such participants 5 years after the closure of the project, despite very active head-hunting in Iquitos, Pucallpa and Lima. In a category 1) only 11 such «true trainees» were identified and interviewed using the questionnaire. The other persons contacted fall into two basic categories; Either they are 2) people who have been intimately involved in the project as co-operating partners, trainers or other resource personnel and who proved easier to identify, or 3) they have not had any contact with the project as such while it was executed, but are still involved in the wood and forestry sector and therefore may have an opinion of the impact of the project. For these two latter categories semi-structured interviews were applied, generally covering the ground of the questionnaire, but also covering operational aspects of the project and reflecting more on the check list questions in the ITTO Manual for Project Monitoring, Review and Evaluation,

page 25.

Later, and through a separate exercise, the questionnaire was distributed (by the executing agency CNF assisted by Sr. Enrique Toledo) and responses were obtained from 40 more project trainees. An analysis of the use of the questionnaire and the list of training sessions (in Phase II) is attached in Appendix 3.

It should be mentioned that during a mid- term evaluation carried out in 1991 by Dr. Jimerson a similar questionnaire was applied to capture the results of training sessions in the first phase of the project.

In the offices of the Executing Agencies as well as the principal technical adviser, a number of documents (project proposals, mid-term evaluation, progress reports, consultancy reports and the final report as well as other publications) were reviewed.

Also, in the Ministry of Agriculture in Pucallpa as well as INRENA in Lima, statistics on wood processing and commercialisation was obtained.

A list of reviewed documents is provided in Annex 4.

4. Findings and Lessons Learned

a) Efficiency

- Some 15 resource persons with a good knowledge of the project were interviewed in a semi structured manner. There was unanimity on a number of issues pertaining to the technical, financial and managerial aspects of the project, which was deemed a great success. The main problem had been that the project staff had been so willing (possibly too willing) to take on so many unplanned activities and also change and expand the activities in practice. This led to an enormous unforeseen work load, and was also indirectly responsible for the (necessary) extension, or rather the definition of a 2nd Phase of the project. One consequence was that there was a lapse of six months between the two phases. This had as one unfortunate effect the temporary unemployment of project staff. Another cause for the delay was the unforeseen problems related to the preparation for publication and dissemination of the project results. This was also the cause for the additional grant of USD 15,071.

Given the problems that this delay and the continuation of the project in a second phase caused, there were otherwise no complaints about inputs allocation from ITTO.

Neither were there any complaints about shortage of funds. Altogether, the budget had probably from the outset been rather on the generous side, given that the activities were mostly doubled (and as far as training is concerned increased tenfold) without any significant increase of the budget.

The project must thus be said to have been highly cost effective, although no clear conclusion can be drawn because of shortcomings and lack of quantifiable indicators in the project proposal document (No budget by activity, no use of unit costs etc.)

Through interviews with the National Director of the project as well as the Principal Technical adviser, wood industry managers and others directly involved in project implementation it became clear that the project had been executed in a professional and efficient manner. One of the characteristics of the project has been that although the projects

objectives did not change on paper during the implementation period, the actual objectives did, or rather the outputs, as they far superseded the outputs envisaged. The reason for this has been the eagerness with which the participants in the private industry has embraced the project. The original specific objective of testing 20 species through industrial use, was increased to 50 species through proposals put forward by the collaborating partners. The work load has evidently been far greater than expected, and the number of reports and consultancies carried out both by national and international consultants is very impressive, as will be evident from the list of documents in Appendix 4.

As for the work plan implementation, there was no planned Outputs-Activities Schedule in the Project Document, hence a comparison with the actual Outputs- Activities- Schedule remains elusive. A salient feature of this project is that it has changed enormously from the planning phase, and as designed in the initial project document.

This seems to have been a direct result of three factors;

- The rather sketchy project proposal document (Although the proposal is intrinsically sound)
- The eagerness of the co-operating partners in the private wood industry to provide additional and alternative objectives and activities

- The willingness of the project administrators to accept such changes

On the level of activities the main changes have been;

- Instead of the planned 16-17 species to be tested, the project proceeded to test 50 different species.
- Instead of the planned co-operation with 5 companies, in reality this co-operation was expanded to comprise 10, 6 facilities in Pucallpa, 2 in Iquitos and 2 in Lima.
- Instead of the planned training of 150 managers, the training sessions came to comprise a total of 1500 persons.
- This in turn has lead to processing of 5 522 cubic meter of wood instead of the planned 3500 cubic meter.
- The range of testing products has also been wider than anticipated

Below is a review of activities grouped under the headings of the actual Work programme as it was carried out in practice and as identified on page 11 above.

Identification and elaboration of a definite list of species to be tested industrially

It is noteworthy that as the project got underway, a number of suggestions as to potential species were raised by the industrial partners. This in fact swelled the list of species from the initial 20 to 50 which was the number actually tested by the project. One consequence of this was that the costs and inputs from the co-operating industrialists almost doubled whereas the overall project budget remained the same, a true sign of the enthusiasm with which the private wood sector embraced this project. Also 10 out of the originally 16-17 have been dropped en route, whereas 43 new species have been added.

Tables 3 and 4 below gives the actual 49 species tested in Iquitos and Pucallpa

Table 3. Species actually tested (Iquitos)

Common name	Scientific name
1. Andiroba	<i>Carapa guianensis</i>
2. Azucar huayo	<i>Hymenaea oblongifolia</i>
3. Brea caspi	<i>Protium elewellynii</i>
4. Carahuasca	<i>Guatteria hyposericeae</i>
5. Cedrillo	<i>Erismia bicolor</i>
6. Cauchi moena	<i>Ocotea</i> sp
7. Huamansamana	<i>Jacaranda copaia</i>
8. Mari buena	<i>Pterocarpus amazonum</i>
9. Mari mari	<i>Hymenolobium</i> sp
10. Pashaco	<i>Macrolobium acaceaefolium</i>
11. Punga	<i>Pachira aquatica</i>
12. Quillosisa	<i>Vochysia vismiifolia</i>
13. Sapotillo	<i>Quararibea</i> sp
14. Shiringarana	<i>Micandra spruceana</i>

Table 4. Species actually tested (Pucallpa)

Common name	Scientific name
1. Aguana masha	<i>Paramachaerium ormosoides</i>
2. Ana caspi	<i>Apuelia molaris</i>
3. Ayahuma	<i>Couroupita</i> sp
4. Bolaina blanca	<i>Guazuma crinita</i>
5. Cachimbo	<i>Cariniana domestica</i>
6. Cachimbo blanco	<i>Carinina decandra</i>
7. Afecillo huayruro	<i>Qualea paraensis</i>
8. Capriona	<i>Calycophyllum spruceanum</i>
9. Caraña	<i>Dacryodes nitens</i>
10. Catahua	<i>Hura crepitans</i>
11. Congona/Machinga	<i>Brosinum alicastrum</i>
12. Copaiba	<i>Copaifera officinalis</i>
13. Copal	<i>Trattinickia peruviana</i>
14. Estoraque	<i>Myroxylon balsamum</i>
15. Higuerrilla	<i>Cunuria spruceana</i>
16. Hualaja	<i>Zanthoxylum</i> sp
17. Huangana casha	<i>Sloanea multiflora</i>
18. Huayruro	<i>Ormosia</i> sp
19. Marupa	<i>Simarouba amara</i>
20. Mashonaste	<i>Clarisia racemosa</i>
21. Moena amarilla	<i>Aniba</i> sp
22. Ojé blanco	<i>Ficus insipida</i>
23. Ojé renaco	<i>Ficus</i> sp
24. Ojé rosado	<i>Ficus glabrata</i>
25. Panganua	<i>Brosinum utile</i>
26. Pashaco blanco	<i>Albizzia</i> sp
27. Pashaco colorado	<i>Parkia pendula</i>
28. Paujil ruo	<i>Guarea multiflora</i>

29. Pumaquiro	Aspidosperma macrocarpon
30. Requia	Guarea sp
31. Sapotillo	Quararibea sp
32. Shihuahuaco	Coumarouna sp
33. Tahuari	Tabebuia serratifolia
34. Ubos	Spondias mombin
35. Utucuru	Septotheca temanii
36. Yacushapana	Terminalia amazonica

The Sapotillo* which appears both on the list in Iquitos and Pucallpa is said not to be the same species, although belonging to the same genus. Another comment to these lists is that Catahua, Copaiba and Higuierilla also appear in the list of traditional species. However, during the evaluation, it was pointed out that although these species had been traditionally used to a certain extent, the use, and particularly the knowledge of the industrial properties of the species had been very limited.

(Any reference to species in the continuation of this document will refer to common names.)

Applied Industrial Testing and Investigation

This turned out to become a very extensive activity, or series of activities. In 10 different sawmills and factories in Pucallpa and Iquitos, 50 species were tested, in considerable volumes

(5,500 m³ in total, as opposed to the planned 3,500 m³) and for a number of end uses. The terminology of products appears somewhat less than entirely consistent in the project document, the various reports, including the final reports, and indeed even in the official Peruvian statistics. Generally speaking, and after an initial analysis based on prior knowledge on the wood technology properties of the species, the species were grouped into tentative products. Industrial processing characteristics were studied including suitability for sawing, natural durability, drying preservation workability etc.

Evidently not all species have been tested for all end uses. Broadly speaking, the species were initially grouped in a category thought useful for veneer and plywood products, and then for all other uses presupposing prior sawing in the sawmills. The species sawn were also tested in drying kilns, and to varying degrees went through dimensioning, surfacing and further elaboration into value added products of various kinds; decorative panels, tongue and groove, finger joints, flooring and parquets, finger jointed products, mouldings and parts and pieces for furniture.

The testing programme got to be very extensive indeed, and it would transcend the scope of this evaluation to recapitulate the detailed and standardised methodology and results.

Interested readers are referred to the Final Report dated March 1993 as well as the subsequently published book (by ITTO in December 1996) « Utilizacion Industrial de Nuevas Especies Forestales en el Peru».

Suffice it to say, that because of a rigorously applied and common methodology, for instance in the setting of angles and other parameters in the sawmills as well as the machinery for peeling of veneer, drying programs in the kilns etc., a wealth of comparable and extremely useful data was collected. This data in itself represents a major output of the project, and as it is very well documented it will be a source of knowledge for the wood industry in the country in future.

Also, industrial yields and productivity was recorded for the various species. Industrial yield is here defined as the percentage (in volume) of product obtained from the raw material (logs). Yield levels ranged from between 24.1 percent for Ubos sawnwood with a thickness of .1 inch, and 65.3 per cent for Shihuahuaco sawnwood with over 3 inches thickness. Yield levels for 2-inch thick timber boards ranged between 39 per cent for Pumaquiro and 73 per cent for Machinga.

The industrial productivity is defined as volume of finished sawnwood per species and eight hour shift. Levels achieved for 2 inch sawnwood ranged between 14 cubic meters for Tahuari and 46 cubic meters for Machinga.

Most of the species proved to have good workability in the sawmills as well as other treatment, as drying etc. However, quite a few species are to varying degree difficult to saw, due to tensions in the wood, or a high content of silicium. These include; Ana caspi, Cachimbo, Capirona, Caraña, Catahua, Estoraque, Higuierilla, Huangano casha, Machinga, Mari mari, Mashonaste, Requia, Shihuahuaco, Tahuari, Yacushapana.

However, difficulties did not prove insurmountable, and with introduction of radial cuts instead of tangential cuts, as well as application of estelite teeth on sawblades in some instances, all species should be workable. Radial cutting in the sawmills is not commonly used in Peru. Some of the training therefore concentrated on such techniques. It is also believed that more training in advanced methods and indeed in more sophisticated equipment in the sawmills is needed in the future.

Most species responded well to drying in kilns, although obviously programmes needed to be differentiated, basically according to the density of the wood. Some species proved difficult because of contractions, undulations, development of fissures etc. and would need special drying programmes as well as being dried under pressure.

Also, quite a few of the lighter woods proved rather susceptible to biological attacks, basically fungi, but also insects, and need both to be processed almost immediately after having been cut in the forests, as well as treatment with insecticides and pesticides.

Training of industrial and commercial staff

The staff in the ten co-operating mills and factories in Pucallpa, Iquitos and Lima received extensive on- the- job training during the testing programme itself. Interviews carried out during the evaluation, either through application of the questionnaire or in semi-structured interviews proved that staff had found this training very useful, and that the techniques learned had continued to find application, and in several instances had been further developed. Many of the staff in the co-operating companies also went on to attend one or several of the many workshops and seminars realised throughout the project. Altogether 24 such seminars and workshops were realised, 6 in Phase I and 18 in Phase II. 10 of the seminars in Phase II were carried out by a special service created by the project the SIAT (Servicio de Informacion y Asesoría Técnica en el Uso de la Madera) « Timber Use Information and Technical Advisory Service). Besides arranging seminars and workshops concerning a number of topics (See Appendix 3) SIAT also functioned as a consultancy body and

responded to over 400 enquiries made in Pucallpa and Lima in the fields of forest harvesting, industrial processing, timber construction, technical standards, marketing, production design, research and products.

During Phase II a model demonstration house was constructed by the project on the campus of the Agricultural National University (la Molina) using many of the new forestry species. The model house was used as a base for courses for architects and builders to promote the use of the new species, as well as related courses in marketing etc. of the same species. (The house still exists and is in use as an auditorium at the University).

As mentioned above, the project training programme was originally designed to include industrial and commercial staff, but as demand rose came to include academics and students as well as general practising foresters and other professionals and workers, like architects and builders. The courses ranged from one day sessions with introduction to the new (LKS/LUS) species to more detailed courses up to five days on a number of technical aspects. For a detailed survey of the courses please consult the book «Utilizacion Industrial de Nuevas Especies Forestales en el Peru» ITTO 1996.

The evaluator received a very positive impression of the results from the training sessions, both through conversations with project staff, semi-structured interviews with resource personnel, as well as analysis of the results from the use of questionnaires. The detailed analysis is given in Appendix 3.

A few salient characteristics of the training sessions should be highlighted;

Participants are unanimous as to the utility and adequacy of the training lessons. They seem to have proved useful to all participants, whether seasoned academics, students or practitioners like foresters, industrialists, traders and builders.

The majority of trainees testify, although to a varying degree, that they now have more knowledge of and are working more with the new species, either in theory or practice.

Also, trainees are generally optimistic as to the potentials for introducing and using further species to the industry and market from the forests of Peru.

They are however somewhat divided as to the ability of the private sector to undertake more investigations along this line on its own. The majority points out that outside co-operation is necessary. One important factor here might be the traditionally ingrained schism between the academic and the commercial worlds in the country.

The positive impression of all these training sessions obtained during the evaluation, both from the «pure» trainees that were identified, as well as from other participants, like co-operating company staff and resource persons is also corroborated by the evaluation results of the first Phase (Mid-term evaluation report by J. Jimerson 1991).

The knowledge of the project in forestry sector in Peru seemed quite good, even by people who had not had any direct contact with the project. However, many had not yet had the opportunity to read for themselves the final results of the project, as they appear in the ITTO

publication «Utilization Industrial de Nuevas Especies Forestales en el Peru» and therefore did not have the full range of information at their fingertips. This is a need that could possibly yet be accommodated. (See below)

Marketing and promotion of Trade in new species

Activities in this field were carried out both in relation to the internal national market as well as in international markets.

As for the national markets SIAT was particularly instrumental in creating contacts with end users of wood and, on the one hand with a purpose to spread information on the new species as well as to seek advise of potential use.

There has been vivid interest on the part of users, particularly in order to find substitutes for woods that are becoming increasingly rare and consequently expensive, like the Tornillo. For instance, and in the opinion of the carpenters and architects, Cachimbo, Copaiba and to a certain extent Capirona are good (and cheaper) substitutes for Tornillo.

As for the international markets, the project sponsored the work of international consultants in North America, Europe and Japan and trade missions composed by project staff and Peruvian timber merchants were realised to Japan and Europe. This gave access to information about the latest developments in timber industry technologies and the development of new products and international market trends.

In addition, and for Japan, contact was made with Japan Overseas Forestry Association (JOFCA) which contracted Dr. Yoji Kikata, and International consultant and professor at the Nagoya University to carry out technological evaluation of the timber species promoted by the project. Industrial trials carried out through the supervision of Dr. Kikata helped further in systematising experiences with the new species and also to identify suitable Japanese machinery and technology. Dr. Kikata was also instrumental in realising several seminars on the introduction of new Peruvian wood species in Nagoya and Tokyo.

The Japanese market is said to be very demanding in terms of quality, and also caters to very specific tastes and preferences in terms of colour and texture of the wood. One important aspect has been to find Peruvian substitutes for woods, imported or endogenous, that already have a place in the Japanese market. Thus, Capirona seems to be a good substitute for the Japanese species Abedul, and for the imported species Apitong the Peruvian Shihuahuaco and Estoraque would seem to be suitable substitutes.

As for the European market, and international consultant, Dr. Matthew Noerdhoek was contracted to carry out evaluation of the new species as well as an evaluation both of the Peruvian wood industry as well as marketing possibilities in Europe. The consultant was also instrumental in facilitating further wood technological trials in Swiss laboratories. Equally, project staff and Peruvian wood merchants visited several European countries, and also attended trade fairs.

The European market, particularly the North European market has a preference for lightly coloured woods. Aguana masha, Capirona, Estoraque, Pumaquiro, Requia, Shihuahuaco, Tahuari and Yacushapana were considered particularly suitable for flooring (parquet) in this market. On the other hand, the European Mediterranean market showed preference for darker

and heavier species for flooring.

Cachimbo and Panguana were considered suitable for furniture, carpentry and mouldings. Also, for instance, Machinga proved very similar to Ramin which Europe now obtains from Malaysia and Indonesia, and can substitute this species in the European market.

Industrial development and potential

In the Final Report, the project staff draws tentative conclusions as to the overall industrial potential of the new species. Here, the following 20 species are listed as the most promising, but unfortunately in alphabetical order, rather than in order of potential;

Aguana masha, Andiroba, Azucar huayo, Bolaina blanca, Cachimbo, Capirona, Congona/Machinga, Estoraque, Higuierilla, Mashonaste, Ojé renaco, Ojé rosado, Panguana, Pashaco, Pumaquiro, Requia, Shihuahuaco, Tahuari, Utucuru, Yacushapana.

Also, in the Final Report a grouping of the species in three categories according to density and durability is attempted, with a corresponding suggestion as to potential use.

Species of low density and durability; Bolaina blanca, Catahua, Hualaja, Marupa, Ojé blanco, Pashaco, Paujil ruro and Ubos. These are very susceptible to attacks by insects and fungi and need treatment with insecticides and pesticides. They will find major use on the national market in the building industry, packaging etc.

Species with medium density and durability; Cachimbo, Cafecillo huayruro, Machinga, Panguana, and Utucuru will also need drying and chemical treatment. However, most of these woods have excellent workability and will therefore probably find good markets in a wide range of products, both domestically and internationally. The Machinga could prove a valid substitute for Ramin in Europe as well as Japan, as mentioned already.

Durable and dense (and often more darkly coloured) woods: Aguana masha, Ana caspi, Capirona, Estoraque, Pumaquiro, Shihuahuaco, Tahuari and Yacushapana. These species do not need any chemical treatment and are species that will normally command higher prices and be more attractive in the international market, also because they will be further elaborated into value added products. Despite being less workable they will have potential in carpentry (cabinet making) where the taste leans towards heavy dark wood, but more typically in flooring (parquet).

A general impression obtained, both through extensive conversations as well as observation in the mills, is that the technological level of the Peruvian wood industry to a large degree remains low. In Pucallpa, only one mill and factory (foreign owned) had modern machinery for elaboration of a fair range of value added products. (Components for doors etc.)

Investigation into new opportunities for forest management of new species

This aspect of the project, whether it should be described as an output or activity, has been the weakest developed during project implementation. Research into such potentials as might present themselves in this field have been realised basically as desk studies of inventories and other material. Also, considerations have leaned heavily on the tentative results at the time from another ITTO project, i.e. the PD 95/ 90 (F) Management plan for the National Forest Alexander von Humboldt.

The basis for consideration of a silvicultural nature and potentials for sustainable forest management based on a wide range of species, is the occurrence, distribution and volumes of these species in the forests.

Without going into too much detail, the majority of these species shows an abundance in most Peruvian tropical forest types, and in volumes ranging between 1 m³ per ha to 10 m³ per ha. A few species are confined to specific ecological requirements. One example is the Cachimbo which occurs only in the alluvial soils that are occasionally inundated. Capirona has a similar preference and can form large pure stands on soils and sites prone to flooding, but also shows wide distribution on soils that are not normally flooded. Altogether a very abundant species with a high commercial potential. A range of species including Machimango, Machinga, Mashonaste, Pashaco, Requia, Yacushapana, Ubos, Ojé, Shihuahuaco, Tahuari and others occur in all tropical forest sites in varying volumes.

Particular regard is given in the Report to the species Capirona, both for possible management in pure stands on highly flooded sites, but also because Capirona seems to be a very versatile species in terms of distribution and form associations with other valuable timber species, including many of the newly promoted species.

The Final Report seems to indicate very promising possibilities to manage all these species in the mixed natural forests with a view to obtain sustainable natural forest management with regard to all species in combined stands. However, it needs to be said that the project itself has carried out no trials to substantiate such claims.

One opportunity missed in this respect is the fact that all the trial volumes of the species tested come from a wide variety of original sites. No attempt has evidently been made to extract several species from the same forest parcels and monitor the effect of the out-take on the remaining forest, let alone initiate cleaning, enrichment planting or any other silvicultural follow up of these sites. The actual management of these species in a mixed natural forest therefore still remains, to all intents and purposes an unknown, at least within the framework of the project.

The PD 95/90 has on the other hand realised silvicultural tests and trials, taking into account an even wider range of species, 88 in total.

In conversations and interviews with the manager of the project and also other project staff, the evaluator was verbally told that evidence exists that through repeated interventions in the same parcels over 4-5 years, some 25 -30 cubic meters of timber has been extracted using a wide range of species. These parcels have also been subjected to some clearing and weeding and other silvicultural treatment, including enrichment planting of desirable species. Project staff estimates that it will be possible to intervene again in the same parcels after some 30 years with the same or even higher intensity of out-take. As the project PD 95/90 has now been discontinued through ITTO, it remains to be seen how the management of this forest will be followed up by Peruvian forest authorities.

A model of analogous forestry comes to mind as a possibility for managing forests with a high number of commercial species, although the number of such species will evidently remain very low in relation to the total number of ligneous species present in the tropical forests of Peru. However, much research remains to be done in order to ascertain the potentials in this field. It is also fair to say, that as the present project is an industrial project,

such research fall mainly outside the scope of the project, and the project should therefore not be judged on the merits or otherwise in this field.

Project Effectiveness

- The technical and scientific intrinsic merit of the Project Proposal and its basic idea is very sound, although sketchily expressed in the project proposal document.

- The Project Proposal Document shows some confusion between the concepts of Objectives, Activities and Outputs. There is no orderly presentation of Indicators at the various project levels, nor any hints to the Means of Verification. Neither are Assumptions explicitly expressed. The budget shows no breakdown in terms of Outputs and Activities and there is neither a proper Work plan with an Outputs- Activities Schedule nor any attempt at a Logical Framework analysis. However, this project was designed before ITTO had developed its manual for Project formulation. Criticism on formalistic shortcomings must therefore take this into account.

Altogether the project document seems to have had little or no function as a planning and monitoring tool. It seems fair to say that it has only been of use in obtaining the necessary funds, and otherwise had little or no influence on project implementation. The real planning has evidently happened impromptu and ad hoc as a co-operative exercise between all partners in the project and has evolved in parallel with project implementation. The project administrators may have exposed themselves to criticism on this score. On the other hand, this alternative planning and routing of the project shows great flexibility and bears witness to an ear to the ground approach in terms of taking on board suggestions from the participants.

- In an assessment of the main Outputs it is clear that they have far superseded what was planned.

The major Output of reaching higher levels of sustainable forest utilisation in the forests of Peru however, remains unsubstantiated. Concretely, the project has foreseen an average increase of forest utilisation from 5 m³ per ha to 10 m³ per ha. There is no attempt in the Final Report to make any analysis whether this goal has been achieved, and it is very evident that it has not., nor would it have been realistic to assume such a goal to be attainable at the closure of the project, or even today. Accepting this goal as an Indicator, no Means of Verification had been identified to even measure progress. There are however scattered examples of application of more intense management systems, the Management plan for the National Forest Alexander von Humboldt being the most obvious case in point.

-Training of some 1500 managers, technicians and other professionals in the forestry sector instead of the planned 150 must be described as a resounding success and the evaluation revealed numerous expressions of this success. Everybody interviewed described the training as a breakthrough experience and it is thought to have had a lasting effect on the wood industry in the country.

For instance, the Camara Forestal Nacional (CFN) is actively using the results from both PD 37/88 and PD95/90 in their policy work, particularly in their efforts to promote and bring about a new forestry law in the land, including a system of more permanent forest concession for the industry. In the proposal put forward by the CFN, they have initially proposed 5 million ha. of concessions, later possibly to be raised to a maximum of 10 mill. ha. It is

evident that such a modest proposal (out of 46 mill. ha. productive forest) has only been possible using the results from these projects as a basis for calculations of exploitable volumes.

The basis for such proposals as put forward by CNF and mentioned above is precisely the most outstanding single achievement of the project on the level of Outputs, i.e. that the planned increase of lesser used species (in Iquitos, Pucallpa and Lima) of 10 percent as a result of the project has been surpassed. For the country as a whole the lesser used species made up 18% of total roundwood production in 1996, and the tendency is increasing.

Table 5 and 6 below gives the breakdown of roundwood production in Pucallpa for the years 1992- 97, and a similar breakdown for the whole country for 1996.

As mentioned above 50 species were tested, and with a view to utilisation in a wide range of end products. In the long run, many of these species have continued to find a market, both nationally and internationally.

The statistics from the Ministry of Agriculture in Pucallpa shows that 31 species investigated by the project are being elaborated and commercialised in Pucallpa. An excerpt containing the first 33 species on the list, here grouped in traditional and new species, is presented in Table 5 below.

Table 5. Production of roundwood (cubic meter) in Pucallpa.

	1993	1994	1995	1996	1997
a) Traditional species					
Tornillo	65 905	70 368	71 705	76 101	76 671
Lupuna	4 756	52 330	54 872	73 531	47 076
Catahua	27 814	32 436	32 033	47 515	37 575
Copaiba	11 708	41 778	44 550	25 787	20 031
Cedro	21 742	23 651	25 022	28 722	26 981
Cumala	15 052	21 277	23 049	33 207	26 422
Moena	10 220	15 329	16 410	16 911	12 363
Caoba	14 231	15 738	12 918	14 427	14 251
Ishpingo	14 894	12 684	10 557	9 937	6 931
Lagarto caspi	640	2 093	2 211	2 828	2 715
Loromicuna	0	274	1 061	888	1 013
Sub total	186 962	287 958	294 388	329 854	272 029
b) New species					
Shihuahuaco	1 435	7 175	8 888	15 877	10 694
Huayruro	6 262	6 898	7 383	5 319	7 609
Capirona	1 198	3 932	5 122	6 276	4 750
Pumaquiro	1 615	3 004	3 762	4 185	3 700
Quinilla	9	1 892	2 633	1 133	2 430
Aguano masho	658	5 097	5 130	4 375	1 806
Pashaco	3 634	3 228	3 427	3 877	2 234

Higuerilla	0	0	0	168	2 373
Panguana	0	48	50	52	2 062
Utucuru	4 465	4 754	5 258	4 210	2 197
Requia	37	892	1 276	1 197	1 173
Estoraque	3	652	763	1 362	779
Marupa	90	85	45	233	627
Huangana casha	0	0	0	731	653
Cedrillo	0	0	0	0	633
Huimba	35	29	258	147	563
Tahuari	12	124	807	1 014	448
Machinga	66	305	98	1 908	395
Mashonaste	538	552	606	296	382
Ana caspi	96	17	0	41	303
Yacushapana	9	499	794	520	339
Bolaina	196	86	100	693	139
Sub total	20 358	39 269	46 400	53 614	46 289
Total 33 species	207 320	327 227	340 788	383 468	318 318
Percentage					
New species	10 %	12 %	16 %	16 %	17 %

The proportion of the new species in the Pucallpa wood industry has thus risen slowly, but steadily from 10 % in 1993 (at the closure of the project) to 17 % in 1997.

As for the production in the country as a whole, statistics of round wood production for the year 1996 is given in Table 6 below as an estimate.

Table 6. Roundwood production Peru 1996. Total 1.402.363 m³ (Source INRENA)

New Species	m ³
Aguano masha	4 995
Ana caspi	72
Andiroba	205
Azucar huayo	23
Bolaina	2 367
Cachimbo	15 076
Capirona	6 904
Carahuasca	21
Caraña	1 287
Catahua	60 177
Cedrillo	93
Congona	14 516
Copaiba	40 505
Copal	224
Estoraque	1 386
Higuerilla	56 816
Hualaja	6
Huangana casha	731

Huimba	4 310
Mari mari	337
Marupa	1 732
Mashonaste	1 213
Moena amarilla	707
Oje renaco	182
Panguana	52
Pashaco	9 803
Pumaquiro	7 441
Quinilla	2 540
Requia	1 247
Sapotillo	25
Shihuahuaco	17 022
Shiringarana	16
Tahuari	1 072
Ubos	315
Utucuru	1 739
Yacushapana	520
	<hr/>
	255 677

36 New Species

Percentage

New Species

18 %

- The overall achievement of 18% volume of New Species is almost double the planned Output for the project.

There are 22 species in the above statistics with a volume of 1000 cubic meter or more. The total volume of new species is above 250 000 cubic meter, more that four times the goal in the planned Outputs. Even more promising is the fact that there are clear indications of a steady increase in the proportion of new species in the overall production and trade of wood and wood products in Peru.

-The single most important Objective (Specific Objective) of the project has been the permanent introduction and use of 20 new forest species in the wood industry and to the markets.

Reflecting on the statistics in Table 6 above which shows a commercial use of 36 species on a country wide basis, there is no doubt that this Specific Objective has been achieved and is even in excess of what was planned.

- Also the number and quality of consultancies largely exceeds what was planned.

- As for other Objectives like the applied industrial investigation, improvement of technology and transfer of such technology as well as introduction to the markets of the species, these Objectives also appear on the list of Activities and have been described, although briefly, above. As Objectives, they have been achieved within the framework of the project. The technological level of the Peruvian wood industry however, leaves a lot to be desired, and will need modernisation in future.

In sum, it is fair to say that all Objectives of this project have been attained.

- It must be said that the project has been highly effective in managing of the unplanned, if not unexpected situation which arose with the tremendous increase of Activities and Outputs due to suggestions and enthusiasm from the co-operating partners. The project has altogether developed along an alternative, and much more laborious route than originally planned, and both project staff and co-operating partners have shown great flexibility and stamina to see the project through.

- There can be little doubt that the basic project idea is still a very valid one for other similar projects. Now, within the framework of ITTO, quite a few projects of LUS or LKS have already been executed, and the question arises whether it would be cost effective to launch more projects, or whether a better route might not lie in the diffusion of existing results. At any rate, any new project of this kind needs to be better formulated in terms not only of a Logical Framework, but other formal requirements as well (Budget etc.). One regrettable fact is that no indicators were developed to verify the export of newer species. One assumes that this would have been possible, given the good relationship with co-operating companies responsible for exports. The information no doubt exists on company level, but the project did not make allowance for this aspect in the agreement with the companies, and has not had access to the books. And, the official export statistics of the country do not register such data, merely exports broken down by products. Important information, i.e. the preferred combination of species and products by countries therefore remains unavailable on an aggregate level.

c) Impact and Effects

Through the interviews conducted with some 30 odd persons during the evaluation, the clear impression remains that the impact of the project upon participants, upon the wood transforming industry as well as the forestry sector as a whole has been considerable.

The interviews, whether of earlier trainees of the project, resource persons like project staff, managers of the CFN, co-operating companies or resource persons during the training sessions, as indeed persons who were never in direct contact with the project, but who nevertheless are working in the forest and forest industry sectors today, reveal a near unanimous opinion that the project has had a profound and lasting effect upon wood utilisation, transformation and commercialisation in Peru.

Some questions in the Questionnaire ask the opinion of the impact of the project in terms of volumes of new species. With one exception everybody answered that the project has had a positive and lasting impact. However, the majority of the respondents in fact underestimated the proportion of new species out of total volumes. Most respondents gave estimates in the order of 5 to 20 % with the majority in the lower bracket of that range.

It should perhaps be added here, that the industry in Pucallpa and Iquitos show very differing

scenarios. The one sawmill visited by the evaluator in Iquitos did not process any new species, but had planned to move into this field only this year. Also, statistics from INRENA testifies to the relative conservativeness of the industry in Iquitos (Loreto), with few species being utilised in any significant volumes, and only a couple of them being new species. This fact might not only be due to conservative industrialists, but also to more homogenous, and indeed more difficult ecological conditions in the lowlands of Loreto, with vast areas prone to flooding.

In the opinion of the CFN, not only has the project had impact on the overall increase in utilisation of lesser known species, but also directly on the export earnings. According to an interview in a Lima daily at the time of the evaluation, Sr. Antonio Castillo, Director of PROMPEX, an umbrella organisation for the export industry in Peru, quoted statistics to the effect that exports from the wood industry in Peru rose some 80 percent from 1996 to 1997, and is expected to continue to rise substantially throughout 1998. Although macro-economic and policy improvement evidently has played a role here, CFN is adamant that this increase could to a large degree be directly attributed to the project.

Furthermore, and more indirectly, but most importantly, the ITTO projects PD 37/88 and PD95/90 are both said to be having an influence of possible changes in the forestry policy of the country, including the expected passing of a new forestry law. Some of the underlying logic and principles of such new policies presuppose long term ownership or cutting rights through concessions of limited size for each company in the wood industry. This again presupposes the exploitation of the full range of commercial species (PD 37/88) through creation of management plans for sustainable forestry management (PD95/90).

Another finding of the evaluation which came to light, was the total absence of organisation of the wood industry in Pucallpa, the main wood processing centre in the country. Information was that there had indeed existed such an association in the past, but it had fallen apart for a number of reasons which remained elusive. Thus there is no possibility to share information, market advances etc. It's everyone for himself, and each company has its own marketing network which has been created on a highly Ad Hoc and personal basis. The companies are though, as far as one could understand, mostly organised directly in Camera Forestal Nacional in Lima. Nevertheless, the lack of organisation on a local and current basis was evidently felt and regretted by several interviewees.

PART III. CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

- i. The project has generally achieved its Objectives and Outputs and also largely surpassed some of them.
- ii. The technologies and products promoted seem to have been appropriate for the state of the Peruvian industry at the time. Nevertheless, there exists a clear need to modernise the industry to allow for the production of more value added products.
- iii. The project has had a great and beneficial impact on the forest sector in the country. The consumption and export of lesser used species has increased significantly, almost twice the

planned figures. Training activities have been extensive, in fact ten times the planned amount, and the effect of the training would seem to have had a lasting effect on individual participants as well as companies.

iv. The lesser known species have been effectively introduced to markets through training, trade missions and other measures and the utilisation of these species are now a permanent feature of the wood industry in Peru, in greater numbers and in greater volumes than had been anticipated in the project proposal. The effects on forest management however, remains uncertain, and possibly even negligible. The goal that forest utilisation should generally be in the order of 10 cubic meter per ha for the country as a whole has clearly not been attained. Neither has it been attained for forests that are to a certain under management, apart from on a project basis.

v. There have been no harmful effects, but rather unexpected beneficial effect both directly in the outreach and transfer of knowledge and technologies, and possibly also on the wider forestry milieu in the country, including forest policy.

vi. Implementation of the project was efficient and highly cost effective. Project internal monitoring, reporting to ITTO, consultants employment, budget adequacy and general adherence to Project Agreement norms must be said to have been very satisfactory. However, changes in planning during project implementation lead to vastly increased activities (and Outputs). This lead to a necessary extension of the project of some 17 months.

vii. PD 37/88 must be said to have been a success, despite great shortcomings in project formulation. Thus it is an example that in reality it is not the adherence to formalistic criteria that always counts, but the fact that the project was based on a sound intrinsic idea, and that willingness existed on the part of project staff as well as co-operating partners to see the project through. Also, the project was designed and executed at a time when ITTO had not fully developed guidelines for project formulation and it would therefore be unfair to level too much criticism on formalistic grounds. Part of the success may however be attributable to the rather sad fact that many of the traditional species, notably Caoba, Tornillo and Cedro in many accessible areas are nearing commercial extinction, and that the eagerness of the wood industry to embrace the project may have been motivated partly by this fact.

2. Recommendations

General

- Lessons learned from this project prove that introduction of new wood species to the industry is not an easy matter, neither from a technological point of view nor as far as market acceptability is concerned. Nevertheless, the task is not impossible, and a major effort, such as has been undertaken in this case, is likely to yield result.
- Therefore, an overall recommendation is that if more similar projects should be undertaken elsewhere, they should be allowed a longer duration to due to the various, difficult and challenging activities, and ample budgets. More vigorous dissemination of results could prove an equally cost effective measure.

Specific recommendations

- Ensure the wider distribution of project results through the book « Utilizacion Industrial de Nuevas Especies Forestales en el Peru», possibly in an abbreviated and more carefully edited version.
- Also, wide distribution of the results from PD 95/90, being a related project should, be ensured, bringing knowledge of forest management opportunities to concessionaires and others.
- CFN should take an initiative, in co-operation with companies, forest- and export authorities to establish better statistics for monitoring of exports of new species by products.
- CFN should also endeavour to recreate the forest industry association in Pucallpa.
- Initiatives should be made, as capital earnings permit, to gradually modernise the Peruvian wood industry to allow for more production of a wider range of value added products.
- In this regard, the possible recreation of SIAT or a similar professional permanent body for advice to the forest industry should be considered.
- Peruvian forest authorities as well as the political establishment should be encouraged to enact a full overhaul of forestry- and forest industry legislation, rules and regulations with a view to create an enabling environment for the forest industry as well as sustainable forest management. In this regard a well thought out system of long term cutting rights, (e.g. concessions) would seem crucial.
- ITTO should consider favourably any approaches Peruvian authorities might consider in asking for co-operation in the field of forest policy development.

Overall assessment

PD 37/88 Rev. 3 (I) must to all intents and purposes be described as a success. Its accomplishments are many, its failures few and largely caused either by over enthusiasm which bloated objectives (but also results) and/or unforeseen difficulties. Some of these difficulties were caused by weak project design, largely due to lacking development of project design procedures within ITTO at the time.

Among the successes must of course be counted the significant increase of the new (lesser used and lesser known) forest species in the forest industry and trade, including export.. The signs are that the project has initiated a process that will continue to grow sustainably in the future. The training results should also be mentioned. The knowledge imparted is bound to have had and will continue to have a lasting effect, both on industry and others involved in the forestry sector.

As for lessons and recommendations for similar projects in future, it should be taken into account that such projects are very complex and often difficult as they address inherent inertia and ingrained old ways both within the industry and in the marketplace. Such projects therefore need both ample time and ample budgets to be successful. The project has also thrown into relief the importance of sound, even rigorous project planning and design. In this

context development of sufficiently diversified and verifiable indicators throughout the chain of custody to the end users of the products would seem extremely important.

In the case of this project additional results seem still to be gained from further dissemination of project results as well as recreation of information services akin to the aforementioned SIAT. These are activities which should not require heavy costs, and should be undertaken by the private wood sector in co-operation with the forest authorities.

List of Appendices:

Appendix 1.: Terms of Reference for the Ex-Post Evaluation of ITTO Project PD
37/88 Rev. 3 (I)

- « 2.: Itinerary and people met
- « 3.: Computation and analysis of questionnaires concerning training
- « 4.: List of documents reviewed

**Terms of Reference for the Ex-Post Evaluation of
ITTO Project PD 37/88 Rev.3 (I)
INDUSTRIAL USE OF FOREST SPECIES IN PERU (PHASE I AND II)**

I. Background

This 2-year project designed and implemented an applied research program to promote industrialization and commercial introduction of 20 lesser-known timber species found in Peru. The selected species were processed and tested in selected wood industries in the departments of Lima, Loreto and Ucayali.

In the project Phase I sawnwood products were manufactured on a trial basis and promoted in the domestic and international market (Europe and Japan). Under Phase I, concluded in December 1991, the following activities were implemented:

- i. wood technology studies to complement information on the technical properties of 20 selected species;
- ii. wood raw material processing trials (3,500 m³) involving sawing, machining, drying, durability and preservation research;
- iii. pilot industrial production of selected products, including sawnwood for structural and non-structural use in construction, parquet and moldings;
- iv. assessment of species and products likely to meet the requirements of the Japanese and European markets and trade promotion activities in these external outlets; and
- v. dissemination of project results and findings to professionals in the construction industry through seminars and consultations:
 - seminar on "Utilization of New Species in Timber Construction" (Lima, 85 participants);
 - seminar for carpenters and other wood construction workers on "Practical Aspects of Using New Forest Species on Timber Construction" (Lima, 100 participants);
 - seminar on "Using New Species in the Timber Industry" (Pucallpa, 100 participants);
 - seminar on "Sawdoctoring" (Pucallpa);
 - forum on "Timber Opportunities as a Construction Material" (Lima, 168 participants); and
 - Technical Consultation on "Timber Properties and Wood Technology" (Lima, 60 participants).

The project Phase II was implemented from January 1992 to September 1993 and focussed on further promotion of parquet and molding products and training and marketing activities. The following activities were implemented under Phase II:

- i. trial processing and marketing of 30 lesser used species;
- ii. dissemination of project results through five seminars, two convened in Pucallpa, two in Lima, and one in Iquitos;
- iii. organization in Lima of a workshop on lesser-known species data bank, in cooperation with project PD 134/91 Rev.2 (I), Selection and Introduction of Lesser-Known and Lesser-Used Species for Specific End-Uses - Phase II.
- iv. establishment of a service to offer information and technical assistance to timber producers and users (SIAT);
- v. promotion of the new species through visits to major traders and users and product use follow-up with provision of technical assistance and product performance assessment;
- vi. organizing and sending trade promotion missions to Japan and Europe;
- vii. printing and dissemination of technical sheets with information on the new species and products;
- viii. construction of a demonstration building using the new species in the University of la Molina;
- ix. establishment of a data bank on forest industries timber traders in Peru; and
- x. planning and design of studies to provide information related to the ecology of species studied in the project.

The project was implemented as planned, with the exception of the 17 month extension in project duration. The implementing agency reported that all proposed activities have been completed and stated objectives have been achieved. It also reported that as a direct result of the project 40 lesser-used species are finding growing acceptance in the national market. Eighteen species were also found appropriate for external markets and some of them are already being exported to Spain, Italy and United States.

The project also included a significant participation of the private sector. Twelve private timber processing companies directly participated in the project activities and over 1,500 managers, technicians and wood consumers received training and information on the processing and use of species studied in the project.

An ex-post evaluation at a later stage is needed to properly assess the project contribution to commercial introduction of lesser-used species in quantitative terms. The intended situation after project completion included a scenario where the timber industry of Pucallpa, Iquitos and Lima would have at least 10% of their production made up of lesser-used species researched and promoted by the project.

II. Terms of Reference for Evaluation of Work

- i. To assess the achievement of the project objectives and outputs.
- ii. To assess the relevance and appropriateness of the technologies and products promoted by the project taking into account the domestic and overseas markets and wood supply and forest industry situation in Peru.
- iii. To evaluate the impact and relevance of the project; particularly its impact on the use and consumption of lesser-used species in the domestic and international markets and the impact of the training activities on individual participants and their companies.
- iv. To determine the effectiveness of the market introduction of LUS and technology transfer and to assess the overall post-project situation, taking into account the intended situation after project completion.
- v. To assess unexpected effects and impacts, either harmful or beneficial, and present the reasons for their occurrence.
- vi. Analyze and assess implementation efficiency, including the technical, financial and managerial aspects.
- vii. Recommend follow-up actions in order to enhance the production and utilization of the lesser used species promoted by the project.
- viii. Taking into account the results of the evaluation, make an overall assessment of the project's relative success or failure; summarize the key lessons learnt; and identify any issues or problems which should be taken into account in designing and implementing similar projects in future.
- ix. Prepare the evaluation report in accordance with the terms of reference for the Project Evaluation Report, as contained in the ITTO Manual for Project Monitoring, Review and Evaluation (pages 28-31).
- x. Assess the project contribution to the ITTA objectives and ITTO Action Plan.

The evaluation work shall also be conducted in such a way as to allow answering the questions identified in the ex-post evaluation checklist provided in the ITTO Manual for Project Monitoring, Review and Evaluation (page 25).

III. Work Schedule

March 1998	Meeting of the consultant and project personnel in the Executing Agency headquarters for briefing and comprehensive discussions on project implementation and results, as well as agreeing and preparing the work plan in further detail. Visits and discussions with project cooperators, beneficiaries and other relevant parties.
March/April 1998	Review of project information and results and preparation and distribution of inquiry questionnaires.
May/June 1998	Preparation of evaluation report.
15 July 1998	Submission of draft final report to both ITTO and the Executing Agency for comments and suggestions.
30 July 1998	ITTO's approval of draft evaluation report.
15 August 1998	Finalization and submission of final report to ITTO.
November 1998	Presentation of the report at the Twenty-Third Session of the ITTO Committee on Forest Industry (Yokohama, Japan)

Itinerary and people met

Lima 12.3.98

Enrique Toledo. Principal Technical Adviser PD 37/88

Fernando Razetto. President of Camera Nacional Forestal

Carlos Herz Co-ordinator Forests, Trees and Peoples Programme (FTPP) FAO

Iquitos 16.- 17.3.98

Hernan Pflucker. Manager of DEFORSA (Desarollo Forestal) formerly Forestal Amazonas S.A.

Guillermo Zender. Industrial Engineer. DEFORSA

Juan Mataluna. Forester and employee with DEFORSA

Heiter Valderama. Professor of Wood technology at the Nacional University in Iquitos. (Universidad Nacional de la Amazonia Peruana, UNAP)

Jose Escobar. Professor of forest management in UNAP

Pedro Angel Anguilo Ruiz. Professor of wood technology UNAP.

Yolanda Guzman. Director of IIAP. (Instituto de Investigaciones de la Amazonia Peruana)

Pucallpa 17- 19.3.98

Jose Dance. Consultant. Formerly Rector of Universidad Nacional Agraria. La Molina.

Pedro Pablo Reyes. Researcher at INIA (Instituto Nacional de Investigaciones en Agroforesteria. Also constructor.

David Lluncor. Professor of Wood Industry at Universidad Nacional de Ucayali. (UNU)

Nilo Cordova. Professor of Silviculture at UNU.

Carlos Saavedra. Worker at INFOMAR, a saw mill.

Juan Simon. Manager INFOMAR

Rodolfo Taboada. Forester. Employee with INFOMAR

Sarita Yaque. Forester in the Ministry of Agriculture, Pucallpa.

Javier Planas. Assistant Manager MPM, a saw mill in Pucallpa.

Juan Mendoza. Forester. Employee with MPM.

Giacomo Franchini Senior. Manager of Maderas Peruanas

Giacomo Franchini Junior. Co-manager Maderas Peruanas.

Rafael Tolmos. Administrator. Peru Timber S.A.

Guillermo Abadie. Consultant. Formerly working in Bosque Nacional Alexander von Humboldt.

Mario Quevedo Neira. Constructor.

Jaime Ching-Hwang NCS American Forestal. A saw mill and wood processing plant.

Omar Castaneda. Manager ITTO project no PD 95/90 (F) Bosque Nacional Alexander von Humboldt.

21.3.98 Lima

Drago Bozovich. Managing Director of Peru Timber S.A.

23.3.98 Lima

Carlos Linares. Employee and statistician at INRENA

Antonio Morizaki Taura General Director of Forestry INRENA.

Christian Arbaiza. Architect

24.3.98 Lima

Carlos Llerena Professor, Watershed Management Universidad Agraria la Molina.

Wilfredo Ojeda. Professor of Forestry Inventories. La Molina

Manuel Chavesta. Professor of Wood Technology. La Molina

Carlos Rincon. Formerly National Director of PD 37/88 (I) Rev. 1

PROJECT ITTO 37/88 PHASE II
«UTILIZATION OF NEW FOREST SPECIES IN PERU»

Computation and analysis of

51 QUESTIONNAIRES
concerning the project training activities.

Introduction.

The project realised a total of 24 training events comprising a total of some 1500 people. The training was originally designed to include industrial and commercial staff, but driven by demand came to include academics and students as well as many general practising foresters and others, like architects and builders. The courses ranged from short one day sessions with introduction of new forest species (LKS/LUS) to more detailed courses up to five days on a number of technical aspects, including construction of houses, commercial and also ecological aspects of the management of these new species. For a detailed survey of the courses please consult the book «Utilizacion Industrial de Nuevas Especies Forestales en el Peru» ITTO 1996.

Nearly 6 years after completion of the project, and following great social turmoil in Peru, it was exceedingly difficult to locate participants in these sessions. Actually, during the evaluation mission, the consultant was, despite active head hunting in Lima, Pucallpa and Iquitos only able to locate 11 «true trainees» who were exposed to the questionnaire. Later and through a major and time consuming effort by the Executing Agency, Camera Nacional Forestal and with the services of Sr. Enrique Toledo, it was possible to obtain 40 additional responses. The responses are computed and analysed in a general sense below. Given the relative small sample (out of 1500 participants), results are not analysed in terms of categories of participants or categories of training sessions although this would have been desirable had it been possible to obtain statistically viable samples. Hints as to how various categories have responded are however, indicated. The purpose of the survey was to obtain a general vision as to the effectiveness of the training programme, as perceived by participants, rather than a detailed analysis.

The sample questionnaires (in English and Spanish) are attached.

Q 1. Participant interviewees: Foresters 10, academics 10, students 7, managers 7, constructors 5, carpenters 5, traders 3, project co-ordinators 2, loggers 2.

Total 51

NB! Evidently not everyone has responded to all questions. The replies will therefore normally not add up to 51.

Q 2. Type of course. No analysis will be pursued differentiating the courses

Q 3. Did you have any previous knowledge of the new forest species promoted by the project prior to attending the course?

Yes 34 No 17

If yes, which species did you know and in which circumstances;

The 5 best known species mentioned were in descending order of frequency; Cachimbo, Estoraque, Tahuari, Huayruro, Catahua
Altogether 22 of the new species were mentioned by one or other of the interviewees, indicating a fairly widely spread, but scattered and anecdotal knowledge of the species.

Q 4. Was the training conducted at a useful and adequate level in terms of literature and other information conveyed?

Too general and easy: 5 Adequate: 46 Too detailed and difficult: 0

Some academics (wood technologists) evidently found the training rather basic, but it is indicative that half of the academics after all benefited from the courses. No one found the courses too difficult, which indicates that the courses (which varied greatly) were well targeted in terms of participation

Q 5. Did the training help you to start using these new forest species immediately after the course, and in what measure?

Little: 5 Somewhat: 33 Much: 10

In fact all categories of participants here show a fairly similar spread with regard to this question, indicating that the personal situation and interest whether in an academic institution or in employment determines the degree of involvement. Overall, the involvement with the new species has increased.

Q 6. To what degree have you been able to maintain you knowledge of lesser used forest species after the closure of the project?

Little: 4 Somewhat: 29 Much: 11

Q. 7. Have you had opportunity to increase you knowledge of lesser used forest species after the training sessions during the project?

A) Theoretically (study of literature, other courses etc.)

Little: 12 Somewhat: 25 Much: 7

B) In practice?

Little: 7 Somewhat: 26 Much: 11

Here the slightly higher positive response to practical applicability might reflect the fact that the sample includes a majority of practitioners.

Q 8. Could you indicate to what degree you work with the new species in your professional capacity, compared to the pre-project situation? (Please indicate the percentage increase if any)

The same: 10 Somewhat more: 20 (10- 20 %) Much more: 5 (20- 40 %)

In your opinion, which are the three most useful new species taking into account the abundance of the species, the industrial capacity and success in the market?

Species....

Products....

As for the most useful new species, there is great overlap with question 3 (which tried to establish prior knowledge of the species). As for products there is a majority that sees potential in value added products, particularly doors, windows and furniture.

Questions 5 through 8 are all trying to capture the same reality from slightly different angles, and the interviewees might have found the questions difficult or even tedious, as not all have replied. Questions that give a range of options could also be said to be somewhat leading as most people would tend to choose the middle ground. (For this the consultant is entirely responsible). Taken as a whole, the replies testifies to more involvement with new species, in some cases to a considerable degree.

Q 9. Did you receive information during the training on lesser used species in other countries (Outside Peru) ?

Yes: 5

No: 36

Only one mentioned a specific species; Capirona in Italy. The other four gave vague references to written material, most of which was external to the training sessions which do not seem to have given any examples from other countries.

Q 10. Do you think there are more lesser known species with industrial and market potential in the forest of Peru besides the species promoted by the project?

No: 1

A few: 16

Many more: 35

Only one (an academic!) took a gloomy view here. Otherwise the optimism was resounding.

Q 11. Do you have knowledge or experience of any impact the project might have had on sustainable management of forests in Peru?

Yes: 5

No: 32

If yes, could you indicate where and how: -

All five (foresters and academics) gave references to the ITTO project in the National Forest Alexander von Humboldt which they thought positive and beneficial in terms of forest management, using new forest species. No other examples were mentioned. Also, one can note that the project in question does not seem to be overly well known, even among professionals in Peru.

Q 12. To what degree do you think that the private sector is interested in continuing company level investigations and promotion of new forest species?

Here the replies can be grouped as follows:

Not at all: 10 Should and could, depending: 21 Is very interested : 5

The five managers interviewed take, perhaps not surprisingly, a very positive view. They use in fact the private sector's active and eager involvement in the project at hand as proof.

The majority point out however, that the private sector will not be able to act on its own, given both lack of capability, inertia, and general unwillingness to commit funds to uncertain research which may or may not yield results. They too use the project to prove their point as they emphasise that the project was initiated (and largely financed) by an outside agency (ITTO). Given such and other support, they believe that the private sector could, and particularly should be more involved in such work. One person points out however, that traditionally, there is an abyss between the managerial and scientific world in Peru, and the two constituencies do not understand each other.

The third group takes a largely negative view of the private industry and thinks it is still hampered by old «get rich quick» ways and is unable to take a long term view which might include research or even active development of new products. They are unanimous that the wood industry has no intention whatsoever in engaging in forest management of any kind.

PROJECT ITTO 37/88 PHASE II
«UTILIZATION OF NEW FOREST SPECIES IN PERU»

QUESTIONNAIRE

1. I am: worker manager logger carpenter architect
builder trader

Other.....

2. Indicate which of the courses mentioned in the Annex you have attended
.....

3. Did you have any previous knowledge of the new forest species promoted by
the project prior to attending the course?

Yes No

If yes, which species did you know and in which circumstances

.....
.....

4. Was the training conducted at a useful and adequate level in terms of
literature and other information conveyed?

Too general and easy Adequate Too detailed and difficult

Comments

5. Did the training help you to start using these new forest species immediately
after the course, and in what measure?

Little Somewhat Much

Comments.....
.....
.....
.....

Supplementary questions relating to the situation after the closure of the project in 1993

6. To what degree have you been able to maintain you knowledge of lesser used forest species after the closure of the project?

Little Somewhat Much

Comments.....
.....
.....

7. Have you had opportunity to increase you knowledge of lesser used forest species after the training sessions during the project?

A) Theoretically (study of literature, other courses etc.)

Little Somewhat Much

Comments.....
.....
.....

B) In practice?

Little Somewhat Much

Comments.....
.....
.....

8. Could you indicate to what degree you work with the new species in your professional capacity, compared to the pre-project situation? (Please indicate the percentage increase if any)

The same Somewhat more% Much more%

In your opinion, which are the three most useful new species taking into account the abundance of the species, the industrial capacity and success in the market?

Species.....

Products.....

9. Did you receive information during the training on lesser used species in other countries (Outside Peru) ?

Yes No

If yes, which species and which countries.....

10. do you think there are more lesser known species with industrial and market potential in the forest of Peru besides the species promoted by the project?

No A few Many more

11. Do you have knowledge or experience of any impact the project might have had on sustainable management of forests in Peru

Yes No

If yes, could you indicate where and how.....
.....
.....
.....
.....
.....

12. To what degree do you think that the private sector is interested in continuing company level investigations and promotion of new forest species?

Comments.....
.....
.....
.....
.....
.....

PROYECTO ITTO 37/88- FASE II
"UTILIZACION INDUSTRIAL DE NUEVAS ESPECIES FORESTALES EN EL PERU"

CUESTIONARIO

1. Soy un(a) obrero Impresario de planta Extractor de madera
Carpintero Architecta Constructor Comercilizador Academico

Otro.....

2. Indique a cual o cuales de las sesiones de capacitacion mencionas en el Anexo Usted ha participado.....

3. Tenia previa conocimiento de estas especies, antes de su participacion?

- Si No

En caso afirmativo, que especies y en que circunstancias.....

4. Encontrò util la capacitacion y adecuado el nivel de literatura y otra informaciòn obtenida?

- Demasiado general y fácil Adecuado Demasiado detallado y difícil

Comentarios.....
.....
.....

5. Le ayudo la capacitaciòn a utilizar mas estos especies en su trabajo inmediatamente despuès y en que medida?

- Poco Algo Mucho

Comentarios.....
.....

Preguntas suplementarios y relacionadas a la situacion despues de la clausura del proyecto en 1993.

6. En que medida ha podido Usted mantener y utilizar el conocimiento obtenido durante cursos/seminarios del proyecto?

Poco Regular Mucho

Comentarios.....
.....
.....

7. Ha tenido Usted la oportunidad de profundizar el conocimiento del uso de las nuevas especies?

A) Teoricamente? (Estudios de literatura, otros cursos etc.)

Poco Regular Mucho

Comentarios.....
.....
.....

B) En la practica?

Poco Regular Mucho

Comentarios.....
.....
.....

8. En su capacidad profesional, puede indicar en que medida esta trabajando las nuevas especies promocionados por el proyecto comparado con la situacion pre-proyecto? (Por favor indique el porcentaje de aumento).

Lo mismo Un poco mas % Mucho mas%

En su opinion cuales son las tres especies y los tres productos con mas potencialidad tomando en cuenta disponibilidad de los especies, capacidad industrial y exito en el mercado?

Especies.....
Productos.....

9. Durante la capacitacion del proyecto ha recibido Usted informacion de especies menos utilizados de otros paises (fuera del Peru)?

Si No

En caso de Si, que paises y que especies.....
.....

10. En su opinion puede existir mas especies utiles en los bosques del Peru afuera de las promocionados por este proyecto?

No

Algunas

Muchas mas

11. Tiene Usted conocimiento o experiencia de algun impacto del proyecto sobre el manejo sostenible de bosques en el pais?

Si

No

En caso de Si, puede indicar donde y como.....
.....
.....
.....
.....
.....
.....

12. En que medida piensa Usted que el sector privado maderero esta interesado en continuar con la investigacion empresarial de nuevas maderas

Comentarios.....
.....
.....
.....
.....
.....
.....
.....
.....

ANEXO NO. 1

RELACION DE LOS SEMINARIOS Y CURSOS DE CAPACITACIÓN EJECUTADOS POR EL PROYECTO (FASE II)

Seminario Curso No.	Denominación	Dirigido a	Lugar	Fecha	Asistentes
1	Construcciones Demostrativas de Madera	a) Carpinteros y obreros de la construcción b) Estudiantes universitarios c) Profesionales y usuarios de la madera	Lima. Universidad Nacional Agraria la Molina	22 al 24 de Abril de 1992	a) 35 b) 150 c) <u>120</u> 305
2	Utilización Industrial de Nuevas Especies Forestales en el Perú	Extractores Forestales de la Región Ucayali	Pucallpa. Cámara de Comercio, Industria y Turismo (Ucayali)	22 de Mayo de 1992	35
3	Utilización Industrial de Nuevas Especies Forestales en el Perú	Industriales Madereros de Pucallpa	Pucallpa. Asociación de Madereros de Ucayali	12 de Junio de 1992	58
4	Uso y Alcances de Programa de Computo LKS	Profesionales, industriales y usuarios de la madera y estudiantes universitarios	Lima. Universidad Nacional Agraria la Molina	16 al 18 de Junio de 1992	48
5	Utilización Industrial de Nuevas Especies Forestales en el Perú	Profesionales y usuarios de la madera	Pucallpa. Cámara de Comercio, Industria y Turismo (Ucayali)	12 de Agosto de 1992	86
6	Utilización Industrial de Nuevas Especies Forestales en el Perú	Autoridades del Gobierno Regional de Ucayali	Pucallpa Gobierno Regional de Ucayali	13 de Agosto de 1992	26
7	Uniformización de los Nombres Vemaculares de las especies Forestales	Extractores, profesionales y técnicos del proyecto	Pucallpa. Bosque Nacional Alexander von Humboldt	14 al 16 de Octubre de 1992	25
8	Utilización Industrial de Nuevas Especies Forestales en el Perú	Profesionales, industriales y usuarios de la madera y estudiantes universitarios	Iquitos. Cámara de Comercio, Industria y Turismo de Loreto	10 y 11 de Noviembre de 1992	111
TOTAL					694

ANEXO NO. 2

RELACIÓN DE LOS SEMINARIOS Y CURSOS DE CAPACITACIÓN DEL SIAT (FASE II)

Seminario Curso No.	Denominación	Dirigido a	Lugar	Fecha	Asistentes
1	Servicio de Información y asistencia Técnica del Uso de la madera	Madereros empresarios	Lima. Sala de Reuniones de la Conf. Nacional de la Madera	8 de Octubre de 1992	20
2	Diseño y Construcción con Nuevas Especies Forestales	Constructores y usuarios de la madera en general	Lima. Auditorio de la Cámara Peruana de la Construcción	14, 15 y 16 de Octubre de 1992	20
3	Nuevas Especies Forestales y sus Usos	Empresarios Madereros	Lima. Auditorio Sociedad Nacional de Industrias	27 de Octubre de 1992	20
4	Nuevas Especies Forestales y sus Usos	Carpinteros	Lima. Autoridad Autónoma Proyecto Especial Parque Industrial Cono Sur	29 de Octubre y 5 de Noviembre de 1992	17
5	La Madera en la Construcción	Empresarios, constructores, profesores, alumnos universitarios	Lima, Univ. Nacional F. Villareal	5 y 6 de Noviembre de 1992	59
6	Nuevas Especies Forestales y sus Usos	Profesores y alumnos de la Escuela de Decoración	Lima, auditorio de Escuela de Decoración	17, 18, 19 de Noviembre de 1992	40
7	La Madera en la Construcción	Alumnos de la Facultad de Arquitectura de la Univ. Nac. De Ingeniería	Lima, Universidad Nacional de Ingeniería	27 de Noviembre de 1992	40
8	Utilización Industrial de Nuevas Especies Forestales en el Perú	Empresarios, constructores alumnos universitarios y usuarios de la madera	Lima, Feria Internacional del Pacífico	2 al 6 de Diciembre de 1992	56
9	La Madera en la Construcción	Alumnos de la Facultad de Arquitectura de la Univ. Nac. De Ingeniería	Lima, Universidad Nacional de Ingeniería	4 de Diciembre de 1992	40
10	Plan de Trabajo del Proyecto Manejo Forestal del Bosque Nac. Von Humboldt	Elaboración del Plan de Trabajo	Lima. Casa Retiro Villa La Paz	20 y 21 de Agosto de 1992	17
TOTAL					329

Ex-Post Evaluation
PD 37/88 (I) Rev.3 Phase I &II
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2. Project Proposal Document "Utilizacion Industrial de Nuevas Especies Forestales en el Peru- Fase II.". Undated.
3. GDFP "Progress Report on ITTO Project 37/88." July- September 1990.
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7. Enrique Toledo and Carlos Rincon la Torre: Resumen Ejecutivo. April 1991
8. Lee J. Jimerson "Mid-Term Evaluation of PD 37/88". May 1991
9. Resumen Ejecutivo. December 1991
10. Phase I Anexo I "Investigacion Tecnologica Industrial", December 1991
11. Phase I Anexo II " Promocion Comercial y Capacitacion". December 1991
12. Phase I Anexo III " Fichas Technicas de Especies Forestales". December 1991
13. Carlos Pinellos G.: Informe de Consulteria " "Metodologia para el Procesamiento de Datos del Proyecto" December 1991
14. Manuel Chavesta C.: Informe De Consulteria "Estudios Anatomicos de doce Especies del Proyecto" December 1991
15. Andres Castillo : Informe de Consultoria " Decripcion Dendrologica de Algunas Especies Estudiados por el Proyecto" December 1991
16. Carlos Saavedra Paredes: Informe de Consulteria " Tratamiento Termicos Empleados para Mashonaste, Capriona y Ana Caspi" December 1991
17. Marion Quevado N. Informe de Consulteria " Caracteristicas Ecologicas y Silviculturales de las Especies del Proyecto". December 1991
18. Wilfredo Ojeda O. Informe de Consulteria " Recopilacion de Inventarios Forestales del

Peru". December 1991

19. DGFF/Enrique Toledo. " Respuesta a las Observaciones y Comentarios del Informe Final del Proyecto ITTO PD37/88 Fase I" July 1992

20. Fase II Informe de Avance Enero a Junio 1992 August 1992

21. Enrique Toledo "Promocion de Exportaciones de Maderas Peruanas al Japon" September 1992.

22. Enrique Toledo " Report from the Lumber Manager Commercial Mission to Japan" December 1992.

23. Fase II. Informe Final 1993 October 1993.

24. Proyecto ITTO PD 95/90 Manejo Forestal del Bosque Nacional Alexander von Humboldt "Costos para Actividades del Manejo forestal" December 1996

25. Enrique Toledo & Carlos Rincón "Utilizacion Industrial de Nuevas Especies Forestales en el Peru" ITTO 1996.

26. INRENA Proyecto PD 95/90 (F) Manejo Forestal del Bosque Nacional Alexander von Humboldt "Plan de Manejo Forestal. Avances y Perspectivas" 1997

27. Guillermo Abadie Phillips & Mario Quevedo Meinit "Aplicacion de Tecnologias Intermedias en el Manejo del Bosque Nacional Alexander von Humboldt" July 1997

28. Proyecto ITTO PD 95 (90) F Manejo Forestal del Bosque Nacional Alexander von Humboldt "Informe Final" 1998

29. Enrique Toledo "Disposiciones Contractuales para Operaciones Forestales por Empresas Privadas y Grupos Locales en Bosques de Tierras Publicas del Peru".

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