



Indian Institute of Technology Kharagpur (IIT Kharagpur)

About IIT KGP and the CSR opportunities

The objectives of Indian Institute of Technology Kharagpur (IIT Kharagpur), located in the District of West Midnapore in the State of West Bengal, India, include:

- To provide broad based education where students are urged to develop their professional skills.
- To draw the best expertise in science, technology, management and law to impart overall training to students.
- To incubate a spirit of entrepreneurship and innovation in students.
- To undertake world class research in areas of national and global importance.
- To provide technical services and support to industry, government and society in relevant areas.

IIT Kharagpur, the largest and oldest IIT, is a confluence of world class multidisciplinary courses, giving global exposure in academics and research, scope in entrepreneurship and best placement. The institute has 19 Departments, 12 Schools and 8 Centres of Excellence. Additionally there are more than 25 R&D units. Academic programs are offered are B.Tech.(15), B.Arch, Dual Degree(35), MBA, MHRM, LLB, MMST, M.Sc/ M.Tech/ MCP/ MS (68), PhD in 6 broad disciplines: (1) Engineering, (2) Basic Sciences, (3) Life Sciences, (4) Social Sciences & Humanities, (5) Law and (6) Entrepreneurship.

IIT Kharagpur promotes co-curricular and multidisciplinary programs through innovative research projects. This inculcates among the students research competence and industry-worthiness through sponsored research

- Student Driven Programmes - SAE Formula Car, Boeing Aircraft Design, Robosoccer, Humanoid, Swarm Robotics, Quadrotor Aerial Vehicle, Autonomous Ground Vehicle, Autonomous Underwater Vehicle
- Students' E-Cell: Workshops, Competitions
- Technology Transfer Group: IndAC, Tech Transfer, TEDx

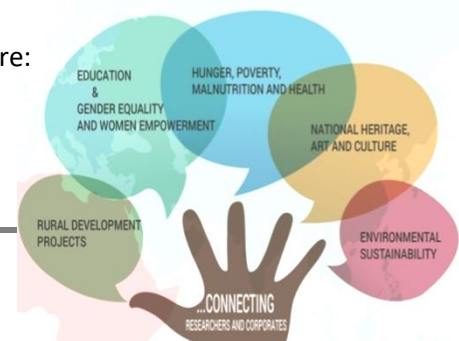
Students and faculty are actively involved in social activities through National Service Scheme (NSS)

- More than 1000 under-graduate students and 16 faculty members and officers donate ~5 lakh man-hour every semester in developmental initiatives in 25 villages and low-income urban neighborhoods around IIT Kharagpur



The broad areas in which majority of our CSR Projects aligned are:

1. Hunger, Poverty, Malnutrition and Health
2. Education
3. Rural Development Projects



4. Gender Equality and Women Empowerment
5. Environmental Sustainability
6. National Heritage, Art and Culture

Our major activities in societal development projects are through our mega projects, centers and deployable individual projects.

Mega Projects:

- Scientific Approach to Networking and Designing of Heritage Interfaces (<http://www.iitkgpsandhi.org>)
- Signals and Systems for Life Science (<http://signalsystemsforlifescience.in>)
- Sustainable Food Security through Technological Interventions for Production, Processing and Logistics (<http://sustainablefoodsecurity.in>)
- Future of Cities : Enhancing Urban Life in India (<http://www.facweb.iitkgp.ernet.in/~foc/>)

Centers in IIT Kharagpur for Socially Relevant Initiatives:

- Rural Development Centre
(Head Prof. Virendra Kumar Tewari)

The centre has a strong foot in the rural Indian perspective covering district-based regional development schemes in many areas like Intensive Crop Farming, Forestry, Horticulture, NTFP-based crafts, Women and Child Welfare programmes etc.

- Design and Innovation Centre for Rural Technology
(Principal Investigator, Prof. P.B.S. Bhadoria)

The objective is to upgrade and transfer rural technology through NGOs. The group has 40 NGOS covering Eastern India

Sponsor: PSA, Gol

- School of Medical Science and Technology
(Head: Prof. Suman Chakraborty)

It is a platform for interdisciplinary teaching and research in the field of Medical Science & Technology, which can lead to a better integrated healthcare delivery system.

For more information, visit: <http://www.smstweb.iitkgp.ernet.in/>

- Unnat Bharat Cell

Unnat Bharat Cell has been set up as a part of Govt. of India's Unnat Bharat Abhiyan, with a view to bring about transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an Inclusive India. The Cell is a consortium of

- National Service Scheme (NSS) unit,
- Rural Technology Action Group (RuTAG),
- Rural Development Centre (RDC),
- School of Medical Science and Technology (SMST),
- Advanced Technology Development Centre (ATDC), and
- Department of Agriculture and Food Engineering (AGFE) members.

- Ongoing activities under National Service Scheme (NSS)
(Program Coordinator: Prof. Debasis Roy)

- Income generation
- Vocational training (funded by Society for Self Employment of Unemployed Youth, Kolkata)
- Twelve 144-hour courses on tailoring, mobile phone repair, plumbing, electrical wiring, electrical appliances repair and maintenance, 2- 3- wheeler repair and maintenance
- 30-35 trainees per course
- Development work at public facilities by the trainees
- Nutritional intervention at schools
- Pilot at Malma: 95 kids, 5-12 y; eggs and fruits provided as midday meal supplement over 3 months; malnutrition reduced from ~80 % to ~50 %
- Follow-up: solya cultivation at three primary schools for sustained improvement of children’s nutrition
- Infrastructure
- Road building at Balarampur (2.5 km), Malma (1 km) and Bolla (1 km)

- Agriculture and Food Engineering (AGFE)
(Head of the Department: Prof. Virendra Kumar Tewari)

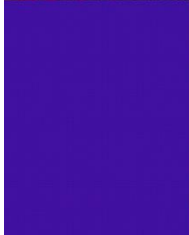
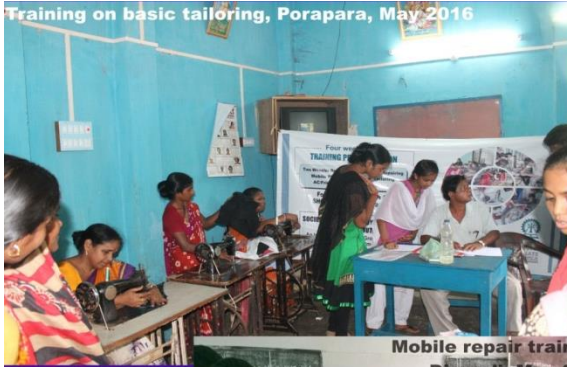
The department is unique among the IITs and carries extensive research and training activities in various areas of socio-economical relevance.

One of the projects that have been widely appreciated is “Formulation and Pilot Scale Unit for Production of Therapeutic Food in Ready-to-Eat Form (TF-RTE) for Management of SAM Children”
By Professor H N Mishra, Department of Biotechnology

For more information, visit : <http://www.agri.iitkgp.ernet.in/>



GLIMPSES OF ACTIVITIES UNDER THESE PROJECTS



Various Skill Development Programmes



Puffed rice making



Puffed rice making



Treatment of pond with clay



Biodiesel production from non-edible oils



Improved device for wet soil preparation



Mechanized production of Indian milk sweets

IIT Kharagpur has recently ventured into aligning with corporates for CSR funding. Some of the corporate CSR initiatives are :

- Community Participation Model for Economic Development and Nutritional Health Management Through Organic-farming And Education (Sponsored By Eastern Coalfields Limited, CIL Executed by: Prof. Khanindra Pathak, Prof. Analava Mitra et al)
- Medical Imaging Informatics for Skin Wound and Malaria Screening (Coordinating Organisation: Charities Aid Foundation, India. Donor Organisation: Microsoft India Development Center Executed by: Prof. Chandan Chakraborty)
- Tracking the antiquity and climate during Bronze age Harappan/Indus Valley Civilisation (IVC) in India using isotope and latest chronological techniques (Sponsored By: Infosys Foundation, Initiated by: Prof. Anindya Sarkar)
- Top International Conferences travel (preferably for women) under CSR Initiative of Infosys Foundation.
- Balmer Lawrie Scholarship under CSR Initiative of Balmer Lawrie & Co. Ltd. Kolkata for SC/ST /PC students.

CCC Project Proposal -2

1. **Area:** Hunger, Poverty, Malnutrition and Health
2. **Name of the Project:** *Ambulatory Care for Reducing Maternal Mortality Ratio (MMR) and Infant Mortality Ratio (IMR)*
3. **Project Brief:**

An estimated 44,000 maternal deaths occur in India every year. Despite tremendous efforts by State and National governments, India is lagging behind achieving its Millennium Development Goal (MDG) for reducing maternal mortality. So far only three states—Kerala, Tamil Nadu and Maharashtra (with MMR equal to 66, 90, and 87 respectively) have been able to achieve the millennium development goal. Most other states will not be able to achieve the target set by MDG. The Infant Mortality Rate (IMR) in India is also pretty high (40 per 1,000 live births). An estimated 1.068 million children of age one year and below die in the country annually. Further, hospital admissions, in such cases, add to financial stress to the family. Improving ambulatory care service may play a key role in reducing MMR and IMR at lower cost. Though ambulatory care is technically less complex than inpatient care, it is logistically more involved due to communication and coordination between various stakeholders. Hence it calls for a systemic understanding of the challenges in ambulatory care services and improving its performance to meet the required MDG for reducing MMR and IMR. The project would lead to the design of an integrated ambulatory care service and associated training needs of the personnel involved.
4. **Total Fund Requirement:** INR 50 lakh
5. **Time for Completion:** 3 Years
6. **Professor(s) In-Charge:** Dr. Ram Babu Roy, Rajendra Mishra School of Engineering Entrepreneurship (RMSoEE)

CCC Project Proposal -12

1. **Area:** Health, Environmental sustainability
2. **Name of the Project:** Decentralized Domestic Water and Waste Management at rural community levels
3. **Project Brief:** Project focuses on human health safety and environmental sustainability. The major activities proposed are as under:
 1. Study of water sources, water use practices, and waste management practices in the selected study area.
 2. Health Risk Assessment and Environmental Impact Assessment of current practices of water uses and waste management in the selected villages.
 3. Design of indigenous low cost water purification systems
 4. Distribution of the systems to the villagers and its performance evaluation in the field.
 5. Life cycle analysis, and cost-benefit analysis of the designed set-up/system
 6. Design scheme for a custom-made pilot level waste management solution for the community and implementation of the same.
 7. Study the environmental impacts and cost benefit impacts of the waste management plan.
 8. Information dissemination through stakeholders meetings and public awareness campaigns
4. **Total Fund Requirement:** INR 90,00,000/- (including Institute OH of 20%)
5. **Time for Completion:** 3 Year
6. **Professor(s) In-Charge:** Dr. Manoj Kumar Tiwari, Fulbright Fellow
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CCC Project Proposal -13

1. **Area:** Health
2. **Name of the Project:** Dietary fortification with Soya milk to reduce malnutrition in school children at villages near to IIT Kharagpur
3. **Project Brief:** Malnutrition in school children is about 65% in rural India severely impacting productivity, intelligence and GDP of the country. Lack of awareness on dietary requirements, health and hygiene particularly during pregnancy, lactation, infancy and childhood coupled with gender inequality, substance abuse and poverty are major contributors to rural malnutrition. NSS, IIT Kharagpur made an effort towards malnutrition abatement through food fortifications by using egg, banana and soy milk over the past year at schools around IIT Kharagpur, where around 80% students were affected by mild to severe malnutrition (wasting or stunting). The intervention led to 90% reduction in the instances of severe malnutrition along with relatively modest reductions in the instances of mild to moderate malnutrition. In this proposal, fifteen village schools near Kharagpur shall be brought under a similar but self-sustaining nutrition program through:
 1. Soya cultivation within and around school premises
 2. Minimally sustaining soya crop via drip irrigation from harvested rainwater and water wells equipped with solar powered pumps
 3. Extraction of soya milk and soya milk products for distribution among school students and pre-school children
 4. Monitoring of the effectiveness of the program through surveys
 5. Awareness program on dietary requirements
4. **Total Fund Requirement:** Rs 1,13,60,000.00

Details	Year 1	Year 2	Year 3
Manpower (one Project Officer @ Rs 20000/- per month and two Project Assistants @ Rs 7,500/- per person per month)	4.2	4.2	4.2
Installation of soya milk extraction systems and training	1.0	1.0	1.0
Installation of deep tube well running on solar power at fifteen schools along with overhead tanks, rainwater harvesting systems and filter units (@ Rs 6 lakh per school)	90.0		
Soya cultivation and consumables	2.0	2.0	2.0
Contingency	1.0	0.5	0.5
Total	98.2	7.7	7.7

5. **Time for Completion:** 3 Year
6. **Professor(s) In-Charge:**
 1. Dr A Mitra, School of Medical Science and Technology, IIT Kharagpur, WB 721302. Tel: 03222 282308. E mail: amitra@adm.iitkgp.ernet.in.
 2. Dr N Chakravorty, School of Medical Science and Technology, IIT Kharagpur, WB 721302. E mail: nishant@smst.iitkgp.ernet.in.

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3. Dr JN Roy, Advanced Technology Development Centre, IIT Kharagpur, WB 721302. Tel: 03222 281946. E mail: jnroy@atdc.iitkgp.ernet.in.
 4. Dr D Roy, Program Coordinator and Head, National Service Scheme, Department of Civil Engineering, IIT Kharagpur, WB 721302. Tel: 03222 283456. Email: debasis@civil.iitkgp.ernet.in.

CCC Project Proposal -15

1. **Area:** Rural Development, Health
2. **Name of the Project:** *E-Market design for potato trading in West Bengal and understanding the role of Contract farming as a risk reduction mechanism in potato.*

3. **Project Brief:**

West Bengal holds a key position in area of cultivation and production of potatoes and is the second largest producer after Uttar Pradesh. Like many agri-commodities, potato prices move quite erratically. Coupled with inadequate marketing channels, lack of adequate cold storage facilities, manipulations by middlemen and the absence of support prices make potato cultivation in West Bengal inherently risky – regularly gets manifested by farmers' suicide. The severity of the problem can be judged from the fact that during February –March 2015, 17 potato farmers have committed suicide.

West Bengal potato economy is also experiencing an emergence of contract farming. Companies such as Pepsico, ITC Foods, Parle and Keventer Agro have started procuring potatoes from farmers through contract farming arrangements. Though contract farming may have come as succor to some potato farmers, but the robustness of any economy/market place is proved when buyers and sellers are free to choose the counterparties to trade.

With the boom in ICT technology, Indian agri-market is experiencing emergence of e-marketplaces for online trading commodities in spot and forward markets. Many states in India are focusing on creating these online market infrastructures.

A case in point is ReMs Ltd of Karnataka. ReMs Ltd is a unified online market for agricultural produce in Karnataka and provides electronic auction system across the state for transparent price determination linking buyers and sellers. Many other states such as Maharashtra, Uttar Pradesh have done considerable progress to link spot and forward markets for better price discovery. However, West Bengal's effort in providing wider market access to farmers has remained lackluster.

In light of this discussion, the major objectives of the projects are:

1. To survey modalities of contract farming in potato in West Bengal.
2. To analyze benefits accruing to farmers engaged in contract farming vis-à-vis farmer's without contract farming.
3. To prepare a roadmap for creation of an online potato spot and forward market linking major potato trading centers of West Bengal.
4. To design a e-auction platform for farmers, traders and bulk buyers for transparent price discovery and wider market access.

4. **Total Fund Requirement:**

Recurring and Non-recurring (lakh)			
Year	Recurring	Non-recurring	Total
I	7.5	4	11.5
II	7.5	2	9.5
III	7.5	2	9.5
Total	30.5		
Institutional charges @20% (IITKgp)	7.625		
Grand Total	38.125		

5. **Time for completion:** 2.5 years

6. **Professor(s) In-Charge:** Dr.(Mrs) Prabina Rajib
 Professor (Finance & Accounts)
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CCC Project Proposal -19

1. **Area:** Health
2. **Name of the Project:** *Development of low cost Devices for Haemoglobin Detection*
3. **Project Brief:**
To improve the Indian healthcare scenario, typically rural India, we wish to develop low-cost and portable devices for easy, rapid, and affordable diagnosis of haemoglobin.
4. **Total Fund Requirement:** 50 Lakhs
5. **Time for completion:** 2 years
6. **Professor(s) In-Charge:** Prof. Suman Chakraborty, SMST

CCC Project Proposal 27

1. **Area:** Hunger, Poverty, Malnutrition and Health
2. **Name of the Project:** *Low cost Rugged Filter for Quality Water in the Villages*
3. **Project Brief:** The Project Investigator has developed a water filter that is already tested in the villages around IIT Kharagpur. The filter is highly efficient, easy to use and maintain. It is capable of making potable water from water from any sources in the village. The filtered water eliminates water borne diseases to a great extent. Ready for use in schools serving mid day meal, ,SHGs,tea/food shops,bustees, mahallas, etc.
4. **Total Fund Requirement:** INR
To implement 100 such units in the village total fund required = Rs.40,00,000.00
5. **Time for Completion:** 3 years
6. **Professor(s) In-Charge:** Prof. Jayanta Bhattacharya , Head, School of Environmental Science and Engineering, Indian Institute of Technology ,Kharagpur.

CCC Project Proposal 33

1. **Area:** Hunger, Poverty, Malnutrition and Health
2. **Name of the Project:** Development of low cost Devices for Hemoglobin Detection
3. **Project Brief:** Regular checkup of hemoglobin is one of the primary recommendations to the pregnant women. However for on-spot hemoglobin monitoring, there are no handheld commercial devices available in Indian market. Each test for hemoglobin detection (following standard clinical laboratory practices) costs ~ 300 INR or even more. Considering the issue of regular monitoring, the expenses of these diagnosis becomes unaffordable for the rural masses. Here, we aim to develop paper-based POC device for the quantification of hemoglobin following a colorimetric approach.
To implement the proposed work, we aim to adopt our in-house developed inexpensive fabrication technique with the aid of a simple office printer and hot plate, for the manufacturing of paper-based micro fluidic platforms. Before introducing the sample fluid within the device, specific chemicals will be pre-embedded on the detection zone. Thereafter, one drop of the blood sample (~ 50 μ l) will be introduced on the sample pad and subsequently transported to the detection zones. Once the sample fluid reaches to the detection zone, colorimetric signals will be altered; which will be captured for further processing. Finally, the quantification will be performed from the standard calibration chart.
4. **Total Fund Requirement:** INR 25 lacs
5. **Time for Completion:** 30 months
6. **Professor(s) In-Charge:** Prof. Suman Chakraborty; Department of Mechanical Engineering, IIT Kharagpur

CCC Project Proposal 37

1. **Area:** Rural development, Hunger, Poverty, Malnutrition and Health, Environmental sustainability
2. **Name of the Project:** : Benchmark Data Set Creation and Annotation for Cultural Preservation of Bharatanatyam
3. **Project Brief:** Solid waste management in rural settlements of India is a major issue of concern considering rural health and environment. This requires immediate intervention which is significantly different from urban areas due to location and scale factors, availability of a ready market for refuse reuse and diverse user perception due to varying levels of education, income etc. In addition to interventions like waste reduction and segregation, solid wastes in rural areas can be made a possible resource through recycling recyclable materials, converting organic waste to compost and secured disposal of remaining waste through proper technology and appropriately designed infrastructure which is acceptable to rural people. One of the reasons for poor performance of infrastructure projects in rural areas is that the people's priorities, perceptions and the local knowledge are not taken into consideration while making decisions which results in wrong choice of technology, management mechanisms and user charges. The present study aims to determine the appropriate service delivery levels and mechanisms for solid waste management in rural settlements based on local knowledge and user perception.
Scope of work:
 1. To study the existing practices of solid waste management in selected rural settlement
 2. To identify the appropriate attributes defining various aspects, technology options and infrastructure for rural solid waste management based on user perception
 3. To define service delivery levels for different aspects and technology of solid waste management and associated infrastructure and facilities incorporating local knowledge and user perception
4. **Total Fund Requirement:** INR 30 lacs
5. **Time for Completion:** 3 years
6. **Professor(s) In-Charge:** Prof. Debapratim Pandit,
Associate Professors, Architecture & Regional Planning Department, IIT Kharagpur

CCC Project Proposal 38

1. **Area:** Health
2. **Name of the Project:** : Extracting and Summarizing Prevention and Recovery Information from Microblogs during Epidemic Outbreaks
3. **Project Brief:** Information disseminated by affected and common people on microblogging platforms [1] such as Twitter during epidemic outbreaks in certain geographical regions contains useful information like signs or symptoms, transmission medium, prevention mechanism, affected people etc. Under such crisis scenario people look for information to take precautionary measures and accordingly follow recovery procedure. Humanitarian organizations look for health related information to assess the severity of the disease. However, every information available via Twitter may not be true; sometimes rumor or false information also propagate. Table 1 shows example of some rumors propagated during Ebola outbreak. It is interesting to see that microblogging sites like Twitter is used extensively during such epidemic outbreak even in countries like India.

Class	Rumor
Prevention	For u not to be infected by Ebola disease, kindly add salt in a bucket of water and bathe with it before day break.SAY NO TO EBOLA DISEASE
	Please use salt in warm water to bath, and pls don't use soap,sponge,or towel. Let it dry off your body also drink some.. Ebola prevention!

Table 1: Rumors propagated during Ebola outbreak

We have done some initial experiments and found the presence of two prominent information seeking communities — (i). users who are in pro-disease phase i.e. they are looking for preventive and precautionary measures, (ii). users in post-disease phase trying to get recovery and treatment information. Under such circumstances a framework is needed to (i). capture important disease signs and symptoms, (ii). extract do's and don'ts from microblogs, (iii). retrieve information about transmission medium and treatment procedure, and (iv) get feedback from medical experts to update public information. In this **project** we will develop a **real time online system** which is able to **collect data related to a epidemic, extract necessary information**, update those information based on expert advices (to **counter rumor**) and finally **summarize those information**.

References

[1] Elad Yom-Tov. Ebola data from the Internet: An opportunity for syndromic surveillance or a news event? ACM Digital Health 2015.

4. **Total Fund Requirement:** INR 10 lacs (breakup will be provided if requested)
5. **Time for Completion:** 1.5 years
6. **Professor(s) In-Charge:** Prof. Niloy Ganguly, CSE, IIT Kharagpur, niloy@cse.iitkgp.ernet.in, <http://www.facweb.iitkgp.ernet.in/~niloy/>

CCC Project Proposal 39

1. **Area:** Health
2. **Name of the Project:** : Feasibility study of in-company day care centres for the elderly
3. **Project Brief:** Everyone has Parents, not everyone has children.

Corporate organizations have, for a long time, recognized the need for working parents to look after their young children while contributing to their professional lives and set up crèches to help look after the children of their employees. However, the elderly parents are left to fend for themselves while their adult offspring are away at work. Many times, the elderly parents die for want of medical care because they do not have help at home when they need it. Many times, there is no one to give them medicines or even cook for them and they go hungry till their children come back from work and take care of them. The media is full of reports about unreliable and often times even violent house-help.

Through this study we hope to study the possibility of extending the ambit of crèches in corporate organizations to include care for the elderly family members of working professionals while they are at work. We hope to study the impact this is likely have on the productivity of working professionals who bring their elderly parents to these crèches. We also hope to study if the elderly parents who come to these crèches can help with care of the children who are dropped off in these crèches, thereby creating a win-win situation for all.

If successful, the ambit of these day care centres can be extended to include the elderly in the community whose family members do not work in these organizations.

Summary of how the work will be carried out

The team will identify THREE corporate organizations in and around Kharagpur who are willing to participate in the above experiment. Using the funds available, we will help organizations add staff and modify their existing infrastructure to include provisions for a limited number of elderly who can be accommodated in the facility. We will work with the CSR and Human Resources divisions of the selected organizations to recruit participants to the facility. Thereafter, we will closely monitor the working of these facilities through weekly/ fortnightly visits. We will also associate as closely as possible with those employees who bring their Parents to these facilities and try to find out whether and how this provision affects their productivity.

4. **Total Fund Requirement:** INR 30 lacs (breakup will be provided if requested)
5. **Time for Completion:** 3 years
6. **Professor(s) In-Charge:** Prof. Aradhna Malik , Assistant Professor, Vinod Gupta School of Management, IIT Kharagpur

CCC Project Proposal 40

1. **Area:** Malnutrition
2. **Name of the Project:** : Addressing Childhood Malnutrition in Our Backyard
3. **Project Brief:** 30% of children under five have chronic malnutrition in West Bengal, with the largest burden seen in rural regions like our backyard. The first two years of a child's life are critical. Stunting at age 2 is the most important economic indicator of human capital; it affects a child's cognitive and economic earning capabilities as an adult.

Exclusive breast feeding for the first six months of life and appropriate complementary feeding from six months onwards are the two most important interventions that impact child survival. Only 50% of infants in rural West Bengal are exclusively breast fed in the first six months and 20% of children less than 2 have an adequate diet.

Srijan is an organization based at IIT Kharagpur working on addressing maternal and child malnutrition in our backyard. With the Prem Bazaar rural hospital we are developing programs to support mothers breast feed. We are working in villages around KGP affected by maternal and child malnutrition to nurture best local practices for complementary feeding for children from six months to two years, and nutritional interventions for children 2-5 identified with malnutrition.

4. **Total Fund Requirement:** INR 9 lacs
5. **Time for Completion:** 3 years
6. **Professor(s) In-Charge:** Prof.

CCC Project Proposal 41

1. **Area:** Hunger, Poverty, Malnutrition and Health
2. **Name of the Project:** : The causality dilemma: Poverty and decision making
3. **Project Brief:** Recent studies¹ have shown, poverty and scarcity of resources affect people's psychological and physical capabilities restricting their decision-making processes which in-turn influences their overall well-being (figure 1). Anecdotes suggest that poverty creates a psychological situation analogous to, an economic agent struggling to manage with scanty resources like:
 - (i) A time-strapped middle manager unable to translate long-term goals into short-term goals.
 - (ii) A BPL family-head battling to prioritize between basic and social needs

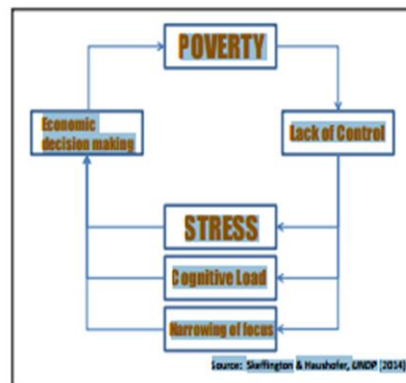


Figure 1: Cycle of poverty and decision making.

We adopt a novel approach to model individual decision-making under constraints, as an evolutionary cycle driven by cognitive processes like sequence-learning, perceptual limitations, and controlled stimulus. Using real subjects under experimental conditions and field surveys, we address the following questions:

1. Decision making processes tend to slow-down for economic agents believing they lack resources. What is the threshold of resource availability, below which retarding of decision-making is triggered?
2. How does the impeded decision-making consequently determine the resource availability?
3. Does any economic agent escape the poverty cycle?

The outcome of the investigation, will reveal the desirable behavioral traits for improved decision-making and enable us to recommend (i) economic public-policy changes and (ii) resource availability thresholds for corporations.

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†Department of Aerospace Engineering, Indian Institute of Technology Kharagpur. Email: ssaha@aero.iitkgp.ernet.in

¹Mullainathan and Shafir, 2014. Picador

4. **Total Fund Requirement:** INR 30 lacs(breakup will be provided if requested)

5. **Time for Completion:** 3 years

6. **Professor(s) In-Charge:** Prof. Abhijeet Chandra
Vinod Gupta School of Management, IIT Kharagpur.

Co-principal investigator: Dr. Sandeep Saha
Department of Aerospace Engineering, IIT Kharagpur .

CCC Project Proposal 48

1. **Area:** Hunger, Poverty, Malnutrition and Health
2. **Name of the Project:** : Laterite based indigenous low cost domestic water filters for iron, arsenic, heavy metal and bacteriological remediation
3. **Project Brief:** In India, 99% of population exposed to arsenic contamination lives in remote rural areas. The maximum permissible limit is recommended as 10 µg /L (WHO standard). Similarly, contamination of ground water by heavy metals, like lead, cadmium is another problem. Therefore, developing economical, effective and eco-friendly solution is the need of the hour. Proposed indigenous technology is a disruptive innovation and a new organic media to address final solution for Arsenic and heavy metal contamination in groundwater.

One arsenic affected village in West Bengal and one in the vicinity of IIT Kharagpur facing problems related to drinking water will be identified. Baseline surveys will be conducted. 200 domestic filters, for 8,000 people in each village will be deployed to supply safe drinking water free of arsenic, iron, bacteria and heavy metals. Annual assessment of water quality will be done, analysis of social and health impact of arsenic and heavy metal contamination before and after providing safe drinking water in supply areas will be noted. The quality of the filtered water will be benchmarked against BIS 10500 specifications. End line surveys will be conducted and a workshop will be organized to disseminate knowledge gained during the project.

4. **Total Fund Requirement:** INR 30 lacs (breakup will be provided if requested)
5. **Time for Completion:** 3 years
First Year:
Identification of the villages, conduction of baseline surveys, awareness generation, identification of the households, preparation of the domestic filters, installation of the domestic filters.
Second year:
Conduction of surveys, health camps, monitoring and maintenance of the filters.
Third year:
Analysis of social and health impact of the region before and after the installation of filters, Monitoring and assessment, handing over of the filter to the respective households.

6. **Professor In-Charge name and affiliation:** Prof. Sirshendu De, Head, Chemical Engineering Department, IIT Kharagpur, India.

CCC Project Proposal 49

1. **Area:** Hunger, Poverty, Malnutrition and Health
2. **Name of the Project:** : Intergenerational Centre for a neighbourhood : improving health of the elderly through social relationships
3. **Project Brief:** Developing and nurturing meaningful relationships is one of the key factors in improving the quality of life of elderly citizens. In the context of the present day scenario, where the elderly are often left alone at home without significant company, a need for a centre to build up and enhance social ties is of immense importance. In this project, we aim at developing a prototype model for setting up an intergenerational centre, where the elderly and the children (mainly pre-schoolers and primary school students) and youth volunteers of a neighbourhood, can interact together and involve in activities of interest. Intergenerational activities and programs have been found to be significantly beneficial in contributing to the social, psychological/emotional, physical, and intellectual/cognitive well-being of the elderly (Generations United, 2007). They also help in bringing together people of different generations in mutually beneficial activities, where they can share their talents, knowledge, and guide each other towards the achievement of specific goals (GU, 2007). Intergenerational activities between senior citizens and children include craft-work, book reading, storytelling, basic schooling, learning indoor games, creative writing, dancing, singing, light exercises, etc. Our project shall include the design of a prototype model outlining activities and the organizational structure required to set up and run the intergenerational centre as well as design guidelines for a typical intergenerational centre at a neighbourhood level. Scope of the work includes developing programmes , operational details , organizational structure tested through organized activities and also the physical design which can be built as a pilot project and replicated .
4. **Total Fund Requirement:** INR 28 lacs
5. **Time for Completion:** 2 years
6. **Professor(s) In-Charge:** Dr Sanghamitra Basu & Dr Debapratim Pandit , Associate Professors , Architecture & Regional Planning Department , IIT Kharagpur

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1. **Area:** Malnutrition
2. **Name of the Project:** : Malnutrition abatement and brain development of under privileged –An evidence based pilot project in rural Bengal
3. **Project Brief:** Protein calorie malnutrition (PCM) affects 67% of Indian populace; majority either in BPL or APL, rural populace mostly affected and a careful analysis reveal along with non-affordability of animal protein the major cause is lack of dietary education with inappropriateness in diet respect to age. Government of India is on the way to solve the menace by putting thrust in it but the impact is yet to be observed. Lack of omega 3 fatty acid derivatives lead to improper brain mass and IQ reduction leading to low GDP of the country. Brain development almost ceases after 4-6 years of life and nourishment should be provided to the expectant mother, in lactation and to the child. Indian society has different castes and tribes with their stigma in diet. A proper dietary education and scientific validation is needed of the anticipatory benefit to produce impact. Proper strategy encompassing socio-culturo-political domain and governmental approaches with proper educative measures which may be IT based audiovisual education with active participation producing permanent impacts in individualistic, familial, societal and on national level leading to a holistic development of the nation. Soybean a cheap protein easily cultivable in India may act as solution to the complex problem. It is acceptable to almost each and every cult and race in India. Only problem is elimination of its beany flavour and anti-nutritional elements like Bowman Burk and Trypsinogen inhibitors and has a high concentration of female hormones. Affordable technological solution exists to overcome this.

The soy is a low cost source of protein that has been consumed in Asian nations for many centuries. The rapid growing population of the developing countries is facing acute shortage of protein, soy bean is rich protein content and contains fiber, below is a list of regular sources. Human beings consume milk past childhood. At about the age of four, a child may begin to lose the ability to digest lactose, the carbohydrate found in milk. This results in a condition known as lactose intolerance that causes unpleasant abdominal symptoms, including stomach cramps, flatulence and diarrhoea. Lactose intolerance is reality for 75% of the world population. Even though consuming dairy is unnatural and problematic for many people. However, there are many people who cannot drink cow milk because of a milk allergy or out of a values choice like vegan. Soymilk is a healthy drink and is important for people with above problems and had been the first production ever prepared and consumed by human since long ago. Soymilk not only provides protein but also is a source of carbohydrate, lipid, vitamins and minerals. A pilot study done by our team on PCM affected children on nearby villages of IIT Kharagpur showed lack of protein intake-qualitative and quantitative. Further, the results showed about 85% of children of nearby villages are belonging to SC/ST community. They are also either in APL (10%) or BPL (65%). Agriculture (single crop per annum) is the main source of income in the family. Hence, there is poverty in the family and children are not well nourished. Poor sanitary condition further aggravates with GI infestations with parasites and helminths. Government of India has initiated programmes to overcome this. In this proposed project we will select 10 primary

schools in the local area mainly dominated by SC and ST community and having free land area in the school. The schools have less than 100 students on an average. Food fortification will be done by soy milk and the effects will be measured annually in complete health dimensions including clinical, biochemical, anthropometric and other dimensions (socio-mental). The study will be directed to pregnant and lactating mother and children up to 10 years of age, with inclusion and exclusion criteria following a consort flow chart to select the volunteers about 1000 in number. The study will be as per ICMR guidelines and the benefits will be documented after scientific validation of data. The project duration will be 3 years and the educative component along with will be basic computer education to the community and dietary optimised programme which later volunteers will modulate through computer based education. Local administration will be in touch. Soy bean cultivation will be in the school ground with water supply provided through bore holes. Soy products will be obtained following standard protocols. Persistence of the project will be through money generated through crop cultivation and knowledge dissemination where school students and teachers will play a leading role, environmental cleaning (vermcompost generation) and holistic approaches.

4. **Total Fund Requirement:** INR 37.62 lacs
5. **Time for Completion:** 3 years
6. **Professor(s) In-Charge name(s) and affiliation(s)**

IIT KGP- Trendsetters in CSR