



Promoting synergies with indigenous knowledge and grassroots technologies for the achievement of SDGs

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how often have we scouted and spawned creative innovative voices from outside the formal sector in our respective verticals.

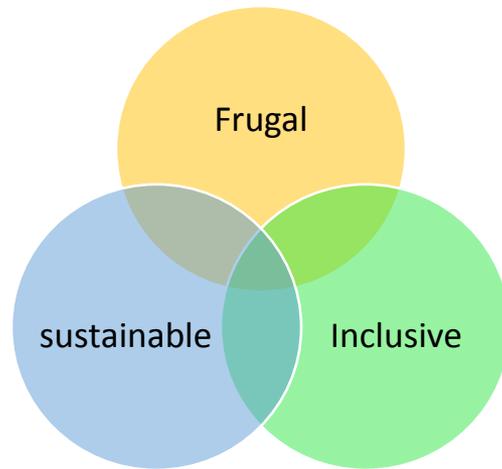
**Are we listening, learning and leveraging the innovations from/for Grassroots/shopfloor, vendors, supply chain and users to reach the unreached bypassed/neglected**

6-S

*spaces, sectors, time/seasons, skills, social groups and structures of governance*

***A change not monitored is a change not desired:  
towards inclusive FRUGAL  
innovations***





# Accessibility

Adaptability &  
Modularity, recombining

# Affordability

Reliability,  
Environmental  
suitability

# Availability

Redesignability  
Acceptability

# Technological Inertia: women will suffer NO more



# Women based innovative enterprises: DFO Sharma udaipur



# Samvedana: driver of inclusion



Ethical fulcrum of empathy?

Where are the fertile grounds for sprouting seeds of empathetic innovations?

- informal sector
- formal sector

# Just for the pain of the mother

**Asu making machine for Pochampally sarees: C Mallesham, Nalgonda**

Laxmi Asu machine by Mallesham has relieved women from 8-9 hours of labour everyday.

In Residence Scholar, Rashtrapati Bhavan



- it just takes 90 minutes to prepare AASu for a saree compared to the four hours required in the manual process.
- Also see Honey Bee 19(3): 4-6, 2009 for his detailed profile



This is how it was



This is how it is



# Cotton Stripper Machine

## Problem

Separation of lint in cotton crop ( Kalyan-V797, G13) is laborious process, manually carried out usually by women and children labour



## Solution

A unique solution to a tedious, manual process,  
Social relevance-reduces drudgery of women and child labour,  
Increasing efficiency & Quality of output by eliminating staple cutting,  
Wider socio-commercial application



Innovator: Shri Mansukhbhai  
Patel

# Cotton Boll Picker

## Problems

- Cotton harvesting is a labour intensive activity
- Demand of labourers during season is high
- If cotton is not plucked in time, the crop gets wasted.
- High labour cost



## Solution

- Machine separate cotton balls from plant and collected in storage cabin
- Machine is tractor mounted,
- Takes drive from PTO,
- Cotton ball plucking unit can be raised or lowered by hydraulic system to get a desired height from ground level,
- Easily attached to tractor and taken to the field



Innovator: Shri Natubhai R Wadher

# Mobile Groundnut Thresher

## Problems

- Threshing is labour intensive and lack of labour during peak season
- Loss of yield if threshing not done in time
- High cost of threshing



First Prototype

## Solution

- Machine is tractor driven
- The storage bags can be raised or lowered by hydraulic system to dump the product and by-product where desired.
- Easily attached to tractor and taken to the field



Current Prototype



Innovators:  
Shri Nileshbhai  
Dobariya

# Why Grassroots Innovations

In a context of **rising income disparity among the have and have-nots**, conversion of the ideas and innovations of knowledge-rich but economically-poor individuals and communities into **viable means of raising income, addressing social needs, and conserving the environment is needed**

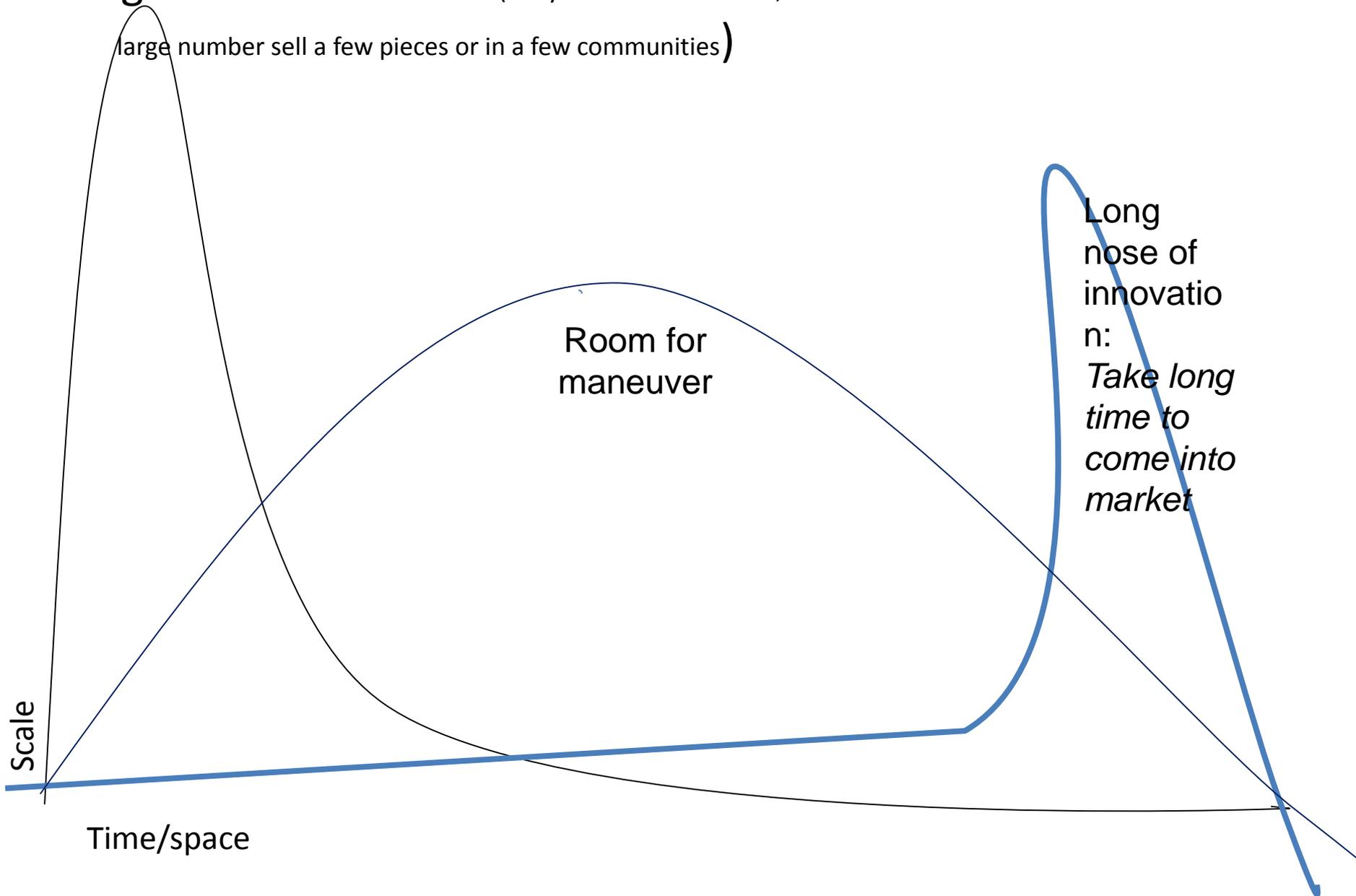
**The** emergence, recognition and diffusion of grassroots innovations helps **trigger experimental self-design ethic** and **reduce dependence on the government/others** for solving local problems.

**Long tail of innovation:** location specific solution

GRI provide **frugal heuristics for fertilizing imagination in other sectors** of economy including higher education

# Long tail of innovation

( only a few achieve scale, a large number sell a few pieces or in a few communities )



**Frugality** born out of material constraints and knowledge abundance is the way forward at all levels in the society

Engaging **students** pursuing Higher Education and final year school in **scouting and supporting** grassroots innovations and outstanding Traditional knowledge is the most frugal way forward, It **can start tomorrow** without any additional funding though **validation and value addition will need public funds**. Link final year **projects of students** with **unmet social needs** as in [Techpedia.in](http://Techpedia.in)

# Innovation GYTI Awards 2018

March 2018 | Festival of Innovation and Entrepreneurship | Rashtrapati Bhavan



Honourable President of India awarding tech students GYTI awards for outstanding solutions - 2018 at the President's House, FINE

Frugality is feasible: while pushing productivity frontier



Frugality has to manifest in three dimensions

- Form
- Feature
- Function

DHRUV: GANDHINAGAR, A REFRIGERATOR WHICH GIVES MORE FOR LESS

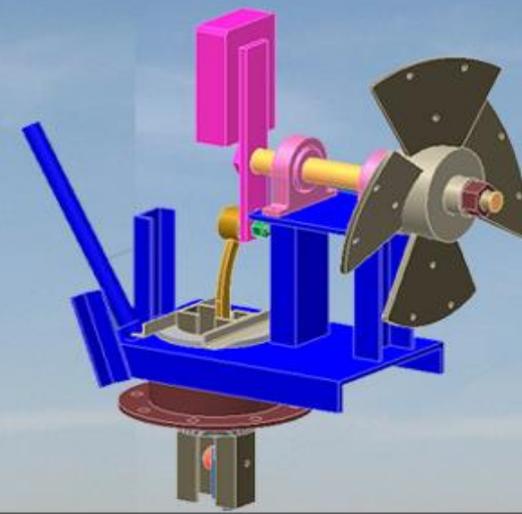
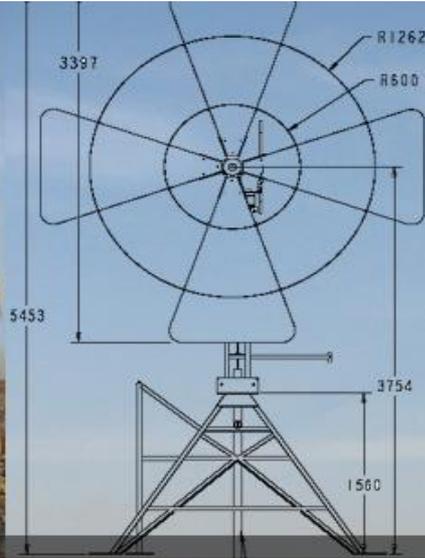
Many grassroots innovators may develop different variations around the same conceptual theme discovered independently and simultaneously



Pre-heating of kerosene improved fuel efficiency 35-60 per cent



Just  
70  
Euro



Stronger, durable version,  
900 euro, saves diesel  
worth 700 euro in one  
season of salt making

**New heuristics: maximizing output per unit of time and smoothening the flow are not always sustainable; Innovation by Mehtar Husain and Mushtaq Ahmed from Assam to Gujarat**

## Public Policy Interventions

**Prior Informed Consent** of Knowledge provider, protecting their rights vs open innovation platforms

Without testing and validation, we can not decide to invest in value addition and thus **a fund to add value through a network** of designers, workshops, labs, colleges is needed to make inclusive innovations ready for social or market based diffusion.

Circular Economy: Testing norms and Fatigue factors

Each **public sector lab** should be **mandated to test** and give free reports to grassroots innovators and TK holders, or a national fund for the purpose be created to **compensate the labs**.

Almost ninety per cent start up ideas die before the Venture funds get interested in equity investment in commercially viable ventures. **Early stage Micro Venture Innovation Fund is imperative** as distinct from micro finance.



## Herbvate: a skin ointment

- It is based on the knowledge of seven innovators from six districts Sabarkanth, Panchmahal, Dang, Mahsana, Patan and Bhavnagar of Gujarat. Herbavate exhibits remarkable properties against eczema and variety of inflammatory and infectious skin conditions.

**Communities:** The innovators of Herbavate: 1. Amratbhai Shankarbhai Rawal, Mehsana Gujarat. 2. Kunjubhai Kakadiyabhai Bhoya, Dang Gujarat 3. Pujabhai Dabhi, Sabarkantha, Gujarat 4. Karshanbhai Parmar, Sabarkantha Gujarat 5. Laxmanbhai Pagi, Panchmahal, Gujarat 6. Lilabhai Rawal, Patan Gujarat 7. Lakhabhai Becharbhai Khatana, Bhavnagar Gujarat

# JKUAT-SRISTI partnership to Transfer three Farmers' innovations to Kenya



**Shujaa/  
Bullet Santi  
Mansukhbhia jagani**

A multipurpose farming machine for ploughing, spraying pesticides, **ridge making, weeding and interculture.**



**Fruit and Vegetable  
Processing Machine  
dharambir**

This is an economical solution for post harvest value-addition at the farm. Makes **juice, jam, jelly, and essential oils.**



**Seed and Fertilizer  
Dibbler  
Mansukhbhai**

This is a useful implement to sow seeds and apply fertilizer while reducing drudgery.

## Policy Challenges: Development of standards for Shujaa

On March 14, 2018 in a national workshop organized by Kenya Bureau of Standards, various stakeholders endorsed the flexible standards for Shujaa after thorough deliberations and inspection—new standards were created in 4 months, wish, we could be as fast in India



Making **potential consumers aware about the frugal grassroots innovation**, one has to organize roadshows, exhibitions or participate on third party trade shows, TV/Radio spots, newspaper articles/advert etc., besides Shodhyatras, learning **walks to scout and share ideas**. All these costs money and without support, they will remain localized. At the same scale should not be made enemy of sustainability. **Long tail of innovation** implies that not all innovations will diffuse widely

# Shodhyatra

learning from four teachers: from within peers, common people and  
Nature



**Leadership is to see the intertwining of  
sacred with profane, in pursuit of  
sustainability:**

**CREATING PUBLIC STANDARDS OF  
EXCELLENCE**



Five Fulcrum of leadership

**Passion,**

**Purpose,**

**Process,**

**Platforms**

**and**

**performance**



Children are not just the  
sink of sermons  
but a valuable  
source of ideas



## T Chris Ananth

Class 1  
Bell Matric Higher Sec  
School  
Tirunelveli, Tamil  
Nadu



## Mini vacuum cleaner in shoe

Young Ananth's idea is to have a vacuum cleaner like small device in a shoe that could suck in dust when a person walks. The base of the shoe would also have a small dust bag in which this dust may be collected.



## Modified walker with adjustable legs

**Shalini Kumari (then 8 class)**  
**Bihar**

Shalini's grandfather uses a walker to assist him while he walks. But she noticed that he could only use the walker comfortably while walking on a level surface. Shalini came up with the idea of the modified walker with adjustable legs. NIF got it fabricated and licensed this technology to a company recently

## Inverted Model of Innovation

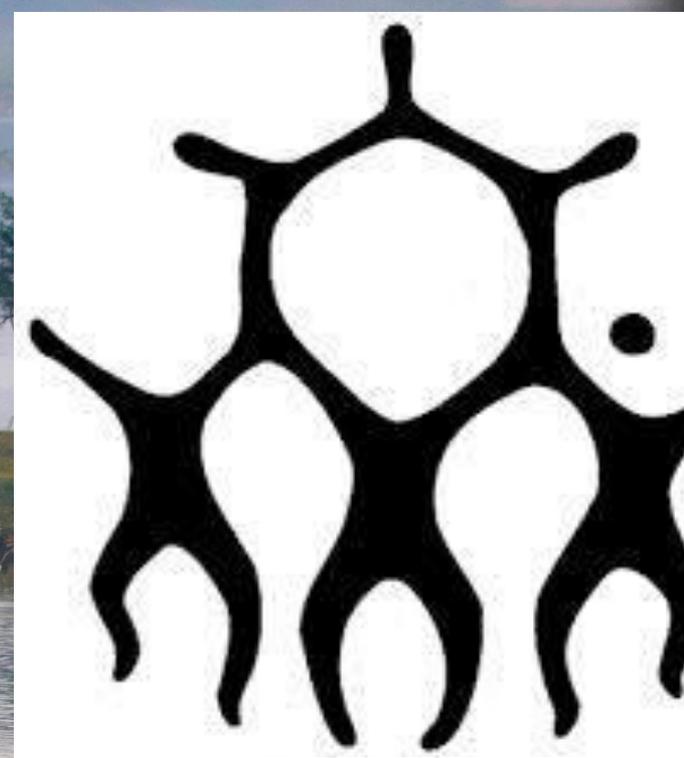


Innovation is simple



Giving voice, visibility and velocity to creative and innovative people in formal and informal sector

Honey Bee network 1987-1988



## LOOKING FOR THE ODD BALLS

The Honey Bee Network (HBN) has been leading the grassroots innovation movement in India and abroad in the past three decades to strengthen the inclusive innovation ecosystem of the country but also has become a global benchmark of frugal, friendly and flexible solutions for men and women farmers, pastoral and artisan households, mechanics, forest dwellers, fishermen, etc.

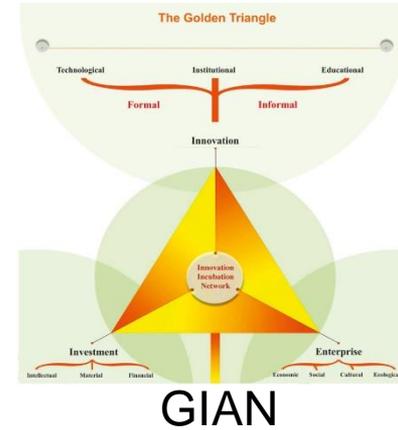


**Learning**



**Leveraging**

# Our Journey



**Linking**



**Legitimizing**

# ANIL K. GUPTA



MINDS ON THE MARGIN ARE NOT MARGINAL MINDS

'I am confident that this book will inspire young people to become entrepreneurs, and encourage the educationists to rethink the message they give to their students' **Muhammad Yunus**

Drivers of resilient and empathetic innovations

*Frugality*

*Diversity*

*Inclusion*

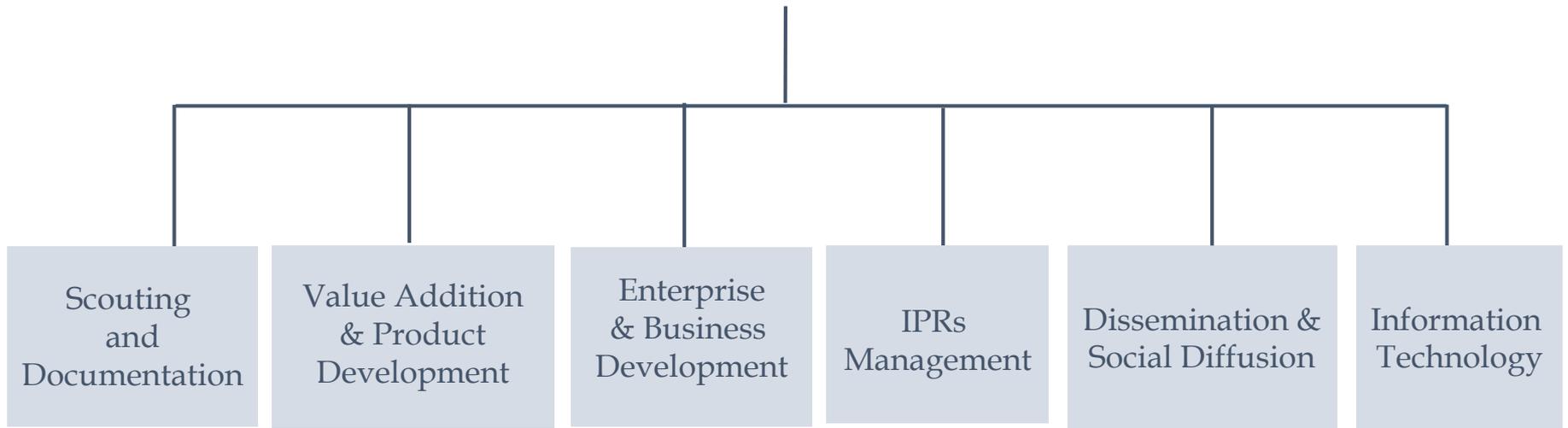
*Coping with climatic fluctuations, risks and uncertainty*

*Networked innovations*

*Open, reciprocal and responsible innovations; spawning start-up culture and networking at all levels*

# The HBN institution, NIF and sister Institutions

## Functions



Scouting and Documentation

Scouted more than 2,50,000, ideas, innovations, traditional knowledge practices (not all unique, not all distinct) from over 585 districts of the country  
MAINLY WITH THE HELP OF HBN actors

Value Addition & Product Development

Over 1000 projects supported for validation/ value addition  
37 Community workshops/ micro incubator support in 19 states

Enterprise & Business Development

193 projects supported under **Micro Venture Innovation Fund**

Transferred 89 technologies to licensees

IPRs Management

Dissemination & Social Diffusion

Filed >1050 patent applications in the name of innovators/ knowledge holders in India, 8 in USA, 27 under PCT (37 granted in India and 4 in US)  
27 applications under PPV&FR Act  
16 Trademark and 14 Design registration applications

Information Technology

A black and yellow spider is positioned in the center of the frame, suspended on its web. The spider's body is black with yellow spots, and its legs are black with yellow bands. The background is a blurred green, suggesting foliage. The text is overlaid on the spider and the web.

Fragility is the strength:  
Mutual dependence

**Network** is the way forward

Building THEIR CAPACITY by building ours