The first lag of the journey didn’t go well as planned due to circumstances beyond the travellers control however we managed to make it and appreciated the companies in Melbourne who were kind enough to cancel initial dates and reschedule the visits.

The rest of the participants returned to PNG on March 29th 2018, in time for the Easter Celebrations with their families while Kilva Lancelot (Researcher, PNFRI) and Elaine Galore (Researcher, TFTC) stayed back to assist in preparation of Batch 1 species for gluing tests that was to be done at the Burnley Campus.

Full report on trip available
Central Processing Unit (CPU) even though was not a selected Key Performance Indicator (KPI) activity it had the same amount of discussions and deliberations as the KPI activity. Over the 2 years, all partner institutions tried to assist PNG FA and TPTC in achieving positive outcomes in this activity as it was proposed in accordance in the Governments Vision of increasing Downstream Processing in Papua New Guinea.

There were a series of trial activities conducted under this activity, however there were no formal reports done to assess and or justify its inclusion in the project. In the last Project Steering Committee meeting the committee members put a lot of emphasis on either developing further or shelving the activity. A decision was made to hire a consultant to develop a Business Plan for the CPU which could be used for the proposed concepts of a Central Processing Unit at Timber & Forestry Training College in Lae.

Initial proposed engagements through the former Commercial Manager was done with a Landowner company “Kei Beseu Kampani” (KBK) from Manus Province to ship export rejected round logs to Lae (TFTC), however this didn’t eventuate due to the constraints in logics and the finances to conduct this activity. This however didn’t discourage TFTC from trying other options in achieving this activity. With the assistance of the Consultant, a local landowner group from the Wafi-Golpu mining lease area was invited to meet with TFTC. An initial meeting was held in March 21, 2018 with the Tuku Landowners’ CPU Coordinator, Women’s Rep and Admin Rep with Rep from the Momase Forestry Regional Office, CPU Consultant and TFTC ACIAR Coordinating Officer and Research Officer. This meeting was to discuss the views and benefits of the both TFCT representing the Project and the Tuku landowners. The discussion from this meeting was promising and a plan was set up for a follow up meeting and possible site visit by the project team.

The follow up meeting was conducted on May 9th, 2018 with the inclusion of the Tuku landowners Executives, Committee and Clan Chief. The emphasis of this meeting from the Landowners was on the delay of the action plan discussed in the last meeting and concerns about the market and possible transportation of the logs currently at the felled site. There was also clarifications done from TFTC and the Project’s end that its collaboration with the LO group will not interfere with the current arrangements that the group has with other timber or other development companies. The project maybe able to assist in areas of skill and knowledge transfer (training).

A site visit was conducted on May 14th, 2018 to Bavaga village and part of the mining lease area (forest) that needs to be cleared for mining. The team from TFTC included Timber Harvesting Supervisor (Forester), Timber Salesman, Research Officer and the Driver (Mechanic). The inclusion of the College mechanic on this trip was vital for his expertise in the assessment of accessibility of the resources with the available machinery and its current issues.

The team in its efforts and commitment has reported about the initial purchase of rough sawn quality timber from this landowner group and other small sawmill operating individuals and landowner group companies. The process of this activity was possible due to a great contribution from the recently appointed care taken of the Timber Sales section and the Commercial Manager with the support and continuous deliberations from the Deputy Principal/ TFTC ACIAR Coordinating and Organising Officer, Charles Tsiritsi. Full report will be presented during the final review in March 2019.

Site visit - Bavaga village (Wafi-Golpu)

Meeting with village chief and Tuko LO Group Executives
Since the inception of Project FST/2014/065, Value-Adding and EWP projects have been conducting Joint Project Steering Committee Meetings to discuss outstanding issues and solutions for collaborative activities.

Joint Project Steering Committee Meeting #4 was held at the PNG FRI Conference Room on the 24th of April 2018 and was chaired by Dr. Golman, Director PNG FRI.

Attendees were members of the Steering Committee representing partner institutions of both projects including PNG Forest Products, Pacific Islands Projects (PIP), Forest Industry Association, RH, PNG-FA, PNG FRI, Forestry Department–UNITECH and TFTC (PNG partners) and Australia Partners - LEAF Carbon, Engineering Wood Products Association Australia (EWPAA) and Queensland Department of Agriculture & Forestry (QDAF), University of Melbourne and ACIAR.

This meeting, like the previous meeting have opening remarks from the ACIAR Forestry Program Manager, Tony Bartlett. Tony’s opening remarks summarized changes at ACIAR on (1) new 10 years strategy plan including a review of the structure after the 10 period, (2) the changes in the funding for Forestry Projects and bilateral projects and (3) that his (Tony Bartlett) term as Manager will end in mid July 2018 due to ACIAR Policies for Program Managers that the same person can’t be in the same position for 8 years.

Project FST/2014/065 - “Development of durable engineered wood products in PNG and Australia” have completed most of its activities of the 4 objectives as per schedule or extension from the last PSC meeting, however there are few activities that are yet to be completed due limited data, participation from relevant organizations delay in logistics and negotiations. There was also change of approach for Objective 3 activities due to limited data available for the proposed activities.

Testing of batch 1 species—13 species of mixed hardwood and softwood has been completed and the team is on to testing next 13 species (Batch 2 species). Important activities that need further discussion before the phase out of the project includes Central Processing Unit (CPU) establishment, Wood species database for the 26 species and reports of Objective 4 activities including compiling and development of promotional materials such as wood sample kits and pamphlets.

Project FST/2012/092 has been given the approval of 3 months “no cost” extension, thus the project will phase out on the 31st March 2019.

The meeting concluded with final remarks from Tony Bartlett as the ACIAR Forestry Program Manager. His concluding remarks appreciated the efforts of the two projects working together on various activities and was very satisfied with the approaches and solutions on issues delaying certain activities.

Both projects and it partners have done a lot of good work in the final years of their project for a satisfying feedback during the Final Review in 2019.
Testing for Batch 1 species have been concluded and data sent to Dr. Belleville for analysis. These species are Taun, Pellita, PNG Rosewood, PNG Boxwood, White Albizia, Erima, Labula, Wau Beech, PNG Vitex, PNG Basswood, Kwila, PNG Merawu and Heavy Hopea.

Wood machining characteristics testing was briefly or barely explained in the project document of its procedures and processing of conducting the testing. It was quite a task for the Activity Leader, Mr Ravu Iru (TFTC) to establish the plans and the Research methods of carrying out this test. However, with enthusiasm and interest he went on to do the foremost step in Research - Literature Review. Literature review gave him the boost to conduct trial test on *Pometia Pinnata* (Taun).

These preliminary test results of Taun was sent to University of Melbourne to Dr. Belleville and Prof Ozarska for viewing and comments. There was a lot to comments and suggestions of changes to the perimeters to be tested. It was some challenging moment for the Ravu Iru as this scientific research was his first. Prof Ozarska and Dr. Belleville were very helpful and supportive in their critics, suggestions and directions in how the tests should be conducted.

The analysis and the comments from the preliminary tests of Taun kicked started the testing of the other 12 Batch 1 species. Like the other tests, sample preparations was the important and most time consuming activity.

As a full time teaching personal and taking care of the Machining Section as other section staff were on study leave, it was all on time management for the activity leader. Preparation, testing and data collection of the 13 Batch 1 species was done with the assistance of the young high school staff children. These boys helped a lot in their participation and also on the other hand have learnt something new for themselves.

The species samples were kiln dried to the required 12% moisture content (MC%), 40 - 75 replicates of each species - 13 species were selected and pre-machined using a planer moulder to 50mm x 50mm x 900mm (dimensions selected due to availability and abundance of specimen/timber of that size). The test was conducted using the Standard Moulder 22N, as it has varied feed speed and cutting speed that was recommended for conducting planning characteristic test.

Visual grading was assessed on defect planning characteristics (torn grain, fuzzy grain, raised grain, chip marks and knife marks) for each species replicates after 3 runs of the specimen/samples at feed speed of 6 meters per minute. These surface defects were graded at 5 different grades depending on the required amount of sanding needed after machining.

The data collected including the photographs of the defects from the different species will assist in developing Standards for Surface Defect Grading for PNG Timber species.

Batch 2 species which are Malas, Pangium, Pencil Cedar, Milky Pine/ White Cheesewood, Water Gum, Quandong, Brown Terminalia, Pinus Carribaea, Hoop Pine, Klinkii Pine, Kamarere and Blackbean have been milled and samples collected ready for preparation. Testing should be completed by the end of the year or early January 2019.

Full report will be available when analysis of the 26 species is completed.
There are no markets nor large demand for useable short length timbers (waste timber as it is commonly referred to) in Lae and the Papua New Guinea as a whole. Timber selling companies without furniture or cabinet making business seem to have not much choice but to sell good timber under 1.2m as fuel wood or discard as waste timber.

Niugini Tropical Woods (TNW) Ltd is no different to this issue, the owner and Manager Jack Ambang expressed that working with the project may assist his company with this issue. He has done some research of demand on certain timber products that can use short length timbers which is of high demand in the overseas markets, products such as coal for fuel and parquetry. In the last meeting with Professor Ozarkska, the manager asked if the project could assist in conducting further research on demand of parquetry and the possibilities of exporting overseas.

On the note of utilizing undersized good timber, the Objective Leader has suggested to work with TNW in using these short length timbers in developing products such as furniture and parquetry. The Furniture design and prototypes from the Project ASEM/2010/052 Design Competition can be used, arrangements can be done with TNW and TFTC to have the usable short length Timbers (rejects) be brought to TFTC for further processing into affordable, foldable, easily portable and do-it-yourself (DIY) products such as the student desk or the Market tables and stools.

Objective 2 Leader, Haron Jeremiah will be working with a 4th year Forestry Student on a final year student project on “Assessment of parquetry design choice for PNG home owners”. This project will assess if PNG home owners know of this product, would like to have it in their homes and the designs they would prefer. These findings will have the team produce products from short length timbers.

Another visit to TNW had the team conduct assessment on the reject or waste timber in their yard and what products can be produced from what is available. Moira Spairong (Activity 2.3.3 Researcher) assisted Merolyn assisted in this assessment. The assessment report on the usable reject or waste timber will enable the team to liaise with the company on how to use these timbers and the benefits for the company, the partner institution and the project.

The activity team plans to have the products produced to be show cased in the up coming 2018 Annual Agricultural Morobe Show.

Pictures here showing what has been already been done with the short lengths in the Hotel/Lodge owned by the Company “Miles Lodge”.

*picture of young David Spairong is used with permission from his parents.*
TRAINING AND TECHNOLOGY TRANSFER ON VALUE-ADDED PROCESSING METHOD

TFTC each year has schedule for short courses for companies and interested individuals or organisation who wish to gain skilled knowledge and certificate in certain aspects of Timber Manufacturing. These trainings are either conducted on site (at the company) or at TFTC.

A week long training was conducted by Mrs Spairong, Moira for Open Bay Timber Company in the East New Britain Province on Timber Grading from 2nd - 6th April 2018. This training was done for employees of the company with different levels of education, some with basic level of education and others with minimum or no formal education at all but have vast experience in what they have learnt doing from observation.

These trainees were award certificate from TFTC for their participation.

These training is included or reported as part of the project activities on “Skilled knowledge Transfer” and “PNG Timber Grading Standards” manual developed by Moira Spairong for Activity 2.3.2.

Delay of the procurement of the final 4 species were due to logistics factors as arrangements were needed to be done with the companies involved and approval from relevant persons from the National Forestry Services office. Despite the hiccups, procurement and milling of all Batch 2 species were completed in June 2018.

Sample preparation and testing is already underway for Mechanical testing, sample preparations for the other tests will continue and tests to be conducted. Species samples for gluing was sent to University of Melbourne while preparations for Machining test continue with final testing of batch 1 species.

As a Key Performance Indicator (KPI) activity, the newsletter Committee would like to congratulate all project members in their efforts to complete this activity. The challenging part of Objective 1 was the procurement of the species samples, facilities of testing was available however most delay was on the availability of the timber/wood samples to conduct the tests.

Appreciation and acknowledgments to National Forest Services (Plantations) - Bulolo & Dami, PNG Forest Products - Bulolo, Stettin Bay Lumber Company and the partner institution that played a major role in harvesting, milling, drying and machining almost all of the 26 species samples - Timber & Forestry Training College semi-commercial unit, and also to Unitech Forestry Department for drying all 13 batch 2 species and PNG Forest Research Institute.

It wasn’t simple as it sounded but as a team we managed to complete all procurements and should be able to have all tests completed in time for final review.

Key Performance Indicator (KPI) Activity

All tests for batch 2 species is anticipated to be completed by end of 2018 or early 2019 ready for analysis and reporting for the final review in March 2019.

Procurement, milling and preparing 26 species samples for various wood tests is almost nearing its end as the Project is nearing to its phase out date. These species were group in two of 13 species each Batch in due to the logistics and arrangements of procuring, preparation, testing, analyzing and reporting. Batch 1 species, the first 13 species various testing have been completed and data is in progress of analyzing and final reports been written.

With batch 1 species out of the way, preparations have been going on for procurement and preparing of Batch 2 species. Most of this batch 2 species have been harvested and milled months leading to the end of 2017, the 4 remaining plantation species are Klinkii and Hoop Pines which was harvested at Bulolo Plantation and milled at the PNG Forest Products sawmill while Kamarere and Blackbean was harvested at Dami Forestry Research Trial Plantation and milled at the Stettin Bay Lumber Company sawmill in Kimbe, West New Britain Province. .
Gluing test was agreed to be done at the Melbourne University due to the availability of the Instron machine and other equipment. The logistics and arrangement of sending the samples to Melbourne was challenging as the processing of sending samples overseas needed considerations. However, TFTC managed to send 10 boxes of 11 Batch 1 species samples via TNT Air freight. The testing was delayed as per schedule but samples was received in January 2018 in time for Research Officers’ travel to assist in sample preparations and testing.

ACIAR Research Officers from PNG FRI and TFTC were scheduled to travel to attended the Crawford fund training and do the testing as well. Their involvement in the testing was also part of basic training on standard operating procedures for operating Laboratory Press, Instron Machine and other necessary apparatus used to conduct gluing test.

Preliminary gluing testing was for Batch 1 species was done from 3rd - 20th April 2018. Pre-conditioning of the samples was done prior to the preparations with Research Officer PNGFRI and Dr Belleville. These species were pre-conditioned to 17% MC prior to preparation for pressing. The preparations of pressing involved selection of sound species samples, dressing on side surface of specimen prior to gluing specimen together within 2 hours of dressing. Gluing/pressing of specimen were done at Burnley Campus and shear blocks were prepared at Holmes Glen Ltd.

The species were grouped according to its basic density to determine the amount of glue used and the pressing pressure. The pressing pressure was selected assuming the surface of boards was 595 cm$^2$ (3 boards); low density species (White Albizia, Labula, Erima and PNG Basswood) pressing pressure was 4 metric tons or 0.7 MPa, medium density species (Taun, PNG Mersawa, PNG Boxwood, Vitex, PNG Rosewood and Kwila) pressing pressure was 6 metric tons or 1.0 MPa and high density species (Heavy Hopea) pressing pressure was at 8 metric tons or 1.3 MPa. The adhesives used were PVA and EPI. PVA was used for all the species while EPI was used on selected medium and high density species.

Preliminary testing was done on low density species on the different tests to determine the glue-bond strength, remaining medium and high density species testing will be done by Dr Belleville and some interns. All samples were glued, pressed and stored in the Conditioning Room at 17% Moisture Content (MC) for both PVA and EPI adhesives.
Furniture Design Competition saw number of entries from TFTC students and Instructors, however only 3 designs were awarded. The elimination was done according to the design criteria set by the Committee for the competition.

The designs were to be do-it-yourself (DIY) low cost light weight tables, stools or benches that can also be portable foldable furniture with special joints which can be used by all and can also be able to be constructed using the short length timber that is been considered rejects or waste by the Timber companies.

The designs selected and awarded were (in order of awards) with consolation prizes and Certificate of Appreciation from the Project Manager.

1st Prize - Market Table and seat designed by Embah Sama-na (Instructor)

2nd Prize - Student Table & Stool designed by Francis Spairong (Instructor) and Alex Kasalinda (Apprentice)

3rd Prize - Study table with attached seat designed by Moira Spairong (Instructor)

Prototypes of these designs were constructed using short length timbers. These designs will be further enhanced to proper furniture for use and sold to interested customers.

Ravu Iru showing interested young boys how the Study Table is folded - Winning design #3 Prototype

DISCLAIMER

ACIAR Project FST/2012/092 newsletter is a collaborative publication between PNG Forest Authority and ACIAR. Other collaborating institutions are UNITECH Forestry Dept., TFTC, PNG FRI, PNGFIA and University Of Melbourne. Any views expressed are views of the Newsletter Committee including Research Officers from representing collaborating institutions. Any newspaper or journal interested in articles published here should contact the Country Project Coordinator or Director Forest Policy and Planning for fair and accurate reporting to avoid misinterpretation.