



Report of

The Asian Regional Symposium of the Global Natural Fibre Forum (GNFF)

September 25 to 27, 2012

At The Lalit Ashok, Bangalore

Organised by Industree Crafts Foundation India
&
The Commonwealth Secretariat, UK



Supported by:



Contents

Introduction	4
Day 1, September 25, 2012	4
Inauguration	4
Day 2, September 26, 2012	8
Session 1: GNFF Caribbean, Africa and Asia.....	9
Presentation 1: Dr. Thandeka Kunene	9
Presentation 2: Ms. Lisa Callender	11
Presentation 3: Ms. Poonam Golani.....	13
Session 1: Post presentation clarifications and discussions	13
Session 2: The Evolution of Natural Fibre Industries in Asia and the Future.....	15
Presentation 1: Mr. Zaheer Abbas.....	15
Presentation 2: Mr. Sudhakaran Pillai.....	16
Presenter 3: Ms. Noor Intan Saffinaz Anuar	17
Presentation 4: Ms. J.A. Kumudu Fernando.....	18
Session 2: Post presentation clarifications and discussions	18
Session 3: Natural Fibre Composites – Emerging Technologies and Research in Asia	19
Presentation 1: Dr. Mubarak Ahmad Khan.....	20
Presentation 2: Dr. Sangeeta Baksi.....	21
Presentation 3: Mr. Abhishek Thomas	22
Session 3: Post presentation clarifications and comments	22
Session 4: Integrated Interventions along the Value Chain-Case of Banana	24
Presentation 1: Dr. Chanakya Hoysala	24
Presentation 2: Dr. V.B. Manilal	25
Presentation 3: Dr. R. Shanti.....	26
Presentation 4: Dr. R.G. Patil	27
Presentation 5: Dr. Tarak Kate	27
Session 4: Post presentation clarifications and discussions	28
Session 5: Transitioning from the Traditional to the Contemporary-Innovations in the Creative Sector.....	31
Presentation 1: Mr. Gopi Krishna	32
Presentation 2: Mr. Dhevan de Saram.....	33

Presentation 3: Ms. Payal Nath	33
Presenter 4: Mr. Rajshekhar Narayan.....	34
Session 5: Post presentation clarifications and discussions	35
Field Visit to Mother Earth	36
Day 3, September 27, 2012	36
Session 1: Scaling Social Business Models-Securing Rural Livelihoods.....	36
Presentation 1: Ms. Neelam Chhiber.....	37
Presentation 2: Khunying Puangroi Diskul.....	38
Presentation 3: Mr. Krishnan.....	40
Presenter 4: Mr. Milton Ratna	41
Session 1: Post presentation clarifications and discussions	42
Session 2: Design – Leading Value Chains	43
Presentation 1: Dr. Vinod Shanbag.....	43
Presentation 2: Mr. Jacob Mathew	44
Presentation 3: Mr. C.S. Sushant	45
Session 2: Post presentation clarifications and discussions	45
Session 3: Markets-Building an Equitable Supply Chain for Natural Fibres	45
Presentation 1: Mr. Swapan Kumar Das.....	46
Presentation 2: Mr. Piyush Deogirikar.....	47
Presentation 3: Ms. Sreekala Kadidal	47
Felicitations of Artisans.....	50
Open session	50
Presentation 1 - Dr. Thandeka Kunene	50
Presentation 2: Mr. Deogratias Ruhinda.....	51
Session - Final GNFF Asia Program and Key Partnerships	53
Conclusion	54
Annexure 1_Country-wise responses	58

Report of

The Asian Regional Symposium of the Global Natural Fibre Forum (GNFF)

September 25 to 27, 2012
At The Lalit Ashok, Bangalore

Introduction

Global Natural Fibre Forum (GNFF) is an international network set up with the specific intention of promoting the development and propagation of natural fibres towards sustaining our ecology. Its other equally important agenda is to help small producers across the world, strengthen and sustain their livelihoods by assisting them in increasing their income through the use of indigenous natural fibres. GNFF serves as an information hub on natural fibres - disseminating knowledge on cutting edge technology, designs, marketing information and research to individuals and organisations associated with the sector. GNFF focuses on popularizing various industrial and non industrial applications of lesser known fibres such as grasses, straws, water hyacinth, sisal, pineapple husk, etc, and the possibilities they offer for the socioeconomic development of vast millions of people.

The Asian Regional Symposium of GNFF was organized by Industree Crafts Foundation¹ and the Commonwealth Secretariat, UK (COMSEC).

The symposium aimed to bring together key stakeholders in the natural fibre sector from different countries across Asia to exchange their experiences and knowledge in the area of natural fibres, and to explore partnerships and collaborations among them towards building the Asian chapter of GNFF. The symposium had the participation of 84 delegates from countries of Asia, Europe, the Caribbean and Africa such as Malaysia, Sri Lanka, Thailand, Bangladesh, India, Pakistan, Jamaica and Tanzania.

The collaborations, partnerships and business linkages that are expected to emerge as a result of the symposium are seen as catalysts for increased trade and commerce within and outside the region.

Day 1, September 25, 2012

Inauguration

The symposium began with an inauguration ceremony on the evening of September 25th.

The highlight of the evening was its commencement with reverberating performances of the *Dollu Kunita* and *Veeragaase* by local artists from Karnataka to showcase some of the cultural arts of the region.

¹ A social enterprise supporting livelihoods of rural producers across India

The guests of honour for the evening were Mr. Watipaso Mkandawire, Advisor and Acting Head, Enterprise Development (SASD), Commonwealth Secretariat (UK); Dr. Keerti Tewari, Principal Director of Audit (central) Karnataka O/O Comptroller and Auditor General of India; Mr. K. L. Ramesh, Vice Chairman, Export Promotion Council for Handicrafts; Dr. Mubarak Ahmad Khan Chief Scientific Officer and Director, Bangladesh Atomic Energy Commission and Ms. Gita Ram, Vice Chairperson, Crafts Council of India.

The audience enjoying a performance of *veeragaase* during the inaugural ceremony of the symposium



Dr. Keerti Tewari, who was invited to deliver the key note address, identified herself as a lover and advocate of natural fibres and their products if not an expert on them. She aptly provided a very interesting and informative introduction to natural fibres covering aspects such as their classification into plant and animal fibres based on their sources; the large number of natural fibres that are known to exist; their sources from various parts of the plant, animal, bird or insect they originate from; their existence as a fundamental part of human life since ancient times and their etymology.

Dr. Tewari spoke of how natural fibres which had once found traditional use were today also finding novel applications such as in the manufacture of composite boards to make furniture or in the automotive industry to make dashboards. She felt that everyone would agree that these new uses have the potential to offer opportunities for market expansion and future development of the global natural fibre sector.

Referring to the shift away from natural fibres towards synthetic fibres in the last century, she spoke of how, of late, there has been a growing appreciation of the detrimental effects of synthetic fibres and a rising concern on their impact on health and the environment. According to her these have led to a renewed interest in natural fibre products. She shared her opinion that it is imperative for us to relook at natural fibres and promote their usage if we want to achieve sustainable living.

Mentioning the various virtues of natural fibres, she highlighted the fact that natural fibre production is also vital to the economy of many developing countries. She felt that with many people across nations living in abject poverty, it is crucial that our efforts, besides looking at environmental sustainability, also address social and economic sustainability. She expressed her happiness at knowing that the Commonwealth Secretariat in partnership with various bodies across the globe has initiated the GNFF. She was certain that the forum would provide a platform for all organisations working with natural fibres to collaborate with each other and give an impetus to the natural fibre industry. Welcoming all the guest participants from Asia, Africa and the Caribbean, she hoped that the symposium would give rise to a strong network of people united in the mission of making the earth a better place to

live in. She ended her speech with the exhortation that our actions have to be responsible, ethical and accountable and conveyed her best wishes to the invitees and participants of the symposium.

Ms. Neelam Chhiber, Managing Trustee of Industree Crafts Foundation, provided the opening address welcoming everyone present. She made special mention of the participants from India acknowledging their support during preparations for the symposium.

She went on to provide a historical perspective to GNFF and the symposium. She recounted how Industree Crafts Foundation had gone through the website of the International Year of the Natural Fibres and felt that Industree Crafts Foundation had something to share in terms of its learnings from experience with small producers of natural fibres across the world. She shared how a meeting with COMSEC had resulted in the birth of GNFF and that its continuous support has brought what she termed, the fledgling network to where it is today.

She acknowledged COMSEC's intense efforts to see how the GNFF, envisioned as an open source network, could enable people from different countries who have knowledge in the natural fibre sector to come together. She identified Industree Crafts Foundation and COMSEC being mere initiators trying to set up something which should be able to carry forth itself and become sustainable - a platform for all small producers across the globe to share their knowledge. She spoke of how COMSEC helped structure the whole initiative by highlighting the need to look at regional platforms and the need for building networks at the grassroots levels.

She also acknowledged the roles played by various Indian government agencies² in the growth of the natural fibre sector in the country, which she feels is in the fledgling stage. She mentioned achievements in the sector in India such as the setting up of the first Natural Fibre Crafts Park supported by state government agencies. At the end of her speech she offered, on behalf of Industree Crafts Foundation, any support to the participants or their organisations.

Mr. Watipaso Mkandawire addressed the gathering on behalf of COMSEC, welcoming all resource persons and participants. He introduced COMSEC as a unique organisation of 2 billion people commonly bound by aspirations of democracy and development for which, he said, natural and human resources that constitute the 2 billion people had to be harnessed. Complimentary to what Ms. Chhiber had shared, he spoke of the origin of GNFF. He recollected the journey that began with the collaboration of COMSEC, Industree Crafts Foundation and other stakeholders in 2009 during the International Year of Natural Fibres in Bangalore to harness natural fibres. The program was called Pan Commonwealth Natural Fibres Skill Development Program during which 50 participants from 20 different Commonwealth countries had participated. It had been a response to the International Year of Natural Fibres and aimed to share information on economic opportunities that exist with natural fibres.

² Such as the Export Promotion Council for Handicrafts, Ministry of Textiles, Government of Karnataka, Office of Development Commissioner of Handicrafts etc

He shared the thoughts and ideas of Dr. Abdul Kalam, chief guest of the program, on how micro, medium and macro enterprises play a role in rural development. He also shared what Dr. Kalam had challenged the delegates then- that The Natural Fibres Skill Development Program should aim at creating business opportunities through medium and small scale industries to an extent of at least 5 billion dollars for the partnering countries within the next 3 years. Mr. Mkandawire said that 3 years since then, he now challenged delegates whether that target has been reached. He continued that the other challenge that had been put forth by Dr. Kalam, was to come together to create a world-level knowledge platform of natural fibres linking the national missions of the Commonwealth countries. He said that COMSEC with Industree Crafts Foundation had jointly taken up this challenge.

He said that during the last 3 years, tremendous efforts have been put in by COMSEC, Industree Crafts Foundation and many other partners in setting up the GNFF and in facilitating the creation of worldwide, national, regional and project networks among a number of Commonwealth countries. He spoke of other achievements made by GNFF in terms of activities and interventions.



He concluded that he hoped that the symposium would see the birth of the Asian GNFF, an exchange of knowledge across various chapters, and that GNFF would soon not only be a global brand but also a flagship, self sustaining entity, serving the needs of small producers and farmers of the world. He felt that it is possible to achieve the targets set by Dr. Kalam if all stakeholders worked as a team with a common purpose. He wished everyone all the best in a journey which he felt they needed to be on for many more

years to reach the set goal. He wished for fruitful deliberations during the symposium.

Mr. K.L. Ramesh, an entrepreneur and facilitator of the Natural Fibre Park and efforts of the Council of Handicrafts in south India, in his address, pointed to the increasing popularity of natural fibre crafts. He put forth his request to the NCDPD³ to provide new ideas and directions for making natural fibre crafts an area of success. He also acknowledged how EPCH⁴ is contributing to making natural fibre crafts popular in India, doing quality compliance workshops, participating in different country fairs and promoting producers to increase their production for export. Acknowledging that the natural fibre arena promotes tremendous labour generation, he wished success to the symposium in reaching its set goals and that all participants learn from each other.

Dr. Mubarak Ahmad Khan who shared that he had been working with jute for the past 25 years spoke of the virtues of the fibre in absorbing CO₂ from the environment while

³ National Centre For Design & Product Development

⁴ Export Promotion Council for Handicrafts

manufacture of synthetic fibres did the opposite. He acknowledged how COMSEC has taken the component of development and commerce around natural fibres into its programs and appreciates the efforts being put into commercializing products made of natural fibres which were earlier unknown to producers. He wished the symposium a grand success.

The inaugural function came to a conclusion with the lighting of a ceremonial lamp by the guests of honour followed by vote of thanks by Ms. Gita Ram, Vice Chairperson, Crafts Council of India.

Mr. Suresh Kumar, Honourable Cabinet Minister for Urban Development, Law and Parliamentary Affairs, State Government of Karnataka, who had been invited as chief guest to inaugurate the symposium was unable to attend on being detained by work elsewhere.



Day 2, September 26, 2012

Day 2 marked the actual commencement of the symposium as a platform for exchanging experience based knowledge in the realm of natural fibres.

The core design of the symposium involved moderated sessions containing presentations of experiences of working with and commercialising natural fibres in Asia. It also included presentations on experiences of the Caribbean and African chapters of the GNFF in trying to operate as collaborative networks.

The day began with Mr. Neju George, Senior Project Manager of Industree Crafts Foundation going over the schedule with the participants-indicating changes that had occurred on account of some of the participants (moderators of sessions and presenters-such as the consultant from the Pacific) having been unable to attend the symposium. The themes that would be covered during the various sessions, the moderators and presenters in each session were briefly introduced.

Handing over the session to the moderator of the first session, Mr. Neju George made special mention that Mr. Mkandawire had been instrumental in taking the GNFF program from a concept to spreading it out to some of the most needed areas of the world. He added that one of the realisations after doing extensive research was that challenges faced by people working with natural fibres were the same all over the world. Hence the GNFF offers an opportunity for much cross-learning.

Session 1: GNFF Caribbean, Africa and Asia

The session was moderated by Mr. Watipaso Mkandawire. Presenters included the following:

1. Ms. Lisa Callender- consultant, GNFF Caribbean
2. Dr. Thandeka Kunene- consultant, GNFF Africa
3. Ms. Poonam Golani- GNFF Asia

The moderator introduced the objective of the session as being to share what is happening in the regions of Africa, the Caribbean and Asia, based on the countries where the 3 presenters have done work. He reminded the gathering that the presenter from the Pacific was unable to come but that the work done in the Pacific would be shared during the course of the session.

Presentation 1: Dr. Thandeka Kunene



Dr. Kunene in her opening comments mentioned how glad she was at the opportunity to come to the symposium and to India, quoting what she had heard Haile Selassie say in one of his speeches, that Africa, which had somewhere along the line lost its culture, traditions and heritage, had a lot to learn from India which has retained them. She expressed that having come to the symposium, she was particularly interested in gaining some of the technologies to harness natural fibres and to learn of specific models already created to develop and commercialise them. She voiced her hope that the objectives and activities of GNFF could expand beyond knowledge-sharing to trading so that natural fibres could actually be used to remove poverty.

Dr. Thandeka's presentation which provided an overview of the activities that have taken place related to GNFF Africa featured the following points:

- How she came to be involved with the GNFF - that after having read the first phase report of the research done by Industree Crafts Foundation, she had realised that many of the African countries also have natural fibres but they are being underutilised.
- Her contract to do a short term consultancy - there were 4 aspects that had been looked at - what's happening in the African region, how to form the country GNFF chapters, how to develop the GNFF structure and key GNFF intervention programs that could be done.
- What's happening in the African region - research was started with a questionnaire sent to the 18 Commonwealth countries in Africa; respondents were from among

sectors of construction, agriculture, research, community development, education and art and crafts sectors, companies, government, universities, NGOs etc. Respondents were officials, ex patriots, trainers, designers, consultants and beneficiaries.

- Research Findings:
 - There are around 51 fibres of plant and animal origin found in abundance. Most of them grow wild and some are domesticated
 - There are a lot of fibres being harvested and sold merely as bales so there is not much benefit; further processing is done after they are exported. Fibres are mostly used in handicrafts and textiles and there are lots of efforts going into extraction, processing and weaving of the fibres. Industrial use is very less
 - The area of concern - developing a model that proves that natural fibres can remove poverty
 - Challenges faced - lack of awareness, skills, certification, clear roles and responsibilities

Dr. Thandeka said that she particularly wanted to draw attention to the challenges of collaborative R&D, market research and product development because these were areas where there was the hope that the link with GNFF Asia could assist Africa.

 - Opportunities–product diversification; alternate sources of renewable energy, climate change, collective marketing, waste management from existing factories and industries
- Formation of the country GNFF chapters- A symposium with the participation of the 18 African countries held in February 2012
- GNFF Africa services adopted (agreed upon by the 18 counties who came together for the symposium):
 - Farming (helping farmers get right models, sustainability of supply); Extraction (knowledge on hand extracted technologies, automated extraction); Conversion (improving SME products, industrial applications)
 - Critical technical support groups (R&D, training and capacity building, product development and marketing, equitable access to factors of production)
- Implementation of the 3-pronged approach – support to existing handicraft producers and natural fibre framers to produce better products for current markets; introduce new innovative lifestyle products using existing skills and fibres; explore ways of being in the total value chain with special focus on industrial applications and innovative products across industry intersectional linkages
- Collective intervention programs – existing (eg: audit of existing natural fibres, properties and applications), current opportunities (eg: demonstration of centres for key anchor fibres), explorative (eg: further collaborative R&D programs)
- Identified key stakeholders – public sector (eg: education, training and vocational training; renewable resources, energy and environmental affairs); Private (crafters and associations; farmers and associations, designers); other (eg: business

development service providers, natural fibre industry clusters, international networks)

- Critical success factors: awareness raising, design and production, clear regional, national and continental agenda, involvement of regional bodies, fair consultation and involvement of all stakeholders, delivery strategy must be self sustaining etc.
- GNFF structure, roles and responsibilities - regional co-ordinator, regional advisor, country co-ordinators
- Agreed upon services of GNFF Africa- knowledge generation, facilitating dialogue in policy, promoting innovative products for farmers and SMMEs, strategic partnerships, processing, beneficiations, co-ordination and governance

Presentation 2: Ms. Lisa Callender

Ms. Callender's presentation was to provide a perspective of natural fibres in the Caribbean- their present status and their desired future through the mechanism of the GNFF.

She began with the story behind the picture of a small Amerindian boy featured in her presentation, whom she had met at St. Cuthbert's Mission in Guyana. This little boy, she said represented to her, all the traditions and heritage of the Caribbean; all its present possibilities, hopes and optimism for the future. She said that just like the natural fibre industries he is a very long way from maturity and like him, natural fibres of the Caribbean are the continuity of its past, the opportunity of the present and the possibilities of the future.

Her presentation provided the context of developing natural fibre industries, a summary of the fibres present in the Caribbean based on research, their status in terms of use, and some of the prospects of development of fibre industries.

The features and key points of her presentation included:

- An introduction to the Caribbean
 - Diverse countries that comprise the Caribbean
 - Increasing dependence on tourism services as a means of economy. Production is more or less a dying art; many imports from China and elsewhere serve the growing consumption appetite of the Caribbean's growing populations
 - Vulnerability to natural disasters resulting in destruction of crops; traditional importance of agriculture and forestry - seen as critical to food security and rural development and thus reflected in the policy of all the governments of the Caribbean
 - Increasing concerns about climate change, environmental protection, energy supply, cost of energy and the retention of the Caribbean's cultural heritage in a world of globalisation
 - Migration of citizens to other wealthier countries in search of opportunities

- More users than creators of technology in the Caribbean and the potential for GNFF to address that
- The need to be able to access the proper technologies from other parts of the world; but implications are that the process of creating technology requires certain skills which are lacking. So any program must have not only infrastructure but also training and capacity building to build any form of industry in the Caribbean
- Over view of the research supported by COMSEC towards building GNFF Caribbean conducted in Barbados, Jamaica, Belize and Guyana. Focus was on fibres that have commercial potential and also on those, on which there was information in the public domain. The project was also used as an opportunity to focus on indigenous communities and traditional skills
 - Research questions - what fibres exist in the Caribbean? Are they cultivated or wild? What are their quantities? What are their potential uses? What are the potentials for projects which may be of future interest
 - Research findings - different countries have different fibres which could be grouped into agricultural fibres, naturally occurring fibres and non timber forest products. Uses - primarily for food, also for shelter, furniture, woven textiles, cultural objects (tools), and bio fuels. Potential investment opportunities - composites, furniture, textiles, packaging handicrafts and e-commerce marketing.
- Highlights of the regional symposium in the Caribbean held in June 2012:
 - Outcome - agreement among members on the importance of forming networks, consensus on the value of the economic usage of fibres and identification of some general needs of the key sectors
 - What was missing from that discussion was who will take responsibility for developing these industries in a structural way. The Caribbean GNFF has a system of national co-ordinators established. But now they are also looking at how they will move forward so hopefully the outcome of this symposium would be that some clarity is gained on that
 - As an early indication of the optimism, Barbados has developed a proposal for the use of coconut waste, Guyana has requested technical training
 - Immediate needs of GNFF Caribbean - a comprehensive virtual forum as well as a data base(suggestion that it is a GNFF website or a commonwealth connect forum which should provide user friendly access to information); technical assistance and training to support economic usage of the fibres; formation of action oriented steering committees to support the development of sectors though support in planning and partnerships; establish national pilot programs in various countries so people can see models of what works and then replicate them from their own models; implement sustainable harvesting programs to support industries; turnkey investment profiles of prospective entrepreneurs
 - Future needs - a GNFF Caribbean chapter that is functioning with a formal structure connected to the global forum to create market access opportunities

for producers; access and participation in global pools of natural fibre experts; formation of stakeholder-based steering committees; regional and international partnerships in design; product development; R&D

Presentation 3: Ms. Poonam Golani

Ms. Golani indicated that with the context being the first Asian symposium, her presentation was about the fibres in Asia as a means to lay the ground for future discussions and the next forum. Her presentation covered the definition of fibres, distinction between natural and synthetic fibres, types of natural fibres, their classification into animal and plant fibres and further classifications of plant fibres based on their sources. Many examples of the various plant and animal fibres of Asia were shown. General information was provided on common natural fibres such as coir, jute, cotton, silk, and kenaf.



Her presentation also provided an overview of the kinds of products that were made out of natural fibres in Asia and the various organisations and industries that are processing and making products out of them. Countries included India, Brunei, Pakistan, Malaysia, Sri Lanka, and Singapore.

Session 1: Post presentation clarifications and discussions

@ Dr. Thandeka

What is the THC for the hemp grown in Africa?

Less than 1%

Is hemp seed oil extracted?

Yes - Unilever is cultivating a lot of hemp and flax but now our government is talking to them to buy from us because the only hemp production in Africa is in south Africa, Tanzania and Egypt.

Removal of poverty is one of the reasons why we are working on natural fibres, but to what extent?

Do we have any goal to do that?

We have requested the 18 countries that are part of the GNFF Africa to indicate exactly how many people they are going to impact. We have gone by the 3-pronged approach. Our target in 5 years is that they grow their businesses by 20 to 100 %. As a part of the process, we are hoping GNFF world will measure the impact of our interventions and we have set clear targets for the next 30 years.

You have indicated that there are 51 types of natural fibres in your countries. Do you have any bank of natural fibres?

Sadly not. We just started looking at seed breeding, and where to secure the source. We thought of having a standing exhibition of natural fibres at the NEPAD⁵ office because they are the regional office for the whole of Africa. But we haven't done that yet.

@ Ms. Lisa Callender

Referring to what emerged during the GNFF Caribbean symposium, who indeed, will take ultimate responsibility to co ordinate towards developing the industries in a structural way and to achieve the GNFF goal?

It was not agreed within the symposium who will take responsibility. So we have set up within the time frame of the project a system of national co-ordinators who are interested in linking directly to the global GNFF. There were such co-ordinators at the symposium who spoke of the needs of their countries .We do have regional bodies within the Caribbean who could also be engaged but things tend to work better at the national level for the time being . Because of a lot of reasons, the process of building trust and collaboration is extremely slow. Hence it has not been agreed at this point who will take leadership because the national coordinators are themselves looking at what the next step is and the way forward. They do have some ideas of their own. But at this time, natural fibres are still in the domain of craft and we need to transpose it from crafts to other products, other industrial applications and also look at potential investors.

@ Ms. Poonam Golani

Is there any structure for Asia?

This symposium is the first step towards developing it.

There was a recommendation from Dr. Mubarak that a library of natural fibres be developed seeing that it would be useful for the members of the GNFF.

In response to this, Dr. Shanbag of Pearl Academy shared that the Pearl Academy has a resource centre which accumulates all kinds of merchandise from fibre to the end products. He continued that with support received by DEFRA⁶ , Pearl Academy had done a study of all the organic materials in India which have been developed into an archive. The archive contains samples of every piece of organic material that they could come across during the study. He concluded with the offer that Pearl Academy would be glad to offer its services in providing space for setting up a bank for natural fibres; He said that although Pearl Academy didn't have a lot of space, the idea and philosophy of grassroots is to see how to accommodate and how to get ahead despite all constraints. He said that if it is natural fibres, this philosophy could be taken further if it was to the liking of all.

The moderator concluded the session saying that the intention of bringing in the other regions was to look at what has worked and to use that information to build GNFF Asia and GNFF in general.

⁵ The New Partnership for Africa's Development

⁶ Department for Environment, Food and Rural Affairs

Session 2: The Evolution of Natural Fibre Industries in Asia and the Future

The session was moderated by Dr. Mubarak Ahmad Khan, Chief Scientific Officer & Director of the Bangladesh Atomic Energy Commission. Presenters included the following:

1. Mr. Zaheer Abbas - Advisor, Pakistan Jute Mills, Pakistan
2. Mr. S. Sudhakaran Pillai - Jt. Director CICT, Coir Board, Bangalore
3. Ms. Noor Intan Saffinaz Anuar - Malaysian Timber Industry Board, Malaysia
4. Ms. J.A. Kumuda Fernando, Coconut Research Institute, Sri Lanka

Presentation 1: Mr. Zaheer Abbas

Mr. Zaheer Abbas shared some of the salient facts about natural fibres in Pakistan mainly about the jute and cotton sectors.

He began his presentation with the statement that the initiative to form the GNFF could be considered as a breakthrough in the revival of an overlooked section of industry and untapped natural fibres which can bring prosperity to the underdeveloped nations. He added that it has the potential to boost economies and can be a turning point in the history of natural fibres.



He quoted the comments of the UN's Eco Panel as a prelude to the case for promoting natural fibres: "The current global model is unsustainable. To achieve sustainability, a transformation of the global economy is required; tinkering on the margins will not do the job."

The features and key points of his presentation included the following:

- The impact of manufacture and use of synthetics and manmade fibres have been detrimental to the planet in many forms such as a threat to the eco balance, depletion of nature, energy crisis, truncation human life on account of air pollution and depletion of ozone. By 2030 the world will require increased levels of water, food, energy and clothing
- The regulation carried out by the UN general assembly in its 33rd session - IYNF 09 was unaccomplished. The Commonwealth taking this initiative of forming the GNFF will help address the unaccomplished agenda of this UN regulation
- Rationale for considering natural fibres - In the last century, all natural fibres have come under tremendous pressure on account of manmade fibres and synthetic alternatives. Jute has been able to withstand this competitive pressure against

alternates. Natural fibres have specific characteristics with regards to end use and don't have substitutes

- Natural fibres have unbeatable advantages – they are biodegradable, replenish the earth with nutrients, can be used for multiple purposes such as energy through biomass, clothing through bark, food through seed oil etc
- World-wide scenario of jute - India is the lead producer and biggest consumer; Bangladesh is the largest exporter of raw fibre, Pakistan is the largest importer of raw fibre for its domestic consumption
- Traditional and non traditional products made out of jute
- Information on the jute and cotton sectors in Pakistan; level of annual production, employment they generate, export, number of mills, shares in the global market
- Potentials of unexploited fibres in Pakistan such as hemp, wild sisal and aloe

The presentation ended with his suggestion that natural fibres be promoted not because their competitors are pollutant or result in environmental degradation but because they have some inherent qualities that cannot be formed or found in manmade fibres. He urged the gathering that untapped natural fibres be promoted as a means to eliminate poverty, hunger and can support future economies. In this context he appreciated the efforts put in by Indusree Crafts Foundation and hoped for the success of its activities.

Presentation 2: Mr. S. Sudhakaran Pillai

Mr. Pillai's presentation provided an overview of the coir industry in India, the 3rd largest producer of coir. It provided interesting information on what coir was, its source, how it is harvested, processed and developed into various products. The structure of the coir fibre was explained as being such as to absorb and retain moisture, making it strong and flexible. An array of products made out of coir as a result of various processing methods were shared such as coir mats, composite materials, mattresses (made of rubberised coir), coir pith and coir geo textiles (which have wide application such as in embankment protection, slope protection and on roads – the use of which has been approved and promoted by the government in rural road development), handicrafts, substitutes to wood such as coir composite boards for furniture and infrastructure (used in building relief homes). Coir pith was introduced as a by product which was once considered as waste but now has various uses in agriculture and horticulture. The various coir products being made by the Coir Board have been standardised. According to Mr. Pillai, the Coir Board had come up with standards for each of these products.

Roles played by the coir industry were shared to be as follows:

- Environment protection
- Gender empowerment (by providing employment to women- most of the coir industries have 80% women among their employees)
- Employment creation
- Improving livelihoods of the unprivileged

Presenter 3: Ms. Noor Intan Saffinaz Anuar

Ms. Anuar made a presentation which provided an overview of the wood-based industry in Malaysia; what MTIB⁷ is doing especially as the co-ordinator of the wood-based industry in Malaysia and the roles of MTIB in the R&D of natural fibres especially bio-composites. Her presentation included the following features and key points:

- Introduction to MTIB - set up in 1973, as statutory body under the Ministry of Plantation Industries and Commodities with the objective of
 - further enhancing industrialisation and upgrading of the timber industry with emphasis on value-added processing
 - promoting and improving the markets and marketing of timber products
 - facilitating and strengthening the development of SMMEs⁸
 - developing and promoting standard in quality timber products
 - fostering orderliness in timber trade

In 2012 MTIB has more than 4015 wood based materials registered under it such as plywood, particle board, cement board, wood plastic composite, all considered as bio-composite products.

- Information on the wood-based industry of Malaysia - it contributes significantly to the national export income; it is the second largest commodity in Malaysia after the oil palm industry. Bio-composites alone contributed seven billion annually
- The rationale for shifting focus to develop bio-composites - The Malaysian timber industry was stuck at the 20 billion Ringgit dilemma for many years. Thus in 2009, Malaysia came up with the National Timber Policy of 2009- as per which and it was suggested that by 2020, the Malaysian timber industry would achieve a 53 billion export target. In order to achieve this target it was suggested fibre and bio-composites be developed.
- Work on natural fibres and bio-composites at MTIB - R&D activities conducted at MTIB are related to natural fibre development. MTIB has a division called The Fibre and Bio-composite Development Centre (FIDEC) set up in 2006 to spearhead the development of the fibre and bio-composite industry in Malaysia. Its activities focus on being the focal point for information on pre-commercialisation activities and coordination of R&D exclusively for the bio-composite industry in Malaysia. It forms the bridging agent taking R&D to implementers and the industry. Through MTIB's work, Malaysia already has about 48 bio-composite materials using various raw materials such as kenaf, wood sawdust, rice husk, and oil palm biomass.
- R&D projects for the development of natural fibres at MTIB - the most significant one being of the high grade palm oil- MTIB managed to bring this project to be commercialised by the industry which, it was anticipated, would contribute 4.5 billion Ringgit, to the production and supply of plywood to the domestic market.

⁷ Malaysian Timber Industry Board

⁸ Small Micro and Medium sized Enterprise

- Issues and challenges being faced – competition with solid wood and other artificial fibres, low awareness on the benefits of bio-composites among the public, customer-vector supply- managing collection of raw materials etc
- What's being done in Malaysia in terms of natural fibres - R&D on development, reduction of production cost, production of higher value products through promoting natural fibres to replace fibre glass, expanding the market through the green image of the product, strengthening institutional support to improve the delivery system related to the industry, etc

Presentation 4: Ms. J.A. Kumudu Fernando

Ms. Kumudu Fernando made a presentation on products formed from coir fibres in Sri Lanka. Her presentation included an introduction on the coconut industry, the importance of the coir industry, types of fibres, their extraction process, the properties of coir fibres and their products.

The features and key points of her presentation included:

- An overview of regions in the world where coconut trees grow
- All parts of the coconut tree can be used and hence it is called the tree of life
- Sri Lanka is the 3rd largest exporter of coconut
- Coir is extracted from the husk of coconut and is becoming a popular alternative to synthetic and mineral fibres
- Coir has attributes such as resilience, resistance to heat and dampness and is biodegradable
- The coir industry plays a major part in the economy of Sri Lanka and provides employment to around 40, 000 individuals
- There has been an increase in value added products made of coconut over the years
- The extraction and manufacturing process of coir fibre - the kinds of machinery used and the various types of fibres obtained
- Products of coir fibre - such as mats, brooms, geo fibres, mattresses, ply boards etc and their various uses
- Future plans of the government – to promote new products in existing markets and search for new markets for existing products; to make the existing market shares stronger; to improve the quality of fibres and fibre based products; to improve work places and work place safety for improvement of productivity and to do research on new approaches to retain people in the industry.

Session 2: Post presentation clarifications and discussions

@ Mr. Zaheer Abbas

How much of cotton cultivated in Pakistan is BT cotton? What are the types of cotton generally cultivated?

Pakistan mainly cultivates American cotton. Very recently the government has approved

BT cotton seeds. These constitute 20% of total cotton grown.

@ Mr. Sudhakaran Pillai

Are there any methods apart from the mechanical process of extracting coir fibres that have been developed or are being developed? What are the commercial applications for products made of coir fibres such as doors, roofing etc? After hearing about it in the context of Gujarat, we don't hear of it much anymore.

Coconut husks can be processed by 2 methods – coir retting and mechanical process. The mechanical process is further divided into de-fibreing and decortivating processes. In the de-fibreing process there is not much damage to the fibre but does happen in the case of decortication resulting in the fibre length getting reduced. The Coir Board has developed a technology for producing a coir composite board which has been standardised. The technology has been transferred to 8 organisations and this product is now slowly coming up.

Are there any mechanisms from the Coir Board to promote small scale industries in the country?
The government of India has developed certain schemes for promoting small scale industries under which 5 critical types of subsidies are provided to coir industries. The Khadi Board also provides a scheme under which up to 15 lakhs are available for subsidy, for any unit in coir.

Do you have any testing facilities in the Coir Board for which flexural durability tests on banana fibre can be made?

It is present at the Coir Board, but it will have to be configured for banana fibre which is difficult. For testing Banana fibre, one could go the regional office in Coimbatore where there is a Central Research Institute.

Do you have certified cottons in Pakistan?

All cottons in Pakistan are certified, otherwise there is no permission to grow cotton.

How are aloe fibres used?

This is what I hope the GNFF can help with- to explore how lesser know fibres can be used.

@Ms. Noor Intan Saffinaz Anuar

In bio-composites, what is the resin being used. Is it a biological one?

Different types of bio-composites require different types of resins. For example in particle boards we use amino or urea formaldehyde.

Session 3: Natural Fibre Composites – Emerging Technologies and Research in Asia

Prior to the commencement of the session, Mr. Neju George informed the group that Ms. Maziah Mohammad of the Armour factory, which has been working on high end applications of natural fibres such as in ballistics, could not come due to visa problems.

The session was moderated by Dr. Vinod Shanbag. Presenters included:

1. Dr. Mubarak Ahmad Khan, Chief Scientific Officer and Director, Bangladesh Atomic Energy Commission
2. Dr. Sangeeta Baksi, Scientist, Technology, Information, Forecasting and Assessment Council (TIFAC), India
3. Mr. Abhishek Thomas, Natura Fibretech, India

As an introduction to the session, the moderator provided a definition of composites as being materials produced when 2 or more fibres are brought together in varied proportions, taking on different dimensions in terms of their properties. It was added that the overlay of properties of different of fibres could be exploited to create different types of outputs. Qualifying that composites are of great industrial use, he informed the plenary that most of the presentations made would be extremely valuable since composites are extremely value-adding. According to him, the story of bio-composites is that research produces them but industry leaves them behind because the government refuses to come in between. Hence the support that composites require, particularly in the small scale sector does not happen despite the fact that a lot of money may be spent on the R&D. This is the case in India, perhaps there are other successful examples to look up to.

Presentation 1: Dr. Mubarak Ahmad Khan

Dr. Mubarak Ahmad Khan's presentation was on the jute-based composite material called Jutin developed for infrastructure. The features and key points of his presentation were:

- Rationale for producing natural fibre-based composites such as Jutin – as a response to growing environmental concerns; they have many advantages such as being biodegradable; more importantly, fibres such as jute absorb CO₂ from the atmosphere whereas production of manmade fibres produce tons of CO₂.
- Advantages of natural fibre-polymer composites: technical advantages (light weight, various processing facilities etc), environmental advantages (renewable resource, provides CO₂ and energy balance, problem-less thermal processing), economic advantages (low cost raw material, alternative income from agricultural field)
- The chemical structure of cellulose, a component of most natural fibres-it is hydrophilic and has to be processed out in order for the binding agent or resin which is hydrophobic, to be effective in the manufacture of composites. The challenge is to keep the inherent property of biodegradability and increase mechanical properties with resins.
- Jute fibre has many attributes compared to glass fibres. It is also a fibre that withstands inundation by water for long periods of time which is what happens in Bangladesh when there are floods.
- Physical and chemical methods of making fibres adhere to matrices to make bio-composites
- Virtues of bio-composites in infra structure – sound proof nature, water resistance etc

- Creation of Jutin - jute reinforced corrugated sheets, to address the infrastructural needs of the poor and homeless in Bangladesh
- Processes of making Jutin - materials required, simple technology for manufacture
- The traits of Jutin- environment friendly, fireproof , rust proof, sound proof, easy to prepare, lightweight, etc
- Properties - mechanical properties, thermal and water aging, weathering, thermal conductivity, etc
- Applications - for making walls, roofs, latrines, kitchen sinks, furniture, etc
- Disposal techniques
- Jutin won first prize at The Global Inventions Science and Technology, 2012 held in Dubai

Dr. Mubarak Ahmad Khan concluded his presentation with the request to keep the earth green, wipe one's carbon foot print and with the statement that the natural fibre sector has taken off.

Presentation 2: Dr. Sangeeta Baksi

Dr. Sangeeta Baksi made a presentation on the R&D work done by TIFAC as a part of the Government of India on bio-composites - the technology involved in the processing, manufacture of natural fibre bio-composites and the range of product applications.

The features and key points of her presentation included:

- An introduction to the advanced composite program at TIFAC - the main mandate of the program is to promote the use of advanced composites. It is done in close partnerships with industries and by linking up with institutions. TIFAC has developed a very normal composite technology and composite products. The industries manufacture products which are of standard quality thereby having better commercial ability
- Definition of 'composite' materials - their composition and nature; composites occur in nature as in the case of flesh and bones in the human body. One can find use of composites way back in history, as in the case of using straw and clay by the Egyptians. Composites exist in different forms today. Attempts are being made to streamline them through technology so that they become non conventional and have several applications in our society
- TIFAC's work in the area of natural fibre bio-composites - TIFAC's focus has veered more towards natural fibres now because of the global concern about the environment. TIFAC has promoted a few composite industries in the manufacture of natural fibre bio-composites.
- The variety of natural fibres available in India and their use in manufacturing bio-composites such as rice husk particle boards which were used to make shelters during the Tsunami in Tamil Nadu
- Components of bio-composites - natural fibres, polymers (resin systems), thermoplastics, thermostats (which make bio-composites heat resistant) and coupling

agents (which help in keeping together the fibres and resin – very important for the durability of the composite material)

- Compared to glass fibre, natural fibres have certain traits (low specific gravity and high specific modulus) as a result of which they are much lighter and better for any non structural application
- Natural fibres which are water-loving need to be treated so that they combine with or are compatible with the resin which is water resistant
- The technology involved in the process of manufacturing bio-composite boards
- Different types of bio-composite materials and their applications - in building infrastructure, automobile industry, in making boats, storage devices, etc

Presentation 3: Mr. Abhishek Thomas

Mr. Abhishek Thomas spoke on coir composites and their future in terms of application. Features and key points of his presentation included:

- Basic industries where any natural fibre can be applied
- Natura Fibretech is mainly into the manufacture of coirply which is used to manufacture furniture
- Traits of coir which make it a perfect medium for furniture and thereby a good substitute to plywood
- Processing of fibres from their source
- Natura Fibretech and its products fill the gap between the demand for wood and supply of alternatives which do not impact the environment in a detrimental way
- The application of coir is huge- some innovative uses include use of coir mats for wall panelling and compressed discs of coir used as table tops
- Vision of Natura Fibretech is to make the environment green – hence it promotes the use of composite furniture
- The goal of Natura Fibretech is to tap into the market of natural fibres and spread awareness that sustainable living does not have to be compromised.



Session 3: Post presentation clarifications and comments

@ Dr. Mubarak Ahmad Khan

What were the testing mechanisms used to determine that sheets made of Jutin are more insulating than Aluminium?

Samples were sent to Michigan State University for its thermo-conductivity to be tested.

Just as Jutin was prepared out of jute, were other natural fibres experimented with? If yes, what was the feasibility of using the other fibres and what were the outcomes?

Yes, Jutin-like material could be made from any other natural fibre because all natural fibres have a basic structure and special inherent properties. However, some fibres such as coir are more expensive than others. There is also work being done on hybrid composites which use a combination of natural fibres such as rice husk incorporated with jute or coir with jute.

@ Dr. Sangeeta Bakshi

Bio-composites use synthetic resins so can we claim them to be environment friendly?

Thermosets which are used with natural fibres aren't recyclable but thermoplastics are because they can be broken down and reused again.

Dr. Shanbag added that the notion of eco friendly is not being 100% eco friendly but approaching eco friendliness. Natural bonding agents can be used but they do not confer as much strength and durability to the product as synthetic resins do. Products made from bio-composites are so durable that they last for years and so the question of returning to the earth in a non bio degradable form does not occur. That is the way we need to understand it in a relative sense. Bio unfriendliness comes with the manufacture of the resins; once the natural fibre has been thermostated there is no problem. What we need to realise is that we have eliminated the use of particle timber by using rapidly renewable natural fibre- that is how this enables eco friendliness.

With regards to natural resin – why have you decided that it is not durable? Because in Mozambique and south Africa, there is a lot of research being done on the use of resin extracted from cashew nut and sugar cane baggasse. Have you done research that has helped come to a conclusion that they cannot be used or are you in the process of exploring them and their possible use so that one could come up with a completely bio degradable bio-composite material?

It is not that natural resins aren't durable, they are not suitable for high structural applications. Natural fibres have their own strength and weaknesses and so do natural resins. Our work shows that natural resins are not at par with synthetic resins in terms of strength. Hence composites made of natural resins can be used for false ceilings, partitions etc but not for high structural applications. They are usable to some extent because of their high specific modulus.

Can methane be developed from lignin?

While using resins to manufacture bio-composites, we do need to remove methane and so yes, it can be developed from lignin and can have potential for various kinds of usage.

@ Mr. Abhishek Thomas

Are the quality and properties of coir fibre from different states the same?

Mr. Sudhakaran Pillai clarified that the properties are the same, but the quality of texture, tenacity etc vary depending on the manner in which they are mechanically processed.

As a conclusion to the session, Dr. Shanbag pointed out that though what was being featured so far was mostly non wear applications of natural fibres, there is a good amount of

R&D on wear applications and natural fibres available in the market in the form of wear. He mentioned that Spain is foremost in developing wear-based applications of natural fibres. In India it being not so prominent in the market in terms of wear is because most natural fibres are rough and require treatment to make them usable for human usage. He said that this is an area of interest in India and which requires focus. Using alternate fibres as accessories in textiles pose fantastic opportunities.

Session 4: Integrated Interventions along the Value Chain- Case of Banana



The session was moderated by Mr. Ashoke Chatterjee, Ex Director, National Institute of Design, Ahmedabad.

Presentations were made by:

1. Dr. Chanakya N. Hoysala, Principal Research Scientist, Indian Institute of Science, Bangalore
2. Dr. V.B. Manilal, Principal Scientist and Safety Officer, Council for Scientific and Industrial Research -NIIST, India
3. Dr. Shanti R, Kumaraguru College of Technology, India
4. Dr. R.G. Patil, Scientist, Navasari Agricultural University Gujarat, India
5. Dr. Tarak Kate, *Dharamitra*

Presentation 1: Dr. Chanakya N. Hoysala

Dr. Hoysala shared his experiences on trying to make fibres from the anaerobic biogas plant which is normally used for generating gas for cooking. His presentation demonstrated how he tried to use banana fibres, augmenting biogas plants with fibre production. It also shared his attempt to look at more value added products that can be obtained from the same raw material, not only making fibre and gas production economic but grounded in rural India.

His presentation featured the following:

- Introduction to the Centre for Sustainable Technologies (CST) of the Indian Institute of Science where he works-which focuses on taking technology to rural areas, and on his work in anaerobic digestion where he has developed around 15 designs and similar number of outputs
- Areas of work of CST- production of bio energy (exploration of how to integrate various uses of biomass along with biogas production so that we can aim for sustainable living), alternative buildings (using bio-composites), water and waste

management, rural industries (experiences of working with natural fibres began with sisal fibre and integrated all activities around a rural industry trying to get various products such as wax paper, alcohol etc)

- CST's anaerobic digestion technologies and the various types of biogas plants developed
- Various value added products that are derived from biogas plants which include fibre. While anchoring the biogas plant as a major energy producer, we cannot reduce the quality or cost of manufacturing the biogas plant. Thus there is an attempt to make several products apart from fibre and gas. Fibre is used as a base for growing mushrooms, making vermi compost; excess liquids are used as pest repellents and aqua culture; excess gas is used for fumigating grains and purifying auto fuel
- Key accomplishment - development of biogas plants that do not need dung
- The process involved in the conversion of plant material into fibres and gas using the phenomenon of anaerobic retting. The attempt is to make this process more controllable and usable
- Inspiration to use technology to make something better came from young women in the villages who work hard to extract fibres
- Technique of separating fibres and challenges faced. What is being attempted and taken up as a challenge is to make anaerobic retting work without water-consumption and pollution and without any hazards caused to the environment
- Breakthrough technology in breaking down lignin has been made resulting in obtaining considerable amount of fibres after the fermentation process as opposed to before when the major product was gas followed by compost and liquid
- Process of small scale fibre extraction from banana leaf and how it adds value to the rural family - as an industry what we need to see is that there should be value additions to the process of making biogas at both household and village levels (fibre at the household level and yarn at the village level); avoidance of industry type of systems to make technology accessible to people in rural areas
- How these biogas plants help in rural areas - by providing fuel, conserving time spent on collecting fuel; producing fibres which can be used for revenue generation
- These technologies that have been developed have been kept in the public domain- if one wants to access them, it is suggested that service agents be contacted to build these technologies because building such devices without guidance is complicated
- It is hoped that this revolution will bring in different kinds of fibres from rural areas and add to the value chain

Presentation 2: Dr. V.B. Manilal

Dr. Manilal made a presentation on the R&D on the anaerobic extraction technology he is involved in.

The features and key points of his presentation included the following:

- An overview of challenges and defects of traditional forms of extracting natural fibres which have an impact on fibre quality and result in pollution
- Content of fibres in different parts of the banana plant which informs us of how an economic operation is possible with the banana plant. Pectin connects the fibres with the tissues and has a special nature which is what the anaerobic process aims at tackling to obtain fibres
- Steps involved in the operation of an anaerobic fermentation plant in the field to demonstrate how it works and the enzymatic processes involved
- Types of fibres that can be extracted and the number of days required for each type
- Outputs along with fibres - pith and biogas
- Advantages of extraction process – scalable to the need, pollution free, not expensive, high quality fibres obtained, biogas as a by product collected and used

Presentation 3: Dr. R. Shanti

Dr. Shanti made a presentation on innovating textile technologies using natural fibres. Data she shared was on the work she has carried out under a project on processing banana fibre for spinning and weaving at Kumaraguru College of Technology, Coimbatore, India. Her presentation featured the following points:

- An introduction to Kumaraguru college of engineering in Coimbatore – has good facilities and infrastructure especially lab facilities for spinning and weaving. Its centre of excellence is the Kepak Board where new product development takes place.
- Background context in which the project was taken up which include:
 - Abundant availability of banana in India and scope for extracting fibres
 - Government of India is encouraging commercial exploitation of banana stem fibre
 - Banana fibre extraction has significant employment generation potential
 - A number of products can be made out of banana fibres
 - India has a good potential for developing products out of banana fibre for export market
- The project was formulated to use banana stem fibres in the area of textiles
- Processes involved - procuring banana fibres, softening with enzymes, spinning into yarns, woven into fabrics and made into articles of utility
- Spinning into yarn was done through
 - jute spinning system (banana yarn, jute and banana blend)- fabric obtained was suitable for interior furnishings , window blinds
 - adhesive splicing – fabrics made out of it used for kurtas, table linen, shopping bags and as alternatives to plastics
 - hand knotting – woven into saree pallus for decorative embellishments
- Conclusion – banana fibres can be suitably softened to enable spinning. The most viable system is the jute spinning system but the yarn count is very low. Open end spinning can also be done when banana is spun with cotton or silk. The problem was protrusion of yarn making it uncomfortable for wear. Adhesive splicing can be used

to unite filaments; roping mechanism can be used to provide twist to the yarn and make it suitable for weaving. Developed fabrics can be used for various purposes. Processes involved are very tedious and labour intensive and result in high pricing. Thus products made from banana fibre are suitable for any niche export markets.

Presentation 4: Dr. R.G. Patil

Dr. Patil made a presentation on the work he and his colleagues have done under the project titled “A Value Chain on The Utilisation of Banana Pseudostem for Fibre and Other Value Added Components”, undertaken at Navsari Agricultural University. The features and key points in his presentation included:

- Context - in India, the amount of banana cultivated has increased over the years. Except in south India and in the north east, in most other regions where banana is cultivated, the pseudostem is wasted. Waste biomass from stem is huge and this waste is unused.
- Objective of the multi-product project were:
 - exploring mechanical extraction of fibres in large scale
 - exploring processes of pulp and paper making from pseudostem, fibres and scutching waste
 - developing edible products from the central core as a ready to eat vegetable in south India
 - manure preparation
 - developing linkages
- Collaborators in the project - CIRCOT, Mumbai; MANTRA, Surat; National Research Centre for Banana, Tiruchirapalli and J.K. Papers Ltd., Songadh
- 4 products of the pseudostem – fibre, scutcher or fresh biomass, sap, central core
- Overview of the processes and experiments done in processing the pseudostem, the qualities of various products produced (yarn, paper, handicrafts, candy, pickles) mechanisms and machinery used, challenges with finished products during the course of the project
- Stakeholders – farmers, food processing industries, textile industries, pharmaceutical industries and paper industries
- Challenges anticipated – technically trained man power, cost of extraction
- Conclusion - almost every stakeholder is appreciating this manner of processing banana pseudostem and the resulting products. The work done is the platform built so far and there are hopes for scaling up the value of the products

Presentation 5: Dr. Tarak Kate

Dr. Kate made a presentation on his work on paper, soft boards and composite boards made from banana. His presentation featured:

- The large amount of waste produced from cultivation of banana - both biomass and fibres can be extracted from them

- Simple processes involved in manufacturing soft boards which can be adopted in rural areas. Experiments made with using 100% banana stem and combination of banana stem with jute and paper(the latter resulted in better quality soft boards)
- Various uses of soft boards with different processing such as asphaltting- used as expansion joints in bridges; partition walls, packing boxes etc
- Challenges faced with boards such as warping and attempts to address them such as through use of synthetic resins, lamination with sun mica, treatment to hot press etc.
- Equipment required for soft board manufacture are similar to those used for making handmade paper except the hot press
- Benefits and limitations of technology - cost effectiveness, provides employment, low energy consumption Vs boards can be used only internally, not yet commercialised
- Collaboration to further work on the technology is invited by the organisation

Before inviting questions from the plenary, the moderator shared that what was coming through from the sessions so far, particularly this session was that there are many issues and challenges that underline the importance of technology, networking and marketing. Feeling that these were important he suggested that the organisers take them up for exploration as a follow up to the symposium, in India and elsewhere to address the particular marketing challenges that have emerged and take them forward to see what kind of linkages are required to take the various ideas and benefits into the market place, users and therefore into the system of livelihoods.

Session 4: Post presentation clarifications and discussions

@ Dr. Shanti

With regards to open end spun yarns, after spinning from an open end system and weaving, would bio polishing have reduced the roughness? Has such a technology been developed?

The fabric was sent for spinning because bio polishing had already been done in the yarn stage, and the resulting effect was that the fabric was harsh to the skin. Spiralling would be more cost effective than spinning.

@ Dr. Patil

Is there any information on research done on the application of banana fibre mats for automobile interiors and seat covers?

The process for using banana fibre for water proofing and fireproofing is being developed in collaboration with another jute spinning mill in Kolkata and it will be brought out into the market soon.

A suggestion was made to Dr. Patil that potassium hydroxide be used instead of caustic soda in the processing of banana fibre since it is more eco friendly.

@ Dr. Manilal

The technique developed seems to be very good considering that hardly any damage occurs to the fibres and it looks like it will result in mechanical extraction vanishing.

It does seem very effective but when this method is employed in the field, feedback on some of its limitations will be obtained. However, till now a lot of people are showing interest. The process has been licensed in the Philippines and elsewhere but there are still no commercial plans put up in the field. We are trying to do it with the support of GST for banana, coir and pineapple. We have a lot of natural fibres available but the issue is that the technology used to produce quality fibres is still very low. The work we have done is an attempt to address this.

@ Dr. Hoysala

Can the process of extracting fibres by anaerobic retting also be used on jute which comprises of sticks?

The process is standardised on a certain materials. The plant design is the same. But in the case of jute, if you want to keep it under water for 7 days as the process requires, very small changes are to be made in the design which will not be very obvious. Hence different materials can be fermented in the same plant and the same plant can be used to ferment different materials in different seasons. Because in this part of the world, you need to have one plant that will address many fibres - that is how it has been designed. In the design that we are using, the 3-plug flow, one can decide how long one wants to keep the material inside and that is the only aspect that is going to be changed. We have not used jute in our plant yet because it is not easily available here.

@ The panel

Many consumers are approaching us for fabrics made of bamboo. Are there any techniques that can be used to extract bamboo fibres for making fabrics? We expect that bamboo textiles are probably being made somewhere in the world since consumers who are dealing with textiles approach us for making them.

Dr. Hoysala shared that anaerobic retting cannot be used on bamboo, not with the techniques used at IISc. However, chemical processes can be used.

Dr. Manilal informed the group that China probably seems to be the only country that is making fibres out of bamboo. They are exporting them but are not ready to share the technology.

Dr. Shanti shared that Kumaraguru college has done some work on bamboo yarn development. After procuring fibres, yarn has been developed and fabrics have also been made. She invited those interested to approach Kumaraguru college for further information.

One of the presenters spoke of the technology being readily available. I believe this was partly funded by Indian government money. How is it available to other players in that sector? For example how can the technology be accessed in Mozambique, Tanzania or the Pacific? Who can facilitate that?

Dr. Chatterjee responded that one source would be the Indo African Economic Co-operation Program which is under the Ministry of External Affairs. He suggested that a project proposal could be put together and passed on to the Program through the forum, and that he and anyone else interested could help in getting in touch with the right window to get some

support through it.

In Africa, for hemp, could dew retting be replaced by bacterial retting? (because we try to move away from water retting.) Outside of control issues, what would be the disadvantage of retting compared to bacterial and enzyme retting?

Dr. Hoysala responded that with dew retting Africa already has a wonderful thing on hand - since it is an easy process and causes no pollution and thereby needn't consider alternatives.

Mr. Neju George explained that banana was taken up as a case study because it was observed that banana fibres are processed in many places but there is no interchange on information on the technologies used across stakeholders. This forum provides the opportunity to do that. He suggested that integration of processes related to processing of fibres should also be looked at to harness them to the maximum. This he said, would be extremely lucrative in the domain of rural livelihoods- looking at increased products from natural fibres to earn a better livelihood.

The moderator concluded the session with his observation that though one often hears about scientists being in ivory towers, what had been demonstrated by the presenters was that they were very much with their feet on the ground, developing user friendly technologies which can be sustained and maintained at the village level. According to him, the whole business of waste to wealth adds a dimension to the movement for natural fibres which needs to be taken seriously. Expressing his uncertainty about the importance of energy production associated with the processing of natural fibres in the context of the whole movement, he emphasized that it should be, because that is of the uppermost concern. He felt that the link with marketing organisations needs to be very strong in order to create sustainable urban and rural livelihoods.

According to the moderator, natural fibres present a global opportunity that has not yet been given its due. One of the reasons he felt was that governments don't give them their due, resulting in their low investment in the sector. He quoted the example of India where the crafts sector offers the second largest source of livelihood and yet the government has not realised its importance resulting in craftsmen facing many problems. This, he said, is a crisis. He was emphatic that this had to be addressed by spending time developing the evidence with partners, which wasn't there before. He hoped that the GNFF network formed by scientists would also have marketing people and economists in the team to help build a case for natural fibres that would be difficult for those in authority to dismiss.

He continued that if it were to be shown that natural fibres are providing some kind of support in addressing the issue of poverty and if the impact of interventions were to be measured, we need to look at what needs to be measured - whether it is outputs, exports, technical innovations, R&D, or movement from only craft to other applications. He emphasised that unless evidence was provided, arguments for the favour natural fibres would be lost in this competitive world.

With regards to critical areas of poverty reduction, he questioned what would be concentrated on and who was going to do it? He felt that there was a need to have scientists, economists, institutions, and universities as a part of the network that could actually help measure this.

He asked those present to think of what it means to have sustainable livelihoods out of natural fibres and about the movement towards decentralised employment opportunities in rural areas which is a huge problem. He said that we need to show that non agricultural livelihoods are possible in rural India and felt that the involvement of natural fibres in this area can be used make a case to minimize migration of people from rural areas.

He added that many of the processes mentioned in the sessions involve women, and hence the natural fibre movement is also the movement for women's empowerment. He pointed out that natural fibres are also addressing the marginalisation and exploitation of indigenous people in a very meaningful way. He emphasised on the need for bringing technologies to the services of the people for whom it is finally intended.

It was suggested that the natural fibre movement take the various strands of global concern and bring them to bear on the work on natural fibres. This, he felt was the way not just to be green but the way to well being. He hoped that the natural fibre movement could move up to a level of global mobilisation by partnering with others who are working in these areas of social concern; that work done on natural fibres is accelerated by the support of many sources including scientist and social movements.

Session 5: Transitioning from the Traditional to the Contemporary - Innovations in the Creative Sector

This session was intended to look at innovations with people, processes and products towards securing livelihoods. The session was moderated by Ms. Gita Ram. She introduced the session with the prelude that natural fibres have been used from time immemorial, to make several products used for certain purposes. But in the last fifty years, life has moved on and lifestyles have changed and therefore there has been a need to contemporize natural fibre products. She introduced the presenters as those who have done appreciable work in trying to contemporize the use of natural fibres.



The presenters included:

1. Mr. Gopi Krishna – *Mittan*; Shramik Abhivrudhi Sangh, India
2. Mr. Dhevan de Saram, *Lakhpahana* Handicrafts, Sri Lanka
3. Ms. Payal Nath, *Kadam*, India
4. Mr. Rajshekhar Narayan, NID, India

Presentation 1: Mr. Gopi Krishna

Mr. Gopi Krishna made a presentation which featured the work he and his organisation have done in the area of natural fibres, in north Karnataka. It included the following features and key points:

- Introduction to *Mittan* which is a for-profit organisation formed by a group of SHGs- dedicated to the profit of society
- Context in which the work of *Mittan* began 25 years ago with a small group of tribals who sustained themselves by selling wood from the forest for livelihood
- The story of *Mittan's* work is about designing sustainable livelihoods for poor people in that region
- The livelihood model developed is applicable in other areas where it is very arid, there are less work opportunities, where the market has not reached and people still depend on natural resources
- History of work - Work that began in one small village of tribals inspired 25 surrounding villages who approached the team to replicate it in their villages. SHGs were formed in these 25 villages and programs were designed where people could be actively engaged and earn a minimum of Rs 50 to Rs. 100 through weaving, dyeing, stitching, spinning, etc
- *Mittan's* USP - Today, *Mittan* is primarily known for bags and baskets which are very distinct and unique. There was a need to find a market to survive and sustain these communities and their livelihoods. The women were taught to weave and in order to face the competition from other weavers, distinct fabrics made with jute and cotton were used. In addition, attempts were made to evolve products from the region using different techniques
- Different raw materials, dyeing processes, techniques used; products made such as bags, sarees, jewellery
- Organisational shift from being SHG to NGO to now a producer company. Work done is more at the ecosystem level. There is an attempt to create an ecosystem for the handicraft economy to survive
- Areas of work - 14 districts of Karnataka with tribals and pastoralists
- Products include home décor, furnishings, baskets bags, jewellery, and accessories
- Technical innovations – such as the modified bicycle for cutting wool and hand twisters
- Interventions had to be made in several aspects- organisation, technologies and strategy building

- Highlight - products contain the heritage of 8-10 communities in the region
- Transitions have been in terms of organisation, role, focus, production, marketing and financial management. Today, markets are coming to the organisation and not vice versa

Presentation 2: Mr. Dhevan de Saram

Mr. de Saram presented a paper which provided a comprehensive view of one of the fibre crafts of Sri Lanka called *Dumbara* weaving once made from agave and which has now been contemporized in terms of raw materials, technology and products made. His presentation covered the following points:

- Facts on the traditional fibre agave which is now virtually extinct and the alternative fibre used for making *Dumbara* products; the difficulty in procuring the raw material resulting in high costs and the lack of government schemes to support the craft
- The history of the craftsmen - the *Kinnara* - one of the oldest tribes of Sri Lanka and their craft
- Challenges faced by this craft - only 9 families are engaged in it. The present generation has migrated to work in factories and overseas for employment. Lack of manpower in industry is of serious concern. Cultural practice of not properly sharing knowledge on processing and weaving to people outside the community. The present generation prefers to work in factories and elsewhere due to stigma associated with craft
- Tradition dyes used - their sources
- Products made from *Dumbara* weaving using natural dyes
- Transitions:
 - Introduction of use of imported synthetic dyes (due to lack of knowledge on making natural dyes; high cost of natural dyes because making them is labour intensive, high cost of raw materials, long time taken for absorption of natural dyes, natural dyes fade easily etc)
 - Contemporizing of designs to more modern designs
 - Products - contemporary utility items - shoe racks, coasters, purses cushion covers, wall hangings, pencil cases, place mats, etc
 - Contemporary buyers are middle class and corporate markets (once upon a time, the craft was made for royalty)
- Challenges - getting the right price for goods, marketing constraints and competition from imported hemp and jute goods which are cheaper and attractive to consumers.

Presentation 3: Ms. Payal Nath

Ms. Nath made a presentation of the experiences of the team of *Kadam* in transitioning from the traditional to the contemporary in terms of its work. According to her *Kadam* transitioned rural lives just by using sabai grass to make contemporary products as

livelihood solutions. Her presentation conveyed the story of how sabai grass became an income generation source in one commune of one district of west Bengal.

Key points in her presentation:

- *Kadam* came to work with the raw materials available in the areas of its operations – sabai grass, bamboo and other smaller fibres; conducted workshops on these materials and combined different craft groups to make products for everyday use which has come to be the USP of these communities/craft groups
- Sabai grass is grown in many countries of Asia and in many states of India. It plays an important role in tribal economy in some regions of India. It is mostly used in the manufacture of paper and to some extent handicrafts
- Mayurganj is a poor district which has high density of tribal population living below the poverty line depending on the primary sector. Sabai grass is the only agricultural product, which is marketed there
- *Kadam* works in approximately 25 villages of this district primarily with sabai grass
- Sabai grass has long leaves and produces high quality fibre. Because they are flexible and strong they are used to make ropes and other rope based items
- It gives employment to 50,000 people in east India
- The processing of sabai involves cutting, drying, repeated boiling and washing, and finally drying in the sun. Grass blades obtained are of different quality and are segregated based on this
- The grass is dyed and plaited or twisted into ropes. These are further developed into baskets using different techniques
- *Kadam* is a small organisation working together as a team. This culture of working has been promoted in areas where it works as a result of which the different tribes and craft groups are now willing to work together and share resources
- Skill levels are constantly upgraded through workshops. *Kadam* is now trying to help producers by bringing market intelligence, providing design and quality inputs, organising skill upgrading workshops, providing training on dyeing, providing basic machinery and initial capital to buy raw material etc
- *Kadam* plans to build a craft ashram in collaboration with 2 other organisations which will combine 6 crafts.

Presenter 4: Mr. Rajshekhar Narayan

Mr. Narayan made a presentation on some of the designs in natural fibre crafts to show how a little bit of design can make a difference and how the crafts were made with the support of low skilled artisans who are not traditionally craftsmen thereby offering a potential for livelihoods. Craft examples shown were from Tamil Nadu, Andhra Pradesh, Kerala and Karnataka and were made from different fibres such as banana bark, screw pine, palm leaf, bamboo, etc and using different techniques such as weaving and plaiting. Products included floor coverings, cushions, bags, bottle covers, baskets, caps, footwear, etc.

Session 5: Post presentation clarifications and discussions

@ Ms. Payal Nath

A suggestion was made to *Kadam* that instead of boiling the sabai grass to remove the silica coating the blades, a bit of wood ash along with water could be used instead to conserve time and energy.

Considering synthetic and natural dyes, which is better in terms of cost, aesthetics and skills?

There are takers for both kinds of dyes. Because for us, natural dyes have to be collected from the south, their prices become higher. Hence the takers for natural dyes are lesser. Right now we are doing research on raw materials that are available in our region that can be used to extract dyes from, to bring down the costs. We want to promote natural dyes.

@ Mr. Dhevan de Saram

In Sri Lanka, as in most countries handicrafts are really not for the youth, but we know that in all countries, youth enterprise is growing bigger. To what extent does Sri Lanka have youth of your kind who are involved in this area of natural fibres because that's where we are going - the initial speaker spoke about keeping people in the rural areas...

Not many, in fact none at all. Only 3 of the practicing craftsmen are below 30. Others are not interested in handicrafts but to enter into jobs in industries which are entering rural areas. It is also because there are stigmas associated with the craft. Hence youth do not want to get into the craft sector despite rewards from practicing crafts being high.

Why is it that most crafts don't take off in Sri Lanka?

This is because most of the craftsmen do not want to cater to what the customer needs - partly because they don't know what the customers require and also because they seem to want to sell whatever they make, without actually understanding the market- that's one of the key issues. The other reason is that there are many intermediaries between the craftsmen and the actual market. As a result one has a highly inflated product which does not have the value that the end consumer is paying for.

A comment was made that if crafts is the second largest source of employment in the country, how do we look at the large number of producers with the models we are suggesting (that employment and securing livelihoods) within the eastern belt of the country which is highly affected by Naxalites and Maoists. Hence the primary duty of the craft sector is for us to look into how we scale models that will reach people and help build sustainable incomes.

Mr. Gopi Krishna responded that his experience was that it is in remote areas where activities can sustain in a big way. People want to work in their areas and not migrate and thus there is a huge potential. People want to work for livelihood security and make something that society requires and gives status to them. If our products focus on these, then many more people will opt for this source of livelihood. The entire community needs to be involved. Marketing is the crux- as long there is market and you have the product, then you will be successful. The experience is that most NGOs have not reached that critical mass of working on developing a good product with whatever locals invent.

The session came to an end with Mr. Neju George acknowledging the support by the Development Commission Handicrafts in the development of crafts in India in the last decade or so. He said that the Development Commission Handicrafts requires our appreciation because it has created massive clusters of people engaged in craft.

As a prelude to the following day's session, he started off by drawing attention to design being a crucial element. He said that a lot of trainings in design production have helped increase the quality of craft products. Now the challenges lie in access to finance, market and facilities of production. He felt strongly that looking at access to all these other factors is what will make or break the success of natural fibre in offering sustainable livelihood. He said that getting people in is the challenge; people are not interested because they don't get paid wages. There are a whole range of other issues if you look at it as a business and that is what would be discussed in the sessions tomorrow- 1) How do you build social business, 2) How do you look at design, 3) How are you looking at markets and finally 4) What is it as countries of Asia, that we are looking at as natural fibres? What are our priorities? What is it that we are going to go back to our countries and say as "this is what we are going to do"?

Field Visit to Mother Earth

A trip was organised to the Mother Earth store in Domlur to demonstrate retailing of Natural Fibres and lifestyle products.

Day 3, September 27, 2012

Day 3 began with a recap of the previous day's sessions by Mr. Neju George

Session 1: Scaling Social Business Models, Securing Rural Livelihoods

The session was moderated by Mr. Mkandawire. Presenters included:

1. Ms. Neelam Chhiber, Managing Director, Mother Earth, India
2. Khunying Puangroi Diskul, Mae Fah Luang, Thailand
3. Mr. Krishnan, Infrastructure Leasing and Financing Services (IF&LS), India
4. Mr. Milton Ratna, Director, CORR - Jute works, Bangladesh

To provide a perspective on the presentations that would be made during the session, Mr. Mkandawire referred to the point made the previous day about providing evidence about work done in natural fibres, to show to the world, why natural fibres are important, why they are the solution for rural development, women's empowerment and socially sustainable livelihood. He mentioned that part of what the practitioners who were going to speak about in the session was that 'evidence'. He said that for the GNFF to start showing

that evidence, it has to demonstrate models that are working, or how these models are being put into practice.

Presentation 1: Ms. Neelam Chhiber

Ms. Chhiber made a presentation of the socio-business model adopted by Mother Earth/Industree Crafts Foundation. The key points in Ms. Chhiber's presentation were as follows:

- Her career began in the craft sector working with artisans in tribal villages in tribal India which has been the guiding force in the work done today. Working in those villages with artisans brought the realisation that they need markets
- A non profit business was set up in 1994, as a private limited company with Ms. Gita Ram as its first social investor
- In 2008, 60% of the company was sold to raise money to build a very strong brand in India. The model has evolved over the last 14 years
- The producers (artisans) in India- the MSME space based on traditional skills, is the 2nd largest rural income provider in India. Hence we need to look at models where we can scale and grow
- Speed of urban India is growing because there isn't enough employment in the villages. There is also a loss of heritage because migrants lose traditional skills. However, 10-20 years down the line it will be realised that these skills are critical for the nation's growth
- Because India has just a 2% share in the global creative industry's market, the organisation's mandate was to look at means to scale up so that the stake of Indian artisans in the market increased and they could earn more. The analysis was that this can happen if the numbers of people in the value chain are reduced
- In a very strong partnership with the government of India a non profit organisation was started, the Industree Crafts Foundation worked with government of India schemes and mobilized artisans into SHGs. By 2008 it had formed all its natural fibre producers into SHGs under the green craft production cluster with the support of the Office of Development Commissioner of Handicrafts
- In 2008 Industree Crafts Foundation was a 1 million dollar enterprise and 100% of that was coming from its work with lesser known natural fibres. When an order was made for IKEA it was realised that as we scale up and impact more and more artisans, production facilities are required. It became very clear that the SHG model had to be pushed so that the SHGs own the production, and that they had to be put under an apex producer company with Industree Crafts Foundation as the link. It is very critical that the producer owns the production because then they will be careful about quality and timing and take more ownership. Money being made went directly to producers instead of supervisors, resulting in producers earning more. So today, Mother Earth builds producer institutions where producers are taught how to run their institutions

- The organisation is a hybrid – the private company creates the market and the Foundation builds the producers and helps them to understand their responsibility in the entire value chain. 40% of what is in the Mother Earth store comes from the SHGs who are called business interest groups. The company with the Foundation provides these groups with market access, model designs, financial access, improves raw material supply, improves technology, planning, and value engineering
- It is very critical that whatever systems and business models are created are looking into how these people are going to earn more, which comes from improved process flow and value engineering
- The organisation now has 2 producer companies with 200 artisans
- The organisation builds a lot on Public Private Partnership (PPP) - for example, the Foundation is instituting a scheme with the help of the Office of Development Commissioner of Handicrafts called Babasaheb Ambedkar Hast Shilp Vikas Yojna to train 7.5 thousand women in 7 states, in 28 districts. Once the design and skill building programs are over, the government will fund common facility centres in the 28 districts. This is to provide the producer institutions suitable spaces to manufacture products which are internationally complaint so that they can implement orders for any global or domestic buyer
- For producers to reach customers, they need working capital, infrastructure, markets, and skill building. The organisation is trying to sort out all these problems in the value chain

Presentation 2: Khunying Puangroi Diskul

Khunying Diskul began her presentation sharing that though a newcomer to the natural fibre line, she was quite familiar as a development practitioner, with the future of natural fibres. She said that she had thus jumped at the opportunity of attending the GNFF symposium because it opened up another livelihood option for the Doi Tung Development Project in Thailand that she has been associated with. She said that what had been shared in terms of rural people and their situations in previous presentations was quite familiar to her and believed that that natural fibres and rural development go hand in hand. She continued that she thus wanted to share the 25 years of work of her organisation in the rural development areas.

Features and key points of her presentation included:

The delegate from Thailand making a presentation during the session - Scaling Social Business Models, Securing Rural Livelihoods



- Introduction to the Mae Fah Luang Foundation, established in 1988 by the Princess Mother on Doi Tung, a high mountain in Chiang Rai, the northernmost province of Thailand, a secluded area and leading region of illicit world opium production
- Complex socio economic problems that existed at the time of Mae Fah Lung being set up – trafficking of drugs and women, drug abuse, sex industry, insecurity and deterioration of the environment and social structure everywhere; all symptoms of poverty and lack of opportunity
- Strategies and stages through which the objectives of the project were achieved by including the community from the beginning; 1) Taking them beyond the vulnerable stage – addressing health and education related issues and ensuring food security. Basic life necessities and opportunities for job and skills-trainings were provided to all people 2) Moving them up to the self sufficient stage through income generation - moving up the value-chain; moving beyond the cultivation of agricultural commodities, by actively planning means to move into processing steps that add value to base product and implementing those plans 3) Sustainability – empowerment – planning their own future and that of their children; strengthening the business units so that the brand and the community are sustainable
- The project aimed at improving the lives of people especially those at the bottom of the pyramid. Interventions were on all aspects of life, setting a balance between society, nature, and economics
- The details of the interventions undertaken under the sustainable development project, the various processes at play, the challenges and ways in which they were overcome and the outcomes in each of the 3 stages of the project
- Natural fibres that feature in the project in the context of sustainable livelihoods – hemp, cotton, linen, silk, vetiver and reeds.
- The model employed involves bringing in experts to improve quality of traditional work done in weaving and embroidery and defining the market; the aim is to develop sustainable livelihood through simple, practical and achievable approaches, intermediate technology with least energy usage, and by maximising resources. A premium market is aimed at for which there is need to focus on design and quality. Hence experts are brought in to help improve quality and design
- Products made are home textiles, ceramics, paper, etc. There has been partnering with big retailers like IKEA- which has required upgrading of standards to meet high quality standards
- Businesses in Doi Tung are the by-products of a sustainable development project. Today, it has its own brand of clothing and runs development projects under co-operation. 4 businesses in macadamia, coffee, handicrafts and tourism provide job opportunities for different age groups. The project has become self sufficient since 2000, with 1640 people on its pay roll. People can work at or near home and need not migrate. Children get educated and come back to work in their own regions. People of Doi Tung are today empowered
- The project supplements the work of the government- reaching where it cannot. The model has been spread out to other countries such as Myanmar, Afghanistan and Indonesia

Commenting on the participation of Thailand in the forum which is not a Commonwealth country, the moderator explained that GNFF invites partnerships from all countries across political boundaries, and not just from the Commonwealth ones. So as it grows as an independent entity, it brings in as many partnerships as possible to make it a sustainable effort.

Presentation 3: Mr. Krishnan

Mr. Krishnan's presentation was on IL&FS's cluster intervention in Tripura, north east India. His presentation included the following points:

- IL&FS provides cluster and PPP based integrated solutions to enhance competitive marketing of micro and small enterprises. It is involved in designing and implementing value chain interventions in diverse areas and sectors
- According to the Planning Commission of India, the bamboo economy, from resource generation to value added application supports approximately 8.6 million livelihoods in the country. Small holders near forest fringes improve livelihood by processing bamboo grown in their backyards. With planned development of integrated bamboo based clusters, most value addition can be done closer to the resources resulting in large scale socio economic benefit
- The annual production of bamboo in Tripura is very high. Tripura Bamboo Mission is the first intervention of the Tripura state and has been launched as a convergence platform where departments of industries, agriculture, and forest; international donors; state and district level rural development agencies come together for the development of the bamboo sector in the state. The program is implemented on the PPP model
- The mission of the intervention was the integrated development of the bamboo sector industry; it was given to Tripura as a leading centre for value added bamboo. The objective was to scale the turnover from 6.3 billion to 24.9 billion USD and double the livelihood involvement in the sectors
- Strategy - build sustainable bamboo-based livelihood, based on cluster-based approach; develop an institutional structure owned and managed by poor producers; build their enterprises based on commercially sustainable business models; provide infrastructure, skill building, design support and direct market linkages; mobilize private investments; develop plantations in non forest areas. The aim is to shift from production of low value, low quality traditional craft to high value contemporary utility products with a high demand in mainstream market
- The model for delivery on the ground is to identify producer subsectors, mapping of clusters, establishment of community-owned institutions, integrating value chain, attain sustainability by developing a local business plan, ensuring appropriate infra structure, economy induction, ensuring access to credit, and ensuring project management support in partnership with NGOs and other agencies
- Focus of sector -incense, handicraft, furniture, mats, industrial applications, etc

- The mission has promoted 25 societies across sectors and a state level special purpose vehicle of handicrafts. Support services - common production centres, business planning, market facilitation, accounting and bookkeeping, training and capacity building; leadership-building. Service providers have been put in place
- Over 30, 000 producers are being supported through this initiative
- Institutional structure - cluster level societies to strengthen production base in to big scale and quality. Societies are federated to drive marketing and enable direct marketing linkages. 1 special purpose vehicle, 25 common production centres
- Plans are on to develop an integrated bamboo park

Presenter 4: Mr. Milton Ratna

Mr. Milton Ratna's presentation was on the social business model of CORR- The Jute Works, an organization of women handicraft producers established in 1973 to rehabilitate the war-widowed and war-affected poor, rural women of Bangladesh.

The following are the key points of his presentation:

- Support to CORR- The Jute Works initially came from Oxfam in marketing jute products manufactured by local women, in Europe
- CORR realises its mission by mobilising the women, providing proper training, increasing their economic development and working skills and in making them self reliant
- 167 Artisan groups with 4050 members, maximum being women, are organised in to special autonomous co-operatives. There are 4 production centres. The artisans produce, take decisions and run the cooperatives themselves. The artisans are the owners of CORR- The Jute Works which is a trust of the artisans. 5 artisans are on the board of trustees which has a total of 9 members
- Raw materials used - jute, natural coloured fibre, twine, terracotta. Natural fibres include, sisal, palm, hemp, flax coir, banana, cane, bamboo, leather, silk, cotton, etc.
- Crafts produced- bags, baskets, home décor, Christmas decorations, kitchen and tableware, footwear, jewellery etc
- CORR- The Jute Works is 100% export oriented - maximum buyers are Fair Trade buyers. However there is an attempt at mainstreaming its market now to make income more sustainable because demands and business are growing
- The hope is for the artisan groups to be able to carry forward the institution on their own in the future and for the facilitators to withdraw
- There are other programs of CORR- The Jute Works to provide support in health and education



Session 1: Post presentation clarifications and discussions

@ Ms. Neelam Chhiber

How do design and product development processes work in the co-operative environment? Where do the designs actually come from- the community or trained designers? How are they accepted? How does this affect ownership, and intellectual property?

Designing is a joint process by people from the community and urban designers. This is why we have shares in the private company for the artisan community. They can buy shares at par. Thus the idea of the model is that there is intellectual property when you are working with traditional craft in the modern context; because there is the value of the traditional skill and the value of the modern design.

@ Mr. Krishnan

A suggestion was made that since Tripura has such a large amount of bamboo, IL&FS could consider incorporating production of bamboo fibre in its initiative to add to the value chain.

@ Khunying Puangroi Diskul

How does one work in places where the environment has threats in the form of terrorism or drug lords?

By building trust with the community.

Is it possible to get access to your models? What does it mean for Africa to reach your assistance in implementing that model? What have been your challenges?

Our model has been adopted and adapted in many countries and now we cannot stretch that much with the resources we have but you are always welcome to our project, to come work with the people to understand how the model works- because the community and people who are part of the project are the best sources of information- on what the challenges are, what works and doesn't. Challenges were around growth and getting people to co-operate and working at their pace.

@ Mr. Milton Ratna

How much turnover is achieved from Fair Trade?

78% of business is Fair Trade- 2 million dollars per year.

The moderator concluded the session by extracting some of the key points that emerged during the presentation which included: How India has used the SHG model, business interest groups; about the empowerment of the value chain by making people work in independent units so that they can take responsibility; earning trust among the communities we are working with by showing that what we are going to produce is going to work; looking at how you take the one-village-one-product model where one commodity is able to create value in the community; in the issue of Fair Trade- is it being professional or just commercial? Credibility towards a model can be achieved through professionalism.

Session 2: Design – Leading Value Chains

The session was moderated by Dr. Saumyajit Ghosal, Director, NID Bangalore

Presenters included:

1. Dr. Vinod Shanbag, Academic Advisor, Pearl Academy of Fashion, India
2. Mr. Jacob Mathew, Director, Idiom Design Consulting Pvt. Ltd, Product Development and Branding
3. Mr. C.S. Sushanth, NID, Bangalore

The moderator introduced the session as one being where the manner by which designs give input to the value chain would be presented.

Presentation 1: Dr. Vinod Shanbag

Referring to the presentations of the morning and that they presented socio - economic development models through design and had looked at value management, Dr. Shanbag said that the presentations of this session would be on design management. His presentation included the following features and key points:

- Craft gets organised into 5 economic models of functioning- individual artisans in cottage style/cottage industry; groups - SHGs - unique to India, co-operative societies; NGOs/societies - craft societies but which are not professionally run (those who manage them informally bring great faith, dedication, devotion and honesty in order to move the artisans forward); NGOs which are professionally run; organised businesses which are stand alone or are in retailing chains
- When you look at these economic models you need comparative parameters which are value chain parameters - scale, artisan proficiency, viability, financial capacity, market knowledge, pricing, supply site logistics and forward site logistic, design, production operations and storage. All these have value addition propensity for the producer or the organisation. We need to look at the value chain to differentiate one form of organisation from another in terms of how things differ. This is because in design we need to address the differentiators and not go into the field with our own models in mind. We need to learn what is required for them and look at the nature of intervention suitable, in terms of design
- Explanations and elaborations on each of the parameters of the various economic models. They show the stages of value increasing in each parameter being considered in the value chain
- Correspondingly, development inputs vary for each category - in terms of skill and capacity which lead to quality and outcomes respectively. The skill and capacity building development required for each of the economic models were shared.
- Different scales exist, different scales have to be recognised and intervened into very differentially because their requirements are unique to them apart from being general as they have been described

Presentation 2: Mr. Jacob Mathew

Mr. Jacob Mathew's presentation was about using design thinking as a tool. Key points raised in the presentation were:

- There is an inexplicable link between what is being done in natural fibres and the alternate social enterprise movements. Just as we want to learn from big businesses, big businesses also want to learn from the social enterprise and natural fibre sectors; the linkage is strong
- Design comes in as a very useful tool to deal with problems faced in the social enterprise and natural fibre sectors
- Why does design matter? - Design influences behaviour
- What does it mean to think like a designer? How do you frame a situation - as a problem or opportunity?
- The example of the story of the cow in the cloth shop raises a number of points related to design thinking:
 - Can a problem become an opportunity?
 - Can you have a story that people will remember?
- Steps we go through in the design thinking journey: How do we empathise? - Who are we designing for? What do they want? Where do they want it? Why and how?
- Design is about taking complex issues and making them simple enough to operate in a complex world
- Design uses empathy to create new solutions - when we look at stakeholders and focus on what really matters to them and what is it that is going to make them better, it will go a long way in making a design successful
- In designing, we look at thinking and ecosystems - looking beyond mere products to the ecosystems they are located in
- Integrated thinking- integrating seemingly opposite forces
- The GNFF is an open innovation framework which requires an element of co-creation where an idea is shared with the ecosystem, the ecosystem modifies it, and the idea comes back in an enhanced form. There have been many examples from within the forum of how an idea is shared, gets built up by others and comes back; there are many of these systems operating the software world- in open systems such as Linux. The GNFF has a huge opportunity to create this platform of sharing and open innovation.



Presentation 3: Mr. C.S. Sushant

Mr. Sushant presented the National Institute of Design's work and achievements in the area of designing. His presentation featured experiences of working in the Outreach Department of NID which focuses on the craft sector and understanding of rural development. The approach involves going to the field, understanding what people are doing, and developing designs at various levels - material or market. The presentation included the various kinds of interventions, experiences and design outputs related to working with rural communities.

The moderator shared 2 of his experience which were connected to the aspect of design- of making designs which are relevant for the consumer.

Session 2: Post presentation clarifications and discussions

@ The panel

How does the ownership of intellectual property work in the public sector space?

Dr. Shanbag's response - this is a developing area. Institutionally how we deliver this is something we need to look at - in the case of cottage industries, it is the students who can do it in 2 ways- at a brief from cottage, the student visits the cottage, develops empathy, does the work then and there; participates, aborts - by observing, the student also learns - it is a paired game. In the case of artisan groups, the students and the faculty work together - this is CSR which means if you are doing community service, you can't claim ownership- it is an errant in the form of service that we deliver. When it's a paid service, the ownership lies with the payer.

It was expressed that a lot of confusion and contradiction exists in this sector as a result of the assumption that craft exists only in closed systems. On the other hand craft and natural fibre sectors exist in open ended systems and it is high time we understand the dynamic nature of the market, crafts and livelihoods. When we talk about natural fibres we are talking about 3rd world countries; we are talking about poor people living in remote places who adopt an intelligent production system, with real time management for their survival, sustainability and livelihood. It is time we understand that we don't try to apply the template of mass production system or mass marketing and confuse the poor and the marginalised but rather have a balance and understand these in the context and go ahead with our future strategies.

Session 3: Markets-Building an Equitable Supply Chain for Natural Fibres

The session was moderated by Dr. Marie Casserly, Consultant Jamaica Business Development Corporation- Kingston Jamaica

Presenters included:

1. Mr. Swapan Kumar Das, Executive Director, Prokritee, Bangladesh
2. Mr. Piyush Deogirikar, Chief Operating Officer, Mother Earth
3. Ms. Sreekala Kadidal, Export Promotion Council For Handicrafts

Presentation 1: Mr. Swapan Kumar Das

Mr. Das made a presentation titled *Export Market for Natural Experience* which shared the Bangladesh experience specifically that of his organisation Prokritee. His presentation included the following:

- Introduction to Prokritee and its work - its origin, its programs
- Prokritee's experience with natural fibres
- Prokritee craft exports are worth USD 1.4 million per year
- Raw materials used for making products- jute, kenaf, banana fibre, hemp etc
- 95% of exported handicrafts are made from fibres, of these 65 % is made of waste jute and 20% waste cotton and 10 % other fibres
- The structure of Prokritee has 1) the headquarters which supports SHGs in development of product design, marketing support, negotiating with buyers, admin support, export processing, financial processing etc; 2) enterprises in rural areas - where products are made (employing 50-60 producers). The producers collect raw materials, make products and do a first - level check of quality 3) Craft Bazaar - an organisation of local small craft organisations which is being pitched at where trade is because the ultimate goal is to promote Fair Trade
- In the marketing department there is push to increase export and domestic marketing
- Export processing is done very carefully to ensure quality
- The product costing structure/framework of Prokritee
- Prokritee's learning - not to just depend on export market but focus on marketing in the domestic market as well
- Linkages to export market - Prokritee has deep linkages with export
- Current buyers - several big international markets
- Learning vis a vis marketing- global product market is increasing and we need to scale up accordingly



Presentation 2:- Mr. Piyush Deogirikar

Mr. Deogirikar made a presentation titled *Chain Store Operators Seeking Alternate Distributions*, which looked at Mother Earth's marketing strategies. The key points of his presentation were as follows:

- What Mother Earth's brand is about - IndusTree Crafts Foundation started in 1994 ; its big inflection point came when the retailer Future Venture invested in it in 2008 and Mother Earth started its first store in 2009. Now it has 10 EBOs (company owned stores) and 100 shop-in-shops; sales in apparel, furniture, natural fibre products, crockery, home linen, etc
- Mother Earth's ecosystem - 2 parts: trading company which buys and sells; Foundation part which co-ordinates with the government; is involved in grassroots mobilization of artisans and villagers; is involved in production; capacity building; creating SHGs; training artisans / villagers
- Management rationale behind doing multiple phase channel - are we only talking of economy of scale - producing more and more of the same things or is there anything else? Or Economic scope -doing multiple things from the same base. There is common ground between economic scope and economic scale called mass customisation
- Mother Earth has adopted economic scope for its sales channels which involves servicing multiple channels from the same base
- In the last year and half Mother Earth has gotten into multiple channels such as platform stores, almost 100 shop-in-shops, online stores, and E-commerce
- Needs and challenges
 - Needs - speedy growth, low operating and apex cost, outreach
 - Challenges - spreading resources thin in terms of manpower, time, money, inventory pile up, long receivable cycle

Presentation 3: Ms. Sreekala Kadidal

Ms. Kadidal made a presentation on "*Building Infrastructure and Common Facilities for Export Promotion*", as a representative of the Export Promotion Council for Handicrafts. Her presentation included the following points:

- The Export Promotion Council For Handicrafts is the apex body of the government of India to promote Indian handicrafts in international markets
- It organises various fairs at international and national levels such as the International Fair at the India export centre near New Delhi; the Indian Handicrafts and Gifts Fair - held twice a year and is Asia's largest fair for Indian crafts; Smaller product-specific shows featuring fashion jewellery, floor coverings, furniture etc. In all these fairs, the market for natural fibres is always there

- Apart from international fairs the Office of Development Commissioner organises fairs across India for development of crafts.
- The need to improve infrastructure came from discussions with exporters such as Ms. Neelam, Mr. Gopi Krishna, Mr. Anand and Mr. Shyam - key players in natural fibres. It was discussed that the availability of products were dependent on the price of the hour. The market was there, with many importers expressing their concern that there are very few players in natural fibres
- People were unable to cope with increase in demand for their products and at the same time make their products viable. There was a need to provide them better infrastructure and mechanise the production of their products
- Hence an appeal was made to the Government of Karnataka which has been at the forefront of establishing craft complexes across the state. The government of Karnataka acceded the request and allotted 14 acres in Channapatna town to set up a craft park
- Channapatna has over 3000 people engaged in wood craft and another 3000 in basket weaving. It is these people who were aimed at being trained, to make products of refined quality for the international market
- It was decided to set up common facility service centres within the craft park for wood and natural fibres. Thus the Channapatna crafts park was born which is a special purpose vehicle with representatives from exporters, the government of Karnataka and Export Promotion Council for Handicrafts. The woodcraft centre has started functioning and the fibre centre will take off shortly

At the end of the presentation, Ms. Kadidal expressed that inputs were needed from the



participants at this symposium/forum on the kinds of machinery to be procured for processing natural fibres. She expected that representatives from Jamaica possibly knew about the machinery required and requested that some time be given to provide suggestions to make the crafts park, an R&D centre for natural fibres a successful model. She said that it is envisaged that this model will be set up in course of time across rural areas of Karnataka and south India where farmers can be trained to extract fibres from various sources available and have a secondary source of income.

Session 3: Post presentation clarifications and discussions

@ Mr. Deogirikar

How does the producer benefit from share holding for producers?

Producers as share holders, will benefit only when dividends are declared. The real

success comes when you go public – it is then that you get a chunk of money. So then all the producers who are linked to your company will also get a large chunk of money.

@ Mr. Swapan Kumar Das

How is hemp which grows wild, extracted? By hand or machine? What machine? How did you land the Body Shop contract?

It is processed at the field level by hand before it comes to the Prokritee enterprise. This approach is preferred as it provides opportunity for employment. Part of Body Shop's business is considered to be a social business and it is under that, that Prokritee landed the contract.

What are the technicalities and economics of producing handmade paper from jute?

The whole idea is generated with the intention of job creation for a class of people who are ignored by the government system especially old men in the villages. We had to ensure many things while intervening in those areas such as avoiding going hi tech, or against religious norms. At the same time, as in the case of water hyacinth and waste jute, we had to look at helping the community and converting a weed into a source of money. We try to create as many jobs as possible at all levels.

@ Ms. Sreekala Kadidal

Can anyone use the crafts park? For how long can they use it? Do they pay?

The crafts park has 2 sections: manufacturing plots and the common facility centre. 26 plots have been allotted to recognised exporters who are members of the Export Council. Each exporter has been advised to build his manufacturing centre within his plot. Plot owners can use the common facility centre which is also open to other users from across the country. They can give their raw materials to this centre which has trained staff to operate the machines. Users pay for the usage of the machines by hour, the rates are fixed by the exporters themselves. The non plot owners can use the facility and machinery for as long as they want, as long as they pay. However preference is given to plot owners.

There was a comment that there were very few discussions on processing of the various natural fibres which are all traditional and consume large amounts of water, fuel and man power. The question was could such processes such as anaerobic retting be tried with these fibres to help reduce consumption of water and fuel and help conserve our natural resources. The suggestion was that to address the issue of processing we need to establish a global network intervention forum to devise technology by which we can separate fibres wisely and save our natural resources.

In response, one participant informed the plenary that there are R&D efforts going on which are looking at contemporary methods for processing with less consumption of water, energy, chemicals etc such as the solar drying technique for paper.

There was a suggestion that GNFF bring into the public domain, information on how to licence, how to get into contracts which would be helpful to stakeholder who are planning to develop or work with producer companies.

Felicitations of Artisans

Before the commencement of the open session, the artisans who had come to participate in the symposium were acknowledged, appreciated and felicitated for the efforts they put into their crafts against all odds, their skills and contributions. The artisans were

- Mr. Piyadasa of Sri Lanka
- Ms. Geethanjani Perera of Sri Lanka
- Ms. R. Mangai of Vellore, Tamil Nadu
- Ms. S. Champa of Vellore, Tamil Nadu
- Ms. Nivedita of Vellore, Tamil Nadu
- Ms. Pushpavalli of Vellore, Tamil Nadu
- Ms. Saraswati of Vellore, Tamil Nadu
- Mr. Velyangiri of Karnataka
- Mr. Nagendra of Karnataka



Open session

The open session was to provide an opportunity to share information on those kinds of fibres that did not specifically fit into any of the themes of the earlier sessions but which were considered to be important to be known about in the arena of natural fibres. The session was moderated by Ms. Neelam Chhiber with presentations from:

1. Dr. Kunene Thandeka, South Africa
2. Mr. D. Ruhinda, Tanzania

Presentation 1 - Dr. Thandeka Kunene

Dr. Thandeka's presentation on hemp in South Africa featured the following points:

- An introduction to hemp - its traits as a plant and crop; its uses - past and potential; the employment potentials it offers
- International trends in terms of production/cultivation, uses
- The history of hemp in Africa from the 1990s to present
- Introduction to House of Hemp - a 100% black owned enterprise with over 17 years of research in the hemp industry with a vision to remove poverty using hemp; its activities; demand indicators for hemp at the levels of industry and partners; projected economic, social and environmental impacts; challenges requiring interventions



At the end of her presentation, Dr. Thandeka expressed that over the 2 days of the symposium she had identified various prospects for collaboration and exchange between the African and Asian Chapters of GNFF; specific areas in which the GNFF Asia could help GNFF Africa and vice versa.

She mentioned that the Commonwealth was organising a Hemp workshop in November 2012 - one of the agenda items will be to look

at the legislation framework for commercialising hemp since Africa cannot grow hemp commercially. Countries like Pakistan, India, Malaysia and Bangladesh grow hemp to some extent - there is the hope that the countries that use hemp to some extent will participate in the workshop. She added that those who want to grow hemp in their countries and have restrictive legislations must also come that workshop so that they could be helped with suggestions on how to overcome these blocks.

Apart from this, she invited various members of the GNFF to share or sell their specific extraction and processing technologies with Africa such as anaerobic retting, the biogas plants, the technology for making banana candy, composites, plywood, etc. Sharing that she had already interacted with a couple of the participants and had formed trade teams, she felt that coming to the symposium was really worthwhile for her. She expressed Africa's interest to buy, borrow and exchange technology and information with GNFF Asia. She said that the members of the GNFF had to combine their minds and scientific research to ensure that the sources of natural fibres sustain for forthcoming generations. She urged members of the forum to join together to create a case to improve natural fibres.

Presentation 2: Mr. Ruhinda

Mr. Ruhinda's presentation provided information on natural fibres extracted from sisal and the opportunities it offers. His presentation featured the following points:

- Overview of Tanzania: located in East Africa, Area: 364,898 sq. Miles, Population: Abt 40 million people; Main Industries: Agricultural processing, mining, cement, wood products, fertilizer, tourism etc)
- Background of company (D. D. Ruhinda & Co. Ltd was founded in 1991) - Initially, a trading house - buying and selling sisal fibre and products locally and abroad; company acquired Mkumbara Sisal Estate in 1997 to guarantee its own need of sisal fibre; employs about 400 workers; products produced include sisal fibre grades 3L, 3s, UG, Tow1 & Flume Tows; voted the Best Sisal Estate in Tanzania in 2011-12
- Sisal agronomy and production - began in Tanzania in 1893 through bulbils obtained from Yucatan; flourishes well in hotter & drier areas; grows best in rainfall 1,000 - 1,200mm but usually grows well with less rain; centre for sisal farming in Tanzania - Korogwe-Muheza zones; traditionally a high input, large-scale crop

- Marketing - after Independence most sisal estates were nationalized and put under Tanzania Sisal Corporation and later Tanzania Sisal Authority (TSA); till 1970s, all marketing was done through TASMA (Tanganyika Sisal Marketing Association); post 1983 private firms were allowed to sell independently but most estates remained under government control; In 1997 the industry was privatized and marketing was done by growers themselves.
- Research & Development - Sisal plant research began in 1929 at Amani for plant selection and breeding of agave species with high leaf production; Hybrid 11648 was derived in the 1940s through cross-pollination of various agave species; Research on production of Biogas & Electricity from sisal residue from 2000 onwards
- Current situation - 100% of the industry is now owned by the Private Sector; Tanzania Sisal Board formed in 1997 for regulation/policy issues; Sisal Association of Tanzania deals with lobbying & advocacy issues; Sisal Smallholders Farming further simplified participation in sisal farming; planting/ production / productivity now on the rise; R&D continues but there is an urgent need to commercialize research findings particularly on biogas, bio-fertilizers, electricity, insulins and ethanol; most products at the moment include sisal yarns, ropes, carpets, mats, bags and geotextiles; handicraft products exist but the industry is yet to be fully developed; policies which favour the natural fibres industry are in place however bureaucracy still exists
- Some lessons learned - R&D is critical; natural fibre industry does best when run privately, marketing and awareness creation has to continue
- Investment opportunities - leaves- fibres and wastes (ropes, carpets, padding bags, construction, composites); boles (industrial alcohols, chemicals such as acids, sugars, waxes insulin); poles (fibre boards, construction, paper); roots (chemicals, aphrodisiacs)

Dr. Shanbag who had to leave the sessions early wanted to share a few points before he left. He mentioned that there are 2 things to note - natural fibres volumes are not large, are spread around and localised. Hence we need to understand the scale issues that exist.

According to him, the best way to institutionalise natural fibres was through networks. In networks, we need to look at strengths of different institutions and give them a co-ordinating role in the strengths they have. Thus everyone has a role to play and share with the rest. An exchange unit must be created to facilitate communication.

He added that there is a lot of R&D going on by which non natural fibres are approaching the qualities of natural fibres. There are attempts to make polyesters more eco friendly. We need to understand these balances. One of the things to look at is how can natural fibres get more into wear and apparel - this would actualise out our attempts to upscale it. In that process, we need to ensure that the property ownership remains with the craftsmen.

He reminded the groups that as far as his institution goes, he has offered a resource to house a natural fibre section and is willing to do research for the GNFF. He added that the Pearl Academy also had machinery and equipment which could be available to the open resource group to use for natural fibres.

Session - Final GNFF Asia Program and Key Partnerships

The objective of exploring how to construct the GNFF chapter in Asia in terms of programs and partnerships across countries was achieved through informal country-wise discussions. Participants were broken down into country-wise groups and each group had to come up with responses to the following 4 questions:

1. Is your country interested to join GNFF?
2. What are the priorities you think GNFF should focus on?
3. What are critical success factors for GNFF?
4. How do you think the structure of GNFF in Asia should be and the structure of GNFF in your own country?

The session was facilitated by Mr. Watipaso Mkandawire.

The responses are provided as annexure 1

Participants working as country-wise groups during the session on developing the GNFF chapter and key partnerships



Following the presentations Mr. Mkandawire shared his observation that the contributions made were complementary to what had been shared in the African and Caribbean Symposia. He said that the broad areas were the same – the need for a bank, collection/dissemination, marketing etc- all vital areas that GNFF should be focusing on.

While being happy at the enthusiasm expressed by participants to become members of GNFF and the various ideas and suggestions shared, Ms. Neelam Chhiber expressed that it was critical that the problem of intellectual property be sorted out for partnerships to move ahead successfully. She said that there is a need for looking at ways in which knowledge could be shared and yet protected. This, it was explained was very important because GNFF was conceived to operate as an open source platform and the concept of intellectual property rights pose to be a big hurdle for it to function in such a manner.

Mr. Mkandawire expressed that it was very important that taking leadership and pushing forward the agenda, holding the network and seeking support come from among partner members of GNFF. This, he emphasised were requisites for it to move ahead successfully and sustain. It was concluded that it was important that GNFF start finding its feet within the policy-making regime of the governments, one of them being the Commonwealth. It was emphasised that the Commonwealth and governments should be involved to develop policies that support the natural fibre sector and help overcome its existing challenges. This, he said, could happen only if GNFF partners, especially those from civil society push for natural fibres to enter into the governments’ agendas.

With this being the last of the series of regional GNFF Symposia, the symposium came to an end with the organisers and representatives of the Commonwealth Secretariat conveying best wishes for a successful path ahead for GNFF.

Conclusion

During the course of the 3 days, the symposium offered a platform to learn of the status and activities of the African and Caribbean chapters of GNFF that have been operating since 2009, and to explore the arena of natural fibres in Asia as a step towards building the Asian



chapter of GNFF. There was a rich exchange of experience-based information on natural fibres from across the participating countries - the various kinds available, their underutilisation, existing applications and scope or potential for application, innovations, technologies and R&D involved in their processing. The symposium also explored several examples of successful social business models that build equitable supply chains to help secure

rural livelihoods and build a market for natural fibre products. It was conveyed that it is critical that business models look at how producer groups (artisans) can benefit socio-economically, to the maximum extent. There were also explorations into design as a factor that contributes to the value chain.

More importantly the symposium helped underline two aspects 1) how developing the natural fibre sector and its commercialisation was not only a means to develop and promote alternatives to synthetics and timber, that would help protect the earth's ecology in these times when we are on the brink of its irreparable destruction 2) but that it also innately has an agenda of addressing issues of socio-economic development, poverty and exclusion. Time and again, it emerged how work associated with the natural fibre sector was deeply intertwined with empowerment, equity and economic development of marginalised communities; in boosting rural economies and also in helping to retain cultural heritage.



The symposium also featured a unique exhibition which offered a glimpse of the variety of natural fibres available for use and demonstrated the scope for their application in the

handicraft sector and beyond that into agriculture, construction, and horticulture. Special features of the exhibition included live demonstrations of making of handicrafts from natural fibres by skilled artisans from India and Sri Lanka and a display of hand looms from Sri Lanka and India. It provided an opportunity for many participating organisations and individuals to showcase their pioneering and innovative work with natural fibres from traditional baskets and bags to the novel Jutin. The exhibition helped provide a visual link between raw materials and products in the arena of natural fibres and what had been presented about them during the various sessions.

XXX

Participants in the GNFF Asia Symposium
September 25 to 27, 2012



Annexure 1

Country wise responses

Country	<i>Is your country interested to join GNFF?</i>	<i>What are the priorities you think GNFF should focus on?</i>	<i>What are critical success factors for GNFF?</i>	<i>How do you think the structure of GNFF in Asia should be and the structure of GNFF in your own country?</i>
Pakistan	Yes - as an individual, as an NGO or as an association	<ul style="list-style-type: none"> • Wild fibres in each country's context - exploring the potential for their use and developing some activity around them • Natural fibres to be promoted on the principles of their virtues and no demerits • Most natural fibres grown in the developed world are low priced - we too can achieve this by bringing their cost of production low and improve their yield. Thus we can sell natural fibres at prices much lesser than the cost of synthetics • Increasing yield of natural fibre per acre 	<ul style="list-style-type: none"> • Harmony and peace among regional countries and corresponding fibre markets 	<ul style="list-style-type: none"> • Each country should have one coordinator and 4 to 5 members as part of the forum
India (Group 1 & 2)	Yes	<ul style="list-style-type: none"> • Database and standardisation of natural fibres • Standardisation of extraction and processing • Present usage and extension to other areas 	<ul style="list-style-type: none"> • Participation and focus on artisans, designers, technologists, government agencies etc • Regular interactions at regional and national levels for up-dation • Creation of network and platform 	<ul style="list-style-type: none"> • Involvement of all stakeholders • Democratic set-up • Bottom → up approach • Creation of <i>Natural Fibre Mission</i> or Natural Fibre Action Plan

		<ul style="list-style-type: none"> • Design; Develop; Document → skills; processes and products • Audit and accreditation of stakeholders • Eco-friendly awareness (curriculum in schools and colleges) <ul style="list-style-type: none"> ○ Processing of natural fibres (cottage, medium, large levels) ○ Data bank on natural fibres - web portal on cultivation, harvesting, processing, technology, communities, resources, traditional rights, marketing linkages ○ Policies, regulations and practices 	<p>for sharing of ideas.</p> <ul style="list-style-type: none"> ○ Marketing linkages ○ Identification of production clusters-scaling up ○ Major or critical stakeholders (cultivators, harvesters, processors-values adders) 	<p>Asia:</p> <ul style="list-style-type: none"> ○ A forum with regional secretariat ○ Executive committee with representatives from all countries <p>National: Special Purpose Vehicle registered with region-wise representatives (lean and mean structure)</p>
Bangladesh	Yes	<ul style="list-style-type: none"> • Information sharing • Technology sharing and transfer • Collective marketing platform • Standard guidelines for managing natural fibre resources 	<ul style="list-style-type: none"> • Openness in sharing information and technology • Continuous funding • Equal treatment to all members 	<ul style="list-style-type: none"> • Bangladesh (inclusion of following): <ul style="list-style-type: none"> ○ Individuals ○ SMEs ○ Microenterprises ○ Institutions ○ Corporate or NGO businesses • Asia • Regional secretary to represent global GNFF committee • Representative from each country
Malaysia	Yes	<ul style="list-style-type: none"> • Processing technology: <ul style="list-style-type: none"> ○ Post harvest process for 	<ul style="list-style-type: none"> • Develop a mechanism for technology transfer among 	<ul style="list-style-type: none"> • Product based - composite craft • Ministry based - commodity ;

		<p>extraction of fibre for each country</p> <ul style="list-style-type: none"> ○ Collection centre that can protect quality • Sustainability certification that can be recognised worldwide <ul style="list-style-type: none"> ○ Green image of natural fibre product • Method of integrating the work that has already succeeded from each country 	<p>members of GNFF</p> <ul style="list-style-type: none"> • Promotion of natural fibre products through platforms such as exhibitions • Information dissemination - updating members on current status and projects in each country 	<p>agriculture</p> <ul style="list-style-type: none"> • Industry involvement - craft; paper; composites • Raw material - kenaf; oil palm; pineapple
Sri Lanka	Yes	<ul style="list-style-type: none"> • Networking among members • Effective strategic framework for new technology transfer • Help in raw material procurement (import if necessary) • Help in growing and propagating natural fibres • Marketing support- securing us with buyers for natural fibres • Developing marketing strategies 	<ul style="list-style-type: none"> • Annual economic contribution to growth as a GDP indicator 	<ul style="list-style-type: none"> • Each country should be an entity with members representing industrial and creative sectors
Thailand	Yes (when ready)	<ul style="list-style-type: none"> • Scaling up to commercial levels • Availability of raw materials • R&D on techniques and processes 	<ul style="list-style-type: none"> • Offer potential to explore; knowledge gained • Exchange of ideas • Networking 	<ul style="list-style-type: none"> • Lectures • Sessions