

**7 day interactive
Bamboo & Cane
Product
Development
Workshop
at
Tamenglong
Manipur
26 May to
2 june 2004
organised by
TAMBAC**

**KVIC
Mini
Bamboo
Cluster
project**

**Bambu Studio
IDC,IITB,
Mumbai**

Report on

**7 day interactive
Bamboo & Cane
Product Development Workshop
at
Tamenglong, Manipur
26 May to 2 June 2004**

NGO: TAMBAC



tamenglong

KVIC
Mini
Bamboo
Cluster
project

Bambu Studio
Industrial Design Centre ,
Indian Institute of Technology
Mumbai-700 076

Introduction



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Under KVIC Mini Cluster project, 12 centres are being taken up in the states of Jarkhand, West Bengal, Chattisghar, Orissa and North East.

In this scheme a 7 day workshop is conducted in each of these centres after identification, along with technology and design inputs.

Two toolkits, Two sets of 4 hand operated machines, two tables, some special tools and several moulds are given to each group organised by the NGO.

25 craft-persons are trained. Each craft person is given a mini toolkit along with the course material.

Two selected trainers from the group are further trained at IDC for a week as part of the scheme.

The comprehensive package enables the NGOs to start off a Mini Bamboo Centre around which a cluster can grow.

This report elucidates the proceedings of the workshop held at Tamenglong organised by TAMBAC, an NGO set up under CIBART.

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TAMBAC



Tamenglong Bamboo and Cane Development Centre (TAMBAC) was setup by CIBART (Centre for Indian Bamboo Resource and Technology), in 2003, with support from the Ministry of Rural Development, Govt of India, Govt. of Manipur and INBAR (International Network for Bamboo and Rattan). TAMBAC has majority of board members from Tamenglong. Variety of inputs in Cane and Bamboo Processing, growing and product development are being planned by TAMBAC. It is a registered body and has the infrastructure to support M.B.C (Mini Bamboo Cluster). Prof. A.G. Rao and Mr. Sukumar Haobam were resource persons in a workshop on Tools and Technology in Bamboo and Cane held at Tamenglong by INBAR. to support TAMBAC. Handicrafts are also being dealt under the TAMBAC project along with other developments.



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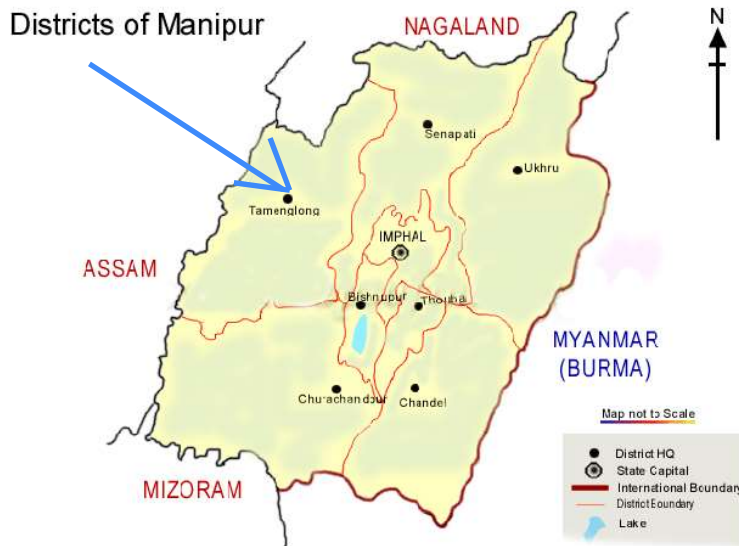
The co-ordinator
of the project::
Mr. Nehimia Panmer
Tel: 03877-222543 (O),
03877-222485 (R)

**PROJECT DURATION
Dec 2002- Dec 2005**

Source	Fund - INR (in Millions)	Fund - US\$ (in Millions)
Union Ministry for Rural Development (GDI)	37.5	0.815
State Government of Manipur	7.5	0.163
INBAR	2.5	0.054
Others (Expected)	2.5	0.054
TOTAL	60	1.086

Charts from CIBART poster

PRODUCT	PROPOSED QUANTITY	TARGET MARKET
Electricity through bamboo-based bio-mass Gasifier	100 KWe	Village electrification, CFC, Active Carbon Plant and micro enterprises.
Active Carbon	1 ton per day	Export market and Domestic consumption
Handicrafts	-	Regional Market - Silchar, Guwahati, Dispur, Imphal
	-	Metro Markets - Delhi, Bangalore, Chennai, Mumbai, Kolkata
Match sticks	10 tons per week	Sivakasi, Tamilnadu
Incense Sticks	20 tons per week	Bangalore, Gaya, Allahabad
Treated Canes (Oil cured)	10 tons per week	Delhi, Bangalore, Mumbai, Chennai, Tiruvananthapuram, Kolkata
Bamboo Charcoal	2 tons per day	Raw material for active carbon, Briquetting, Domestic use
Bamboo Shoots	-	Metro Markets



- Main Tribes**
- Zeliangrong Nagas
 - Kuki
 - Chiru
 - Hmar
 - Khasi



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A glance of the district is as below as per 1991 census:

Geographical Area	4,391 sq Kms.
Population	86,278
Altitude (above MSL)	1260 m
Latitude (HQ)	24.59 N
Longitude (HQ)	93.30E
Humidity	76 min, 92 max
Rainfall (HQ)	3135mm
Temperature	31 degrees max ,4 degrees min
Literacy	50.16%
Subdivisions	Tamenglong Tamei Tousem Nungba
National Highways	NH 53
State Highways	I.T. Road Old Cachar Road Tamenglong Khongsang Road
Major Rivers	Iyei Irang Barak Makru

Reaching Tamenglong

Tamenglong HQ can be reached by Road. From Imphal (state Capital) three buses depart at 6 am weekdays (except Sunday) to reach Tamenglong the same afternoon.

A TATA Sumo was hired by our team of 6 persons from Imphal as there were many boxes to be taken along with. The machines and tool kits which had been sent much earlier were stuck at Guwahati and reached Imphal in the morning.

The road from Imphal to Tamenglong is on the sides of hills with steep slopes. Landslides are common. Any such incident can result in returning to Imphal as staying late on the roads could be dangerous due to incidents of kidnapping for ransoms by insurgent groups. Our trip got 'saved' due to an army contingent which was moving ahead of us



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Tamenglong Town

Tamenglong town is the district head quarter. It is a peaceful town, with basic facilities like School and Electricity. TAMBAC project with its office at Tamenglong covers 69 villages. Most of the villages are inaccessible and can be reached only on foot.

Our 6 member team stayed in 2 places, the designers were housed in Inspection Bungalow which is an old building built in a picturesque place. The craft instructors stayed in the newly built state guest house. The design team had to move to a Forest Guest House later on demand from NSCN leader who wanted to stay in the IB(Inspection Bungalow).

One could see the NSCN leader guarded by 6 to 7 young leuitants. One of them was carrying a walkie-talkie. Mobiles are still not operating in Tamenglong. The other was carrying AK57 rifle. We were surprised to see the people moving with guns openly. Currently NSCN has a peace treaty with Indian Army. Later a representative of NSCN expressed regrets to one of our team members for being evicted from the Inspection Bungalow.



IB Bungalow



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Views of the town from IB

The workshop was held in a big hall which is a town hall. The town has a high school but no college.

There is a water shortage inspite of high rainfall. Electric supply is very irregular. A generator was used for our lap-top presentations. For 4to 5 days there was no electric supply due to damage in the power supply line.



Town hall

Town hall seen





Fish packed in bamboo basket



There is a big market in which vegetables, fish, chicken, pigs etc., are sold often packed in bamboo. Lot of food supply like cereals, potatoes etc., come from outside.



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Old Tamenglong

Old Tamenglong is about 15 Km from the new town. At the centre is the chief's house built in a traditional way. Young cheiftan frm the family volunteered to dress up in traditional dress. On the house various animals and birds in the area are painted.

We could see old bamboo articles used by the cheif's families over a period. A long log carved in the centre longitudinally is used for pounding the grains. The pounding is done in groups often with a song for rythm.



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Strategy for the workshop

In Bamboo Craft clusters, each area has unique skills and bamboo varieties quite different from other areas. Products which the local craft persons make, also vary dependent on bamboo (raw material), skill (tools and technology) as well as the way it is used locally. Thus in the Mini Bamboo Cluster Project each unit demands a different strategy of design intervention.

Tools and technology developed by IDC are basic, keeping in mind all the areas and adaptable to all the units. However Moulds for products are developed and made according to the products chosen for the particular MBC.

In Tamenglong, as the local people have inherited skills, all the products to be introduced in the workshop were not pre-decided. Coil Technique products were kept as a new input where as weave based products were kept open. The trainees who attend the workshops and their skills also vary to a great extent. In spite of all pre-efforts the exact situations are not known.



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In Tamenglong products taken up in the open choice were Multipurpose basket set, waste paper basket, small basket, woven plate with rim, knock down furniture in cane and spectacle case in cane.

In Tamenglong green bamboo skin is also easily available. In the woven baskets, bamboo skin was made use of.

Cane products were introduced along with a set of cane tools. Recently introduced furniture joints and fittings in the Bombay Market were taken for use in cane furniture.



Hangers for the multipurpose basket were made out of cane and bamboo skin in the workshop



The team



Prof.A.G.Rao has wide experience and expertise at international level. in Design and Bamboo craft.



Sukumar Haobam is an Industrial Designer trained at NID (Ahmedabad) and practising design from Imphal for the last 15 years.



Rudrapal is a skilled craftsman from Tripura working in bambu studio for the last three years.



Gangamma is an expert craftperson from Mumbai, belonging to the craft community of Karnataka.



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Krishna is a skilled carpenter and has an expertise in making moulds. He also is trained in Bambu Studio to be a trainer.



Debabrath Colleague of Mr Sukumar Haobam with expertise in photography and videography. He documented the workshop.

Other team members from Bambu Studio

Poornima Shenoy
Sanjiv Moghe
A.P. John

Persons from TAMBAC



Mr.Dorai is Project Co-ordinator from INBAR who took active part in the workshop.

Mr Nehemia Is the director of TAMBAC. He was only able to attend the last day of the workshop



Mr T R Aning local co-ordinator on behalf of TAMBAC.

Day-1: 26th May 04

9 - 9.30 am	Registration	
9.30 - 10 am	Inauguration	
10 - 11 am	New Scope for Bamboo Craft	
	Introduction to workshop	AGR, SH
11 - 1 pm	Introduction to Tool Kits - Video	
	Bamboo and Cane Tools, Demo	NR
1 - 2 pm	Lunch Break	
2 - 3.30 pm	Practice session (Strip preparation)	NR, Gma, KS
3.30 - 4.30 pm	Treatment with Borax+ Boric acid	Gma, NR
4.30 - 5 pm	Review	SH, AGR



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Day-2: 27th May 04

9 to 10 am	Treatment for fungus + insects + Production Planning	AGR, SH
10 to 12	Dyeing with Katha + Tea	Gma, NR
12 to 1 pm	Group formation A, B, C	
1 to 2 pm	Lunch Break	
2 to 4.30 pm		

Day-3: 28th May 04

9 to 10 am	Moulds, Jigs, Fixtures, Templates, Detailing for Production, Costing, Cost reductions.	AGR, SH
10 to 1 pm	Combination-1	
1 to 2 pm	Lunch Break	
2 to 4 .30 pm	Combination-1	Gma, NR, KS
4.30 to 5 pm	Review	AGR, SH

Day-4:29th May,04

9 to 10 am	Measurements, Scaling,Drawings	AGR, SH
10 to 1 pm	Combination-2	Gma, NR, K.S.+ AGR, SH
1 to 2 pm	Lunch Break	
2 to 4.30 pm	Combination-2	Gma, NR, K.S.+ AGR, SH
4.30 to 5 pm	Review	SH, AGR

Day-5; 31st May 04

9 to 10 am	Tool sharpening, Machine Maintenance	AGR, SH
10 to 1 pm	Dyeing with Haldi	
Combination 2,	Finishing work	
1 to 2 pm	Lunch Break	



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2 to 4 .30 pm	Combination-3	All Team
4.30 to 5 pm	Review	SH, AGR

Day-6:1st June 04

9 to 10 am	Finishing, Stains, Lacquering, Smoke finish,Packing & Transportation	
10 to 1 pm	Combination-3	Gma, NR, KS
1 to 2 pm	Lunch Break	
2 to 4.30 pm	Combination-3	Gma, NR, KS
4.30 to 5 pm	Review	AGR, SH

Day-7:2nd June 04

9 to 1 pm	Finishing of all products in groups	
1 to 2 pm	Lunch Break	
2 to 5 pm	Review, Feed Back	All Team

Combination-1:

A	B	C
Woven products	Coil Technique Products	Coil Technique Products

Combination-2:

A	B	C
Coil Technique Products	Choice of Group	Choice of Group

Combination-3:

A	B	C
Choice of Group	Choice of Group	Choice of Group



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List of Participants

- | | |
|------------------------|--------------------------|
| 1. Ms. Guitiang Pamei | Tamenglong |
| 2. Mr. Namdung | Tousem Khullen |
| 3. Mr. Sashau | Tousem Khullen |
| 4. Mr. Thuanmiling | Ching Kao |
| 5. Mr. Shangthuan | Atengba |
| 6. Mr. Buansinang | Duigailong |
| 7. Mr. Namguanei | Tamenglong |
| 8. Mr. Hougongpou | Lungdhum |
| 9. Mr. F.G. Malenggong | Oimenlong |
| 10. Mr. Asnipon | Thinlon |
| 11. Mr. D. haisaidanba | Impaningdi |
| 12. Ms. T.P. Thunguall | Tamenglong |
| 13. Mr. Hounileing | Cheangdai |
| 14. Mr. R. Goiliang | Charamram |
| 15. Mr. Ranghim | Tousem Khullen |
| 16. Mr. Abel Panmei | Aquaram |
| 17. Mr. Ramjuan | Khubuching |
| 18. Mr. Giruam | Old Tamenglong |
| 19. Mr. Gingamang | Khubuching |
| 20. Mr. Mithuambei | Duiluam |
| 21. Mr. Sasa Daneid | Don Bosco Social Welfare |
| 22. Mr. Gaisuiling | Taobam |
| 23. Mr. Jianthailung | Taobam |
| 24. Mr. Beiping | Tamenglong |

Address: Office of the Khadi & Village Development Society,
Tousem Khullem, Tamenglong Dist., Manipur.

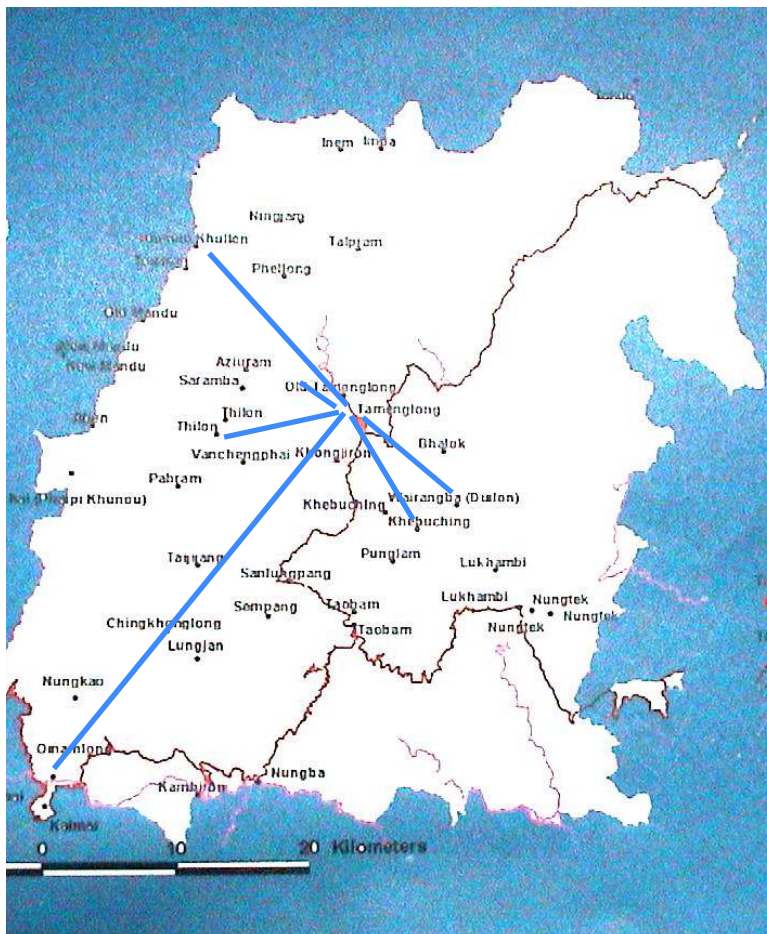
About the Participants

The participants came from neighbouring villages. They were staying in some of their relatives' places in Tamenglong as there is no other transport other than 'walking' to these villages

Tousem Khullen,
Ching Kao,
Dulliam, Taobam,
Khubuching,
Charamram,
Aquaram,
Old Tamenglong,
Lungdhum,
Oimenlong,
Thinlon,
Impaningdi,
Cheangadi
as indicated in the map



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Mr Namdung
Tousem Khullum

*Kaluang (without hole),
Rangtangka (with hole), khuk,
Kaujai, N-gi, Pantanggru, N-Gui,
Kampha, Shopping Basket, N-
Ting, N-Gou.*



Mr Sashau
Tousem Khullen

*Kaluang, Rangtagka, N-Gui, Duang,
N-Ru, Puatru, Khuk*

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Mr Thuanmiling
Ching Kao

Charap, Kharak



Mr Shangthon
Atengba

*Kaluang, Rangtangka, Khuk, Kaujai,
Pantangru, N-Giu, Kampha,
Shopping BAsket, N-Gou, Piatru.*



Mr Buansinang
Atengba, 21 yrs



Mr Namguanei
Tamenglong, 18 yrs



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Mr Hougongpou
Lungdhum 50 yrs

Kakuang, Nka, Pangtangru, N-Gui, Kanjai, N-Gui, Kanjai, N-gi, Kampha, N-gou, Khuk, N-ting, Basket, carrying items like fish, Box, Pineapples Etc.



Mr F G Malenggong
Oimenlong 38 yrs

Stool, Kaluang, Rangtangka, N-giu, Khoutiang (Kampha), Pantagru, Ngou, N-ting(mat). Chair, Table, Box, Almirah.



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Mr D Haisaidanba
Impaningdi, 32 yrs

Table, Chair (with cane & bamboo)



Mr T P Thiujuak
Tamenglong, 42 yrs

*Table (with cane & bamboo),
Chair (with cane & bamboo) Stool
(with cane and Bamboo).
Employs 2 workers, makes things on
order basis.*



Mr Hounileing
Cheangdai, 40 yrs

*Kaluang, Rangtaugka, Handle of
Dou, Pantangru, Njam, Kanjai, N-
gi, Mat, Furniture.
interested in forming a group of
craft makers*





Mr Ranghim
Tousem Khullen
28 yrs
*N-Gui, N-Gou, Kaluang, N-ru,
Luang Thang, Rampuri Rak,
Puatru, N-ka*



Mr Abel Panmei
Aquaram
*knows carving of
bamboo*



Mr Ramjuan
Khubuching
*Furniture, Crafts,
Construction, Kaluang, N-Ka,
Basket.*

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Mr Giruam
Old Tamenglong
45 years

*Walking Sticks, Bamboo
Wood&Cane decorative items*



Mr Gingamang
Khubuching
23 years



Mr Mithuambei
Duiluam
39 years

Has orders for Laungry Baskets





Mr Gaisuiling
 Taobam
 30years
*Has no formal education
 Furniture, Cane table.*



Mr Jianthailung
 Taobam 22 yrs
*Can make Giupak, Fan,Dou
 Handle*

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Mr Asnipou
 Thinlon 23 yrs

*Flower Basket (with cane & bamboo),
 Kanjai (with cane & bamboo), Rangtangka
 (with cane & bamboo), N-Ting (with cane &
 bamboo),,Kampha,N-Gou, Nru-Pantangru,
 Basket.*



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24 Mr Beiping
 Tamenglong 81 yrs

*Illiterate but has traditoinal
 craft skills and wisdom ,
 knows many types of weaves*



Mr Guitiang Pamei from Tamenglong,
 Mr Sasa Daneid Don Bosco Social Welfare,
 Mr Goiliang from Charamram.
 attended the inagural session.

**Raw Materials
Bamboo**

Manipur is rich in varieties of bamboo available; The varieties of bamboo in available in Manipur is mentioned in the web site hosted and maintained by NIC Manipur state unit dated Wednesday 07 January 2004 . Local craft persons are unaware of the botanical names and refer only local names.

Common varieties are

- Bambusa Tulda (Utang)
- .Melaconna baccifera (mobi wa, Muli)
- Dendra Calamus Hamiltoni (wnap,Unap,Pecha)
- Teinostachya dulooa (Dulu).



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- Bambusa arundinacea (Saneibi).
- Bambusa pallida(KalSundi).
- .Dendrocalamus giagianteus(Meiribob)



Most of the bamboo available in India aresympodial. In this area one can see an intermediate variety between Mono and Sympodial varieties.



root of the local variety

Borers in Bamboo

Some of the green bamboos which were brought to the workshop was infested with borers. These eat the cellulose rich sap and bore through the bamboo and live inside the bamboo. They are killed if they are exposed to sunlight. the methods to prevent bo rers is by treating the bamboo with Borax and Boric acid which was introduced in the workshop.



Cane (also called Rattan)

There are 5 genera and 60 species of cane, Northeastern states alone account for 4 genera and more than 25 species. Cane plants favour moist humid climate and are found to grow mainly as under growth in primary forests.

Classes of canes

Diameter of the stem is one of the important physical parameters for assessing the utilization potential and grading of canes. .

Canes can be classified as Small, Medium and Big based on this character. Tamenlong has plenty of Small and Medium diameter canes. Cane varieties available in the North East are given below.

Large diameter canes (diameter above 4 cms)

Plectocomia assamica

P.bractealis

P.khasianus

These are used traditionally for making bridges,ropes etc,.



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Mediun Diameter Canes (diameter between 2-4 cms)

Canes of this group are much used in handicraft and furniture industry for making frame and also walking sticks.

Calamus flagellum

C.inermis

C.latifolius

C.l.nambariensis

C.acanthospathus

C.khasianus

C.erectus

Plectocomia himalayana

Daemonorops

Jenkinsianus

Daemonorops sp.

Are included in this class



Small diameter canes (diameter less than 2 cms)

Calamus gracilis

C.leptspadix

C.tenuis

C.guruba

C.arunachalensis

C.floribundus

are grouped in this category.

These are used for tyeing purpose and to décor handicraft produce.

Flowering of Bamboo

Local variety of bamboo called Mpi (*Dendrocalamus Hamiltoni* - smaller-dia variety) had flowered all along and one can see on road-side huge bundles of bamboo cut and kept neatly for moving

Bamboo Flowering called Gregarious Flowering takes place once in 20 to 25 years depending on the species. When Gregarious Flowering takes place all bamboo plants belonging to that family die and dries up. It is then cut and removed.



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Dried Bamboo can cause land slides as dried bamboo roots cannot hold the soil.



Growing Bamboo and Cane

Tambac has been encouraging growing of bamboo and cane. We visited one entrepreneur who has started planting bamboo and cane saplings in a systematic manner.





Craft skills

Local people in general have weaving skills. Many daily used products are made by villagers.

Bamboo skin is used for basket weaving. This makes the baskets strong. Quality of skin of some of the varieties is very good and can replace cane. Cane is made use of in combination with bamboo.

One Competition organised by INBAR brought in scores of baskets and other items in bamboo and cane. Weaving bamboo products and selling is not that prevalent. Baskets for carrying vegetables, wood etc are made with a triangular weave, using the skin of bamboo. Similar shaped baskets with close weaves sometimes made of cane, are used for carrying flour, etc. The shape of the basket fits into the person's back, while the cane belt attached to the basket is kept on the head. The basket with four legs is stable when kept on the ground.



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Rangtangka



Charap

Khouluwang
Pumei bamboo basket
carrying basket
height 54 Cms
This basket was taken
from the chief's house in
old Tamenlong



Following baskets are made locally.

1. Rangtangka
2. Khouluwang like rangtangka but without holes
3. Khuk container with lid
4. Kanjai (Khubjai) square box
5. N-gui round basket
6. Pantangru large dia tray
7. N-gou 2' to 4' dia tray
8. N-giu container without lid
9. Kampha to keep fish or paddy storing
10. N-ting mat bamboo or cane
11. Duang.
12. N-ru
13. Putru
14. Charap. 2' to 3' dia tray for drying fish



another basket found in old tamenglong used for keeping chicken



Pang.Maring cane and bamboo basket used as a common dining table for the family. Height 47 cms circumference of the mouth is 140cms



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Tabu,
Tangkhul cane and bamboo basket
cloth storage basket
height 69 cms diametre 51 cms

people at Tamenglong also make many products for their use depending on their skills,,a sculpted walking stick in a small dia bamboo and a jug which was an entry to the competition can be seen in the pictures.





Local Tools..

Dhau of different sizes is used by the people. The tools used are very distinct to the place and are carried in person on the waist in a band. The handles of tools are made in brass by some crafts persons. Some prefer weaving cane on handles. The tools are very sharp and maintained well. There is a local person who makes the Dhau for them.



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Our team reached Tamenglong on 27th late afternoon. After night halt at the guest house, the workshop was conducted on the next day in a class-room, with a terrace attached to it. The terrace was used for demonstration sessions. The venue was shifted to the town hall which is also Activity Centre for Sports.



A week before the actual workshop, TAMBAC was asked to get the strips made and keep them ready for the workshop. It was observed that the strips were of varying thickness. They learnt to make strips of same thickness during the workshop.



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Inagural Session

Inagural Session started off with introductions and registering of the participants. Local S.D.O inagurated the function. Mr Dorai introduced CIBART and TAMBAC on behalf of INBAR. Mini tool Kits developed by Bambu Studio, IDC were given to each of the participants. Workshop time-table with the daily schedule along with a manual for colouring of bamboo with natural dyes and treatments in addition to a manual for using the mini tool kit formed the course material. All these materials were given in a traditional Manipuri bag.



Prof A G Rao introduced the modus operandi of the workshop. He explained the speciality of tools in the Mini Tool Kit.

Mini Tool Kit



Talks

Talks on the following topics were given in English by prof. Rao, using a lap top computer to show images. To bridge the communication gaps. Sri Sukumar Haobam translated in Manipuri. Some of the participants knew only their local dialect. Even the workshop coordinator who knew the local tribal language had to seek the help of other participants from the same village to communicate with such participants who were not exposed to outside world.

1. New scope in Bamboo Craft.
2. Introduction to Hand tools and Machines.
3. Use of Moulds and jigs.
4. Finishing, colouring and smoking
5. Production Planning and Costing.



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prof. A G Rao looking on as Sri Sukumar Haobam translates into local language, a presentation using lap top computer.

New Scope in bamboo craft

Participants were exposed to the new possibilities in bamboo craft. Products designed in IDC were shown to them with visuals and few actual samples. Global competition and importance of being with the times were explained.



Bamboo Tool kit

A video was shown to illustrate how each tool in the tool kit is to be used. Use of each tool was demonstrated and explained by Rudrapal and Krishna Sutar.

Cane Tool Kit

Cane tools were also introduced in this workshop and the participants after demonstration, used the tools.



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Tool Kit Tools

Making new products to be used in different environments demands new tools. Tool kit tools were introduced in this context.

Use of pruning saw, hack saw or mini-hacksaw gives clean finish without fibers jetting out when the bamboo is cut.

Craftsmen were seeing the pruning saw for the first time. They were quite impressed with its use for cutting green bamboo.





Participant using cane scrapper

The half round scrapper and IDC mutipurpose knife are useful when curvature in the tool is required.

Scraping bamboo and making round sticks become easy with these tools.

The use of cane scrapper was demonstrated and the participants used the tool.

IDC Multipurpose knife, Fine splitting knife, Half round Scrapper and Jig Plane were liked by the participants as they could see their advantage over their traditional tools. There was a competitive spirit among the new tools Vs their traditional dhau. We found one participant showing to others how the IDC splitting knife was better than their traditional dhau as he will not get tired even if he uses it for long time.



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The piercing tool made the task of piercing holes in the multipurpose basket easy, reducing the possibility of strips getting split.



Sandpaper pad used to finish bamboo strips

Small Machines



Four small machines developed at IDC were introduced to the participants.

Splitting Machine splits 4mm bamboo strips to half the thickness giving 2mm strips. The 2mm strips can be further split into 1mm strips by halving them once again. The machine is simple to operate. For many it was first experience of operating a machine, and the satisfaction could be seen when the even splits started coming out of the machine.

Thickness Sizer

Thickness sizer gives even thickness of the strips. This gadget is very useful if precise thickness and good finish of the strips are required.

Participants used this machine for finishing cane as well. They found it will give them a great advantage for finishing the cane strips.



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Width Sizer

Width sizer sizes the strip in width. Once the blades are adjusted to a particular width, strips of same width can be obtained by pulling the strips through the blades. Participants used the machine extensively once they learnt the simple operation.

Some of the participants tried to size cane strips with the sizer. After some efforts they could adapt to sizing the cane using the width sizer.



IDC Sander

IDC Sander uses the gear mechanism of hand grinder to get high speed with hand operation. It can be used to finish strips as well as end products.

Participants found its power when finishing the tea coasters plates and rims later in the workshop.

Use of Moulds Jigs and templates.

Use of Moulds to control size and shape of baskets as well as components like rims for the baskets is new to bamboo craft.

Basic concept of mould and jigs were explained through visuals in a talk.

Later participants made baskets and rims using moulds. To economise time, the practice sessions were combined with product making when each person made one type of product. Thus 3-D moulds were used for making waste paper basket and 2D moulds were used while making rims for plates.



Initially participants felt it was difficult to understand these concepts. It was translated by Sri Sukumar Haobam in the local language.



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The participants were taught to use templates. The use of templates for tea coasters yields coasters of same diametres. which is other wise not easy to achieve. The participants were using this for the very first time and were happy to learn this technique.



Treatments, Colouring and Finishes

Brief presentation was made covering various aspects of finishing from raw material to final marketing of the end product and the care to be taken at each stage.

Borax boric acid treatment for prevention of insect attack was demonstrated.

Colouring of bamboo strips with various natural dyes was shown .Craftpersons participated in dyeing yellow with Haldi, brown1 with tea-leaves as well as brown2 with Kattha.



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Coil Technique

It consists of winding or coiling a bamboo strip around and applying a glue paste as a binder over it.

The glue paste is made by mixing adhesive, and sawdust.. The strips can be wound on a plain platform and pressed on to a mould gradually to take its shape.

After first 3 days of the workshop, it started raining. It became difficult to dry the plates and tea coasters made of coil technique. A smoke tent was erected by the participants using bamboo and tarpaulin.to dry the products. As the treatments and dyeing needed heating wood stove was on through out generating smoke and hot gases. The smoke tent facilitated the use of these hot gases and smoke.

A temporary platform in bamboo was built to keep the plates,bowls and tea coasters.



Krishna and Rudrapal demonstrating the technique of using the filler in the tray made by coil technique to reinforce the tray



smoke tent



Finishing the product

Machines like IDC Sander makes the arduous task of finishing easy. Finishing with sand paper is done at the final stage when the product is fully dry. Sand paper pasted on blocks helps in its use as well as increasing the life of sandpaper. Sand paper blocks also can give uniform curvature while finishing with hand.



IDC Multipurpose knife is used for finishing flat surfaces before sanding



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IDC scrapper is used to finish curved surfaces of the tray and the plain surface as well.



Finishing with Scrapper

cane was heated using Kerosene Blow Lamp and bent over a circular mould. Usually the Crafts persons use the feet to bend the cane but the use of mould was taught. with this technique a multipurpose stand was made



One of the participant had an expertise in making cane furniture. He was interacting with the group and sharing his experiences. Knockdown concept in cane furniture was introduced to the participants by Mr. Sukumar. A side table was made in the workshop with standard, ready made joining fixtures taken from Bombay. Use of such readily available joints can create market for the Tamenglong furniture outside the district as the transportation becomes easy.

Cane bending



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and weaving

One of the participants was above 80 years with traditional skills. He knew many traditional weaves. We asked him to make a spectacle case. A wooden mould made his task easy and saved his time. He was very appreciative of the mould.



Woven cane spectacle case was made by the oldest participant in the workshop. He was given a wooden mould to build the weave and conform it to the required shape. He liked the concept of moulds very much and was in awe for the same.

The participants were divided into 3 groups A, B and C from the second day onwards to work in project mode. A group leader was chosen for each group and a resource person was assigned to guide. Rudrapal, Gangamma, Krishna were guiding the groups.

Prof A G Rao and Sri Sukumar Haobam were giving design and quality control guidance in each phase. dialogues and documentation of each craftman's details were done alongwith.



The groups worked in different combinations thus covering range of products.



Knock-down moulds were used by the participants. to make the Waste Paper Baskets

Working in Groups



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Each of the trainers Krishna, Rudrapal and Smt Gangamma trained a group. The groups were rotated as per the three combinations leading to many products.





Working in Groups



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Working in Groups





prof.Rao discussing with Mr. Nehemia during the closing session



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Closing session of the workshop
The closing session of the workshop was held on 2nd June. The output of the workshop was displayed.



Output Of The Workshop

- 25 round trays (double weave)
- 25 round plate trays (coil technique)
- 25 Small bowls
- 25 plate coil technique
- 25 big bowls (coil technique)
- 25 multi purpose basket (with cane hook they all could not complete sets)
- 12 waste paper basket
- 10 small basket
- 1 cane specatacle case



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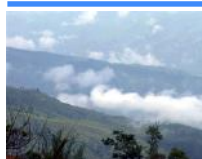
List of things given to Tambac after the Workshop.

Moulds

1. Tea Coaster	08 Nos.
2. Round Plates Mould	04 Nos.
3. Round Tray	02 Nos.
4. Radius (Plate)	03 Nos.
5. Bowls Big	02 Nos.
6. Bowls Small	02 Nos.
7. Waste Paper Basket Rim	3 Sets (1set=3pcs)
8. Waste Paper Basket(big)	2 Sets
9. News Paper Basket(small)	1 Set
10. Spectacle Case	1 No.
11. News Paper Basket Hanger	6 Nos.
12. Plastic Gauge	5 Nos.

Tool Kit

13. Tool Kit	01 Bag
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Small Machines

12. Splitting Machine	02 Nos.
13. Width Sizer	02 Nos.
14. Thickness Sizer	02 Nos.
15. Hand Sander	02 Nos.
16. Hand Grinder	01 No.
17. Roller (Machine)	01 No.
16. Bamboo Splitter	01 No.

Product Samples Given To Tambac

Miscellaneous

17. Tea Coasters Centre Piece	40 Nos.
18. Tray Centre Piece	50 Nos.
19. Cane Tools (Box)	1 Set
20. Stain	03 Nos.
21. Fevicol	2.5 Kgs.
22. Fevi Quick	6 Nos.
23. Katha	1 Kg.
24. Potassium Di Chromate	1 Kg.
25. Copper Sulphate	500 Gms.
26. Tea	500 Gms.
27. Haldi	300 Gms.
28. Saw Dust	2 Kgs.
29. Drill Bit	1 Set
30. Marker(4mm)	2 Nos.
38. Cane Rack	1 No.

31. Coil Technique Plate	14 Nos.
32. Round Tray	4 Nos.
33. Bowls	7 Nos.
34. Tea Coasters	17 Nos.
35. Waste Paper Basket (Big)	3 Nos.
36. Waste Paper Basket (Small)	2 Nos.
37..Multi Purpose Basket	4 Sets

Conclusion

The workshop has been exclusive and first of its kind. The craft group who attended were enthusiastic. TAMBAC, the organising NGO had the requisite facilities and motivation to select the representative craftpersons with traditional skills from different parts of Tamenglong. Participants learnt many new things. The resource group were satisfied with the results as there were many things for them to learn. The local varieties of bamboo and the local skills became familiar. In the Concluding session informal and frank discussions with the participants were held.

They were asked whether the workshop was really useful?

What next?

What follow-up they will do?

In response the participants said that the workshop inputs were indeed useful.

One of them said he would be making 5 carrying baskets in a day instead of 2 to 3 he used to make with the new tools and machines.

They also said they can make new designs for the **Orange festival** which happens every two years at Tamenglong. Many outsiders visit Tamenglong at that time. Some of them were eager to get hold of the machines for themselves.

How can they get the machines ?

We had long discussion with TAMBAC director Mr. Nehemia. TAMBAC could arrange to supply these machines by procuring at a time from Bombay and distributing on the cost basis. Existing loan schemes could also be made use of.



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Can these products get into the City market?

It was suggested that TAMBAC can start with a mini production centre by keeping the machines and toolkits given, in a workshop. Trial orders can be placed by CIBART as the resources required can be easily generated. These products can be marketed at Delhi through CIBART and INBAR. Inbar also has international linkages for marketing once the products acquire requisite quality and quantity. Mr. Dorai was also quite enthusiastic about the possible market linkages.

The major problem is to achieve a reliable supply in quantity with quality..

Press Reports

Press reports appeared in news papers of Manipur giving the details of the workshop. However we could not see it in Tamenlong.

IIT Campus Diary mentioned the workshop prominently with pictures.



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7-day interactive workshop at Tamenglong (Manipur) from 26th May to 3rd June 04



Individual attention is paid to each craft-person



Talks are given with visuals using laptop and digital video

Bamboo for Development

A workshop on 'New designs, tools and Techniques' was held at Tamenglong, Manipur for craftpersons from surrounding villages by the design team of IDC (Industrial Design Centre), IIT Bombay. The workshop was organized by TAMBAC (Tamenglong Bamboo and Cane Centre). The workshop is part of project 'Mini Bamboo Clusters' funded by K.V.I.C.

The IDC team has so far conducted about 10 workshops on bamboo craft in different parts of the Country, adjusting to the needs of each place. Every pocket of the country turns out to be unique with its local skills and local variety of bamboo, posing new challenges to the team. This experience and continuous development after each workshop are making the team more and more professional in dealing with the next modules to bring a new direction to the bamboo craft. New market oriented product designs are developed and introduced in the workshops along with tools, moulds, machines and techniques required to make these products.

Resource Persons:

- Prof. A.G. Rao (IDC IITB)
Designer - Team Leader
- Mr Sukumar Haobam (IMPHAL)
Designer - Consultant

- Smt Gangamma (IDCIITB)
Skilled Craft Instructor
- Shri Niranjan Rudrapaul (IDCIITB)
Skilled Craft Instructor
- Mr Krishna Sutar (IDC IITB)
Mould Maker, Trainer



KVIC
Mini
Bamboo
Cluster
project

Bambu
Studio
IDC, IIT
Mumbai