



## **REVISED PROPOSAL**

**Prevention of Forest Fires in Himachal & Uttarakhand  
by Collection of Hazardous Pine Needles  
from the Forest Floor for Generating Electricity  
Through Gassifier Technology**



## THE PROJECT

### GENERATION OF ELECTRICITY THROUGH 32 KW GASSIFIER



## Introduction

### Background

Forest fires in Himalayan region comprising the states of Himachal and Uttarakhand have progressively shown substantial increase in terms of intensity and frequency resulting in colossal loss of habitat of endangered flora and fauna and other incidental adverse impact on environment as well as local economy. At times human habitations are also under threat due to these ravaging fires.

To mitigate this situation the Biomass based Gassifier technology offers an environment-friendly and sustainable solution by using the dry pine needles as fuel. These needles could be collected by villagers from the forest floor. In this way the forest floor could be cleared of hazardous pine needles and the floor could be made available for the growth of grasses and shrubs. It has the potential of converting dry pine needles/cones into electricity which can find diverse applications for the local community. The electricity produced by the Gassifier system can be used for lighting of houses, powering irrigation pumps and operating machines such as Atta Chakki, Oil Expeller, Rice Huller and Milk Chilling plant and other heating applications.

### Project Area

Any fire affected district of Uttarakhand/Himachal depending on field visit/survey and response of local community. Specific location will be ear marked after survey of the area and response of the local beneficiaries. The identification of the area is tentative so far and may be modified depending on the outcome of the survey.

### Economic Benefits

After implementation of the project the recurring losses due to repeated forest fires will be mitigated at the same time the electricity generated by utilizing dry pine needles/cones will open up lot of economic opportunities in terms of livelihood and promotion of small scale industries like power looms etc. enrichment of the cleared forest area through biodiversity by planting broad leaf mix of species will also be under taken by involving local community for long term sustainable economic benefits.

### Brief Project Description

Forest fires in Himalayan states of Himachal and Uttarakhand have been causing havoc year after year with progressively increasing intensity and frequency particularly during summers from April to June. These fires are having substantial adverse impact on Himalayan eco- system in following many ways.

1. Destruction of Flora and Fauna
2. Damaging the Habitat of Wild Animals
3. Warming up of Himalayan Region
4. Drying up of Water Sources
5. Exposing the Top Soil Making it More Vulnerable to Soil Erosion
6. Threatening the Human Habitation in Hamlets of Hill States

Root cause of these fires is the dry pine needles which cover the forest floors of pine forests, which are turning out to be a curse for Himalaya. These dry pine needles are highly inflammable and so are the pine trees and the cones which are full of resin.

This year (2018) also the pine forest fires have been reported from various districts of Himachal Pradesh Garhwal and Kumaon in Uttarakhand.

The proposed project is based on the concern of tons and tons of dry pine needles accumulating on the forest floor and as to how these can be used in various useful ways. It has been learnt that the pine needles can be gainfully utilized locally. Their transportation to a long distance renders them unviable for other applications. Therefore it is the most attractive proposition to Generate Electric Power through smokeless burning in a Gasifier. Initially as a pilot it is proposed to install a Gassifier of 32 KW capacity which will burn 1.5 ton of pine needles per day and generate 692 units (Kwh) per day at 90% efficiency. This can be utilized for various applications as per **Table – 1** and surplus if any can be fed into grid by making it grid interactive.

Together with the pine needles pine cones are also found in abundance in the pine forests this will ensure availability of fuel for sustained operation of Gassifier throughout the year.

### **Execution of Project and Time Frame**

Selection of precise location of the project will be based on ground level consultation with the community and also taking into account the vulnerability of the region towards forest fires including density of pine trees in the forest. The entire duration of project will be one year from the date of release of 1st installment of the sanctioned amount for the project. After completion of project duration of one year the asset will be handed over to the Gram Panchayat for further sustainable operation. IASRD will extend need based support to the Gram Panchayat on the terms and conditions to be mutually settled at the time of handing over of the plant.

### **Benefits:**

1. Prevention of Forest Fires as Dry Pine Needles will be Collected as Fuel for Gassifier
2. Direct and Indirect Livelihood Opportunities
3. Cheap and Reliable Local Power for the Far Flung Hamlets Local Habitat
4. Reduction in Air Pollution and Atmospheric Warming caused by Forest Fires
5. Conservation of Flora and Fauna Including their Habitat

### **Project Implementation Plan**

The project will be completed in a period of one year commencing from the date of release of 1<sup>st</sup> installment of the approved funds. As per details give in the pert chart enclosed.

## **Execution of the Gassifier Plant in Association with Industrial Partner**

The execution of the pilot Gassifier plant shall be carried out by GEW the agency which has experience in manufacturing, erection/Commissioning of the Gassifier plant. Ganesh Engineering Works (GEW) is accredited by the Ministry of New & Renewable Energy (MNRE) Government of India as manufacturer of Gassifiers. They have already supplied over 500 Gassifiers to generate power in Bihar & other places. They are also exporting these Gassifiers abroad. Considering their background GEW is the appropriate agency to setup the pilot Gassifier plant at village level in the proposed project area. Himalayan (Hilly region).

Ganesh Engineering Works (GEW) manufacture the equipments at district Buxar (Bihar). GEW will set up the plant under BOT Scheme and will operate the plant for three months. For operating the plant they will form a Self Help Group by involving the beneficiaries & other interested youth of the village and they will also train the members of Self Help Group during the period of operation of the plant. GEW along with operation of plant and will provide their expertise in maintenance of the plant during the period of operation. However they will also extend assistance for maintenance to the beneficiaries after handing over the plant to the villagers for operation.

### **Tripartite MoU between IASRD, GEW and MoEFCC:**

A Tripartite MoU will be executed between IASRD, GEW and MoEFCC defining the term and conditions for execution of project. Draft of Tripartite MoU placed at **Annexure –5**.

**Table - I**

Since the total capacity of the plant will be 32 KWT, the load catering will be as under:

**Dark Hours Load**

LIGHTING LOAD	No. S	QUANTITY	Total
Households	20	LED Bulb 13wt - 2	520wt
		Heater 1000 wt -1	20000wt
		TV 90 wt - 1	1800wt
		Per House hold	
<b>Sub Total</b>			<b>22.320KWT</b>
Street lights	15	15wt LED Bulb	225wt
		Per Street Light	
<b>Sub Total</b>			<b>0.225KWT</b>
<b>Total</b>			<b>22.545KWT</b>

**Day Hours Load**

Shops	2	LED Bulb 15 wt - 2	60wt
		Fridge 200 wt - 1	400wt
<b>Sub Total</b>			<b>0.46KWT</b>
Saw mill	1	3000 wt - 1	3000wt
		LED Bulb 15 wt - 2	30wt
<b>Sub Total</b>			<b>3.03KWT</b>
Atta-chakki	1	7500 wt – 1	7500wt
		LED Bulb 15 wt - 2	30wt
<b>Sub Total</b>			<b>7.53KWT</b>
Primary Health Centre	1	Geyser 2000 wt – 1	2000wt
		Fridge 500 wt – 1	500wt
		RO 1000 wt – 1	1000wt
		Lighting load 1000 wt – 1	1000wt
		Heating Load 2000 wt – 2	2000wt
<b>Sub Total</b>			<b>6.5KWT</b>
Water ATM	1	5500 wt – 1	<b>5.5KWT</b>
Miscellaneous			<b>2KWT</b>
<b>TOTAL</b>			<b>25.02 KWT</b>

**Template for Concept Note: Small, Medium Grant and Large Grant Project**

The Concept Note should be a maximum of four (4) pages [excluding the “Information on the Proponent Organization” and CV of PI and Co- PI (**Annexure 3 & 4**)].

**Date of Proposal Submission**

1	2	0	6	2	0	1	8
d	d	m	m	y	y	y	y

1	<b>Type of Proposal</b>	<b>Small Grant</b>		<b>Medium Grant</b>	✓	<b>Large Grant</b>	
2	Project Title	Prevention of forest fires in Himalayan region by collection of hazardous dry pine needles from the forest floor and using them as fuel for generating electricity through smokeless combustion in Gassifier.					
3	Project Location	Any fire affected district of Uttarakhand/Himachal*					
4	Scale of Project operation	National		Regional		Local	✓
5	Implementation Agency/ies	Institute of Applied Systems and Rural Development Address: E-6, Sector-3, Noida – 201301, Website: <a href="http://www.iasrd.org">www.iasrd.org</a>					
	Principal Investigator (PI)	Dr. K. D. Gupta, Chairman IASRD Email: <a href="mailto:iasrd9@gmail.com">iasrd9@gmail.com</a> Mob: 9811488240, Phone: 0120-2443381					
	Co- Principal Investigator (Co-PI)	Mr. Ashok Poddar CEO, GEW Mail: <a href="mailto:ashokpoddar55@yahoo.com">ashokpoddar55@yahoo.com</a> Mob: +91-9431420171,					
6	Implementing partners	Ganesh Engineering Works Address: Poddar House, Jyoti Chowk, Buxar, Bihar - 802101 Website: <a href="http://www.ganeshenggworks.com">www.ganeshenggworks.com</a>					
	Implementing Partners with contact details	Mr. Ashok Poddar, CEO ,GEW Mr. Ankur Poddar, Director Projects Mob: +91-9431420171, +91-9471274028 Mail: <a href="mailto:ashokpoddar55@yahoo.com">ashokpoddar55@yahoo.com</a> Website: <a href="http://www.ganeshenggworks.com">www.ganeshenggworks.com</a>					
7	Synopsis of the Project (500 words)	<p style="text-align: center;"><b>Prevention of forest fires in Himalayas</b></p> <p>Forest fires in Himalayan states of Himachal and Uttarakhand have been causing havoc year after year with progressively increasing intensity and frequency particularly during summer months from April to June. The fires are having substantial adverse impact on Himalayan eco- system in many ways mainly following:</p> <ol style="list-style-type: none"> <li>1 Destruction of flora and fauna.</li> <li>2 Damaging the habitat of wild animals.</li> <li>3 Warming up of Himalayan region.</li> <li>4 Drying up of water sources.</li> <li>5 Exposing the top soil making it more vulnerable to soil erosion.</li> <li>6 Threatening the human habitations in hamlets of hill states.</li> </ol> <p>Root cause of these fires are the dry pine needles which cover the forest floors of pine forests , which are turning out to be curse for Himalayas. These dry pine needles are highly inflammable and so are the pine cones and trees which are full of resin.</p>					

\* Depending on field visit/survey and response of local community

	<p>This year (2018) also the pine forest fires have been reported from various districts of Himachal Pradesh Garhwal and Kumaon in Uttarakhand.</p> <p>The proposed project is based on concern about tons and tons of dry pine needles accumulating on the forest floor and as to how these can be used in various useful ways. It has been learnt that the pine needles can be gainfully utilized locally. Their transportation to a long distance renders them unviable for other applications. Therefore it is the most attractive proposition to Generate Electric Power through smokeless burning in a Gasifier. Initially as a pilot it is proposed to install a Gassifier of 32 KW capacity which will burn 1.5 ton of pine needles per day and generate 692 units (Kwh) per day at 90% efficiency. <b>This can be utilized for various applications as per Table – 1 and surplus if any can be fed into grid by making the grid interactive.</b></p> <p>Together with the pine needles pine cones are also found in abundance in the pine forests this will ensure availability of fuel for sustained operation of Gassifier throughout the year.</p> <p><b>Execution of projects and time Frame:</b></p> <p>Selection of precise location of the project will be based on ground level consultation with the community and also taking into account the vulnerability of the region towards forest fires including density of pine trees in the forest. The entire duration of project will be One Year from the date of release of 1<sup>st</sup> installment of the amount sanctioned for the project. After completion of project duration of One Year the asset will be handed over to the Gram Panchayat for further sustainable operation. IASRD will extend need based support to the Gram Panchayat on the term and conditions to be mutually settled at the time of handing over.</p> <p><b>Benefits:</b></p> <ol style="list-style-type: none"> <li>1. Prevention of Forest Fires as Dry Pine Needles will be Collected as Fuel for Gassifier</li> <li>2. Direct and Indirect Livelihood Opportunities</li> <li>3. Cheap and Reliable Local Power for the Far Flung Hamlets Local Habitat</li> <li>4. Reduction in Air Pollution and Atmospheric Warming caused by Forest Fires</li> <li>5. Conservation of Flora and Fauna Including their Habitat</li> </ol>
8	<p>Rational of the Project (200 words) why the project is necessary</p> <p>Since the pine needles and pine cones are not edible they are not consumed by animals or human beings so they keep on accumulating on the forest floor year after year being highly inflammable. Since there is no alternative use for them it is ideal solution if these could be effectively used as fuel for generating electricity without any emissions which pollute the environment. This project therefore is a unique initiative of converting an hazardous waste in to wealth in the form of electricity which can find diverse applications for upliftment of marginalized and deprived rural masses.</p> <p>The ground which is cleared of pine needles is becomes available for growth of grasses and shrubs which provide fodder for the wild animals as well as the live stock of the farmers. This will also promote bio diversity in and around the area.</p> <p>The briquettes made out of unburnt carbon which is a byproduct of the Gassifier are useful as harmless fuel for domestic as well as commercial use.</p>
9	<p>Proposed Outcomes of the projects( in bullets)</p> <ul style="list-style-type: none"> <li>• 692 Units of electricity per day</li> <li>• Elimination of 1.5 ton of hazardous pine needles and cones per day</li> <li>• 300 kg of unburnt carbon per day for making the briquettes</li> </ul>



10	<p>Expected Project Impacts</p> <ul style="list-style-type: none"> <li>• Prevention of forest fires</li> <li>• Promotion of livelihood</li> <li>• Economic prosperity in the area</li> <li>• Protection of habitat of flora and fauna thus promoting bio diversity</li> </ul>																											
11	Project Budget																											
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12	Contribution from other sources (Co - financing)																											
	<p>With regarding Co – financing of the project efforts will be made to get the contribution from the local communities as well as CSR funding from corporates and local public representatives.</p> <p>Possibilities of gap funding from financial institutions in the form of loan can also be explored because there will be revenue generation through sale of electricity and the briquettes which can be utilized repayment of loan.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Total Budget Requirements (Rs. in Lakh)</th> <th colspan="3" style="text-align: center;">Financing Plan (Rs. in Lakh)</th> </tr> <tr> <th style="text-align: center;">95.20</th> <th style="text-align: center;">Request from NMHS</th> <th style="text-align: center;">Guarantee Contribution *</th> <th style="text-align: center;">Other Contribution *</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">90</td> <td style="text-align: center;">2.60</td> <td style="text-align: center;">2.60</td> </tr> <tr> <td style="text-align: center;">100%</td> <td style="text-align: center;">95%</td> <td style="text-align: center;">2.5%</td> <td style="text-align: center;">2.5%</td> </tr> </tbody> </table>	Total Budget Requirements (Rs. in Lakh)	Financing Plan (Rs. in Lakh)			95.20	Request from NMHS	Guarantee Contribution *	Other Contribution *		90	2.60	2.60	100%	95%	2.5%	2.5%											
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\* Guarantee and other Contribution by IASRD & GEW

**Table - A1 (11)**
**Details of Project budget**

S. No.	Activity	Budget (Rs. in Lakh )	Remarks
	Identification of the suitable location	0.50	
	Consultation with the stakeholders	0.50	
	Obtaining necessary approvals	0.50	
	Procurement of land from Panchayat	<del>6.00</del>	2500 sq yds
	Designing and layout of site and buildings	1.00	
	Awarding the contract for construction	0.50	Advertisement
	<del>Ordering of equipment</del>	<del>1.00</del>	
	Collection of pine needles & cones	6.00	0.50 X12X1 yr
	Making of briquettes	0.00	Part of Gassifier O&M
	<b>Sub Total</b>	<b>9.00</b>	

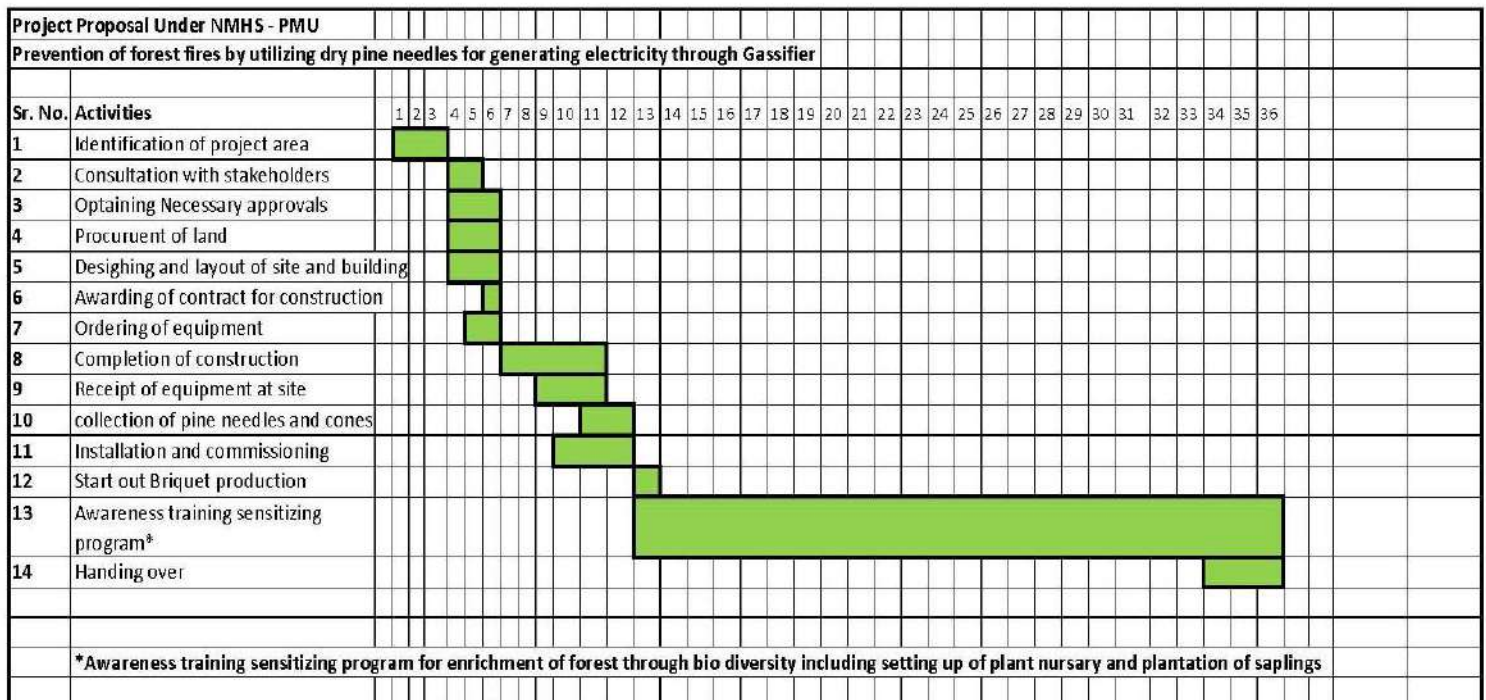
<b>Manpower</b>			
	<del>Project Director</del>	<del>14.40</del>	<del>40000X12X yr</del>
	Project Advisor	3.60	30000X12X yr
	Project Assistant	3.00	25000X12X yr
	Operator cum supervisor	3.60	2X15000X12X1 yr
	Skilled labor	1.20	1X10000X12X1 yr
	Unskilled labor	1.08	1X9000X12X1 yr
	Security guard	1.20	1X10000X12X1 yr
	<b>Sub Total</b>	<b>13.68</b>	

<b>Equipments</b>			
	Gassifier 32 KWH	25.00	
	Tax 5%	1.25	
	Transportation Cost	3.00	Loading and unloading
	Installation and commissioning	2.00	
	Transmission & Distribution network	10.00	9000 meter Wire, 150 poles
	Shredder Machine	2.25	
	Water supply and sumps	4.50	
	<b>Sub Total</b>	<b>48.00</b>	

	<del>Travels (inclusive of Road, Rail, Air)</del>	<del>10.00</del>	
	<del>Meetings and Workshops</del>	<del>10.00</del>	
	<b>Other</b> (Civil construction cost)	<b>20.00</b>	Platform and yard for main equipment, Covered storage area, office and control room for Power Distribution Panel
	<b>Total</b>	<b>90.68</b>	
	Misc. expenses @ 5% of the total	4.52	
	<b>G. Total</b>	<b>95.20</b>	

**Note:** We have rationalized and restricted the overall budget of the project to Rs. 90 Lakh. However in case there are variations in elements of cost then excess/shortfall will be adjusted amongst the elements of cost within overall limit of Rs. 90 Lakh.

## Pert Chart



**Information on the Proponent Organization**

NOTE: Please fill in this form and send it with the Concept Note and Full Proposal.

Project Title	Prevention of forest fires in Himalayan region by collection of hazardous dry pine needles from the forest floor and using them as fuel for generating electricity through smokeless combustion in Gassifier.		
Name of the Organization	Institute of Applied Systems and Rural Development		
Mailing Address	E – 6, Sector – 3, Noida - 201301		
Visiting Address (if different from above)			
Telephone	0120-2443381	Fax	0120-2443381
Email	iasrd9@gmail.com	Website	www.iasrd.org
Mission and Goal of the Organization	The main objective of the Institute of Applied Systems and Rural Development (IASRD) is to act as catalyst in promoting development of rural areas through applied systems and appropriate technologies.		
About the organization	Registration date	26/02/1982	
	Category	Society	
	Contact Person	Dr. K. D. Gupta	
	Number of Staff	10	
	No. of technical staff	3	
Bank Account details	Account Name	Institute of Applied Systems and Rural Development	
	Bank Name	UCO Bank	
	Bank Address	E-5, Hauz Khas, New Delhi - 110016	
	Account No.	06090100012571	
	SWIFT code	IFSC code: UCBA0000609	
	Other routing code	NA	
	Signatories names	Dr. K. D. Gupta	
References	Name, address and Tel No. (Referee 1)	Dr. K. D. Gupta F – 10, Sector – 39, Noida - 201301 Mob: 9811488240	
	Name, address and Tel No. (Referee 2)	Yogita Gupta F – 10, Sector – 39, Noida – 201301 Mob: 9899438799	

Project implemented during the last 5 years relevant to the theme of the current proposal			
S. No.	Title of the project	Donor/Amount	Reference (Name/Tel/email)
1	Air Pollution In Delhi & NCR Due to Ineffective Parali Management	4.25 Lakh	ASSOCHAM Tel: 011-46550555 Mail: membership@assochem.com
2	Climate Change and Clean Ganga Mission, Rishikesh	9 Lakh	BHEL Mail: nthakur@bhel.in
3	Climate Change and Clean Ganga Mission at Garhmukteshwar, Hapur	2 Lakh	SMC Global
4	International Conferences on Solar India : Capacity Building & Skill development 'Issues & Solutions'	4 Lakh	Solar Energy Corporation of India , SMC Global & Other Tel: 011-71989221 Mail: dirhr@seci.co.in
5	International Conferences On Solar India: Sustainable Solar Industry – A Way Forward 'Opportunities & Challenges'	3 Lakh	SMC Global Securities Ltd., SECI & NTPC Tel: 011-3011000 Mail: sca@smcindiaonline.com

(\*) In case of Private/Non Government Organization Annual reports of the organization for the last Three Years need to be provided along with Technical reports/Publications.

**Template for submitting CV of [Principal Investigator (PI) and Co- Principal Investigator (CO-PI)]**

1	Submitted CV of PI/ CO-PI	PI	✓	Co-PI								
2	Name in full (in block Letters)	DR. K. D. GUPTA										
3	Designation of PI /CO-PI	CHAIRMAN, INSTITUTE OF APPLIED SYSTEMS AND RURAL DEVELOPMENT										
4	Date of Birth and Age as on Project submission date	0	1	0	1	1	9	3	9	79		
		d	d	m	m	y	y	y	y	Years	Months	Days
5	Nationality	INDIAN										
6	Sex	Male	✓	Female								
7	Address for correspondence (in block letters with pin code)	E – 6, SECTOR – 3, NOIDA - 201301										
8	Contact mobile number/ e-mail id	Mobile	9811488240									
		Email	iasrd9@gmail.com									

**7. Educational Qualification**
**(a) Details of Examination Passed from Graduation onward to Ph.D**

S. No.	Exam Passed/ Degree Awarded	University/ Institution/ Board	Year of Passing	Subjects Taken	Result with Division/ Class
1	B.Com	Agra University	1959	Commerce	2 <sup>nd</sup> Division
2	M.Com	Agra University	1961	Commerce	1 <sup>st</sup> Division Gold Medal, 3 <sup>rd</sup> Position in the University
3	Ph.D	Peoples' Friendship University of Russia	1967	Planning of Electrical Energy	Defended Unanimously

**(b) Details of Ph.D.**

Title of Ph.D Thesis	Subject/Branch	University/Organization
Planning of Indian Power Industry based on soviet Technology	National Economic Planning	Peoples' Friendship University of Russia

(c) Professional Trainings, if any

Organizations	Period		Details of Trainings
	From	To	
Peoples' Friendship University, Electroshtila, LMZ, Hydro & Thermal Power Plants, Moscow, Kiev.	1962	1967	Energy Economics

9. research Experience (200 words)

Conducted research in planning of electrical industry for five years and undergone practical training in Electroshtila & LMZ Plants in Leningrad (USSR) for over three months both the plants were engaged in production of heavy electrical equipments - generators & Turbines. Apart from these reputed plants underwent training pertaining to the planning of electrical Industry in many other research institutes in Moscow, Leningrad & Kiev (UKRAINE).

10. Experience related to sustainable mountain development, If any (200 words)

Jatropha Plantation & Maintenance carried out in Nainital District covering over 1300 hectare of land in Ramgarh & Betalghat of Nainital District (U.K).

Period of operation:

2006 –08 plantation of Jatropha saplings

Then 2008 – 10 maintenance and monitoring

11. Major Awards/Recognition (if any) at National / International level

- Life Member of International Business and Management Research centre.
- Life Member of world peace Development and Research Foundation.
- Life Member India Institute of Public Administration.

12. Members of Learned Societies (International and National) if any

- ASSOCHAM
- International Chamber of Media & Entertainment Industry
- Association for Asian Union & Asia-Pacific Cooperation

13. Major Scientific / Technological Achievements<sup>2</sup> (if any)

Pioneer in planning of Electrical Power Systems in India in various capacities including Planning Commission. Russian Electrical technology transfer formulation first rural electrification project of India. Was instrumental in getting Rs. 105 million from PL – 480 US Aid funds for Rural electrification in the year 1969-70. Initiated first ever major Housing Estate management initiative in BHEL added more than 10,000 units in the BHEL Township at Haridwar, Hyderabad, Bhopal & Tirchy.

<sup>2</sup>(New methods/ Theory/ Process established, Technology Developed, Socio-economic issues Addressed, Unique data base/centres established etc)

14. Publications/Patents (numbers only)							
Scientific Papers		Policy Papers	Books		Technical Reports	Project Proposals for Fund Generation	Patents (if any)
International	National		Edited	Written			
List of Publications to be provided later							

15. Experience in Managing Research Projects					
No of similar Projects Managed (with details)					
S No	Project Details	Donor Agency	Duration	Project Budget (INR)	
1	Solar Home Lighting Project, Almora	Koti village, Almora District	2004-05	5 Lakh	
	Jatropha Plantation Program	Uttarakhand Bio fuel Board	2006-10	10 Lakh	
2	Biomass based Gassifier	Project submitted under Sansad Adarsh Gram Yojana	2015	35 Lakh	

(Signature of PI)

Date: 12/06/2018

Name: Dr. K. D. Gupta

Place: Noida



**Template for submitting CV of [Principal Investigator (PI) and Co- Principal Investigator (CO-PI)]**

1	Submitted CV of PI/ CO-PI	PI		Co-PI	✓							
2	Name in full (in block Letters)	Ankur Poddar										
3	Designation of PI /CO-PI	Director (Projects), GEW										
4	Date of Birth and Age as on Project submission date	0	8	0	2	1	9	9	3			
		d	d	m	m	y	y	y	y	Years	Months	Days
5	Nationality	INDIAN										
6	Sex	Male	✓	Female								
7	Address for correspondence (in block letters with pin code)											
8	Contact mobile number/ e-mail id	Mobile	9471274028									
		Email	ashokpoddar55@yahoo.com									

**7. Educational Qualification**

**(d) Details of Examination Passed from Graduation onward to Ph.D**

S. No.	Exam Passed/ Degree Awarded	University/ Institution/ Board	Year of Passing	Subjects Taken	Result with Division/ Class
1	MBA	SMS College, Varanasi	2015	Marketing and Finance	First Division

**(e) Details of Ph.D.**

Title of Ph.D Thesis	Subject/Branch	University/Organization
NA		

**(f) Professional Trainings, if any**

Organizations	Period		Details of Trainings
	From	To	
GEW	2015	2018	NA

**9. research Experience (200 words)**

**Area of research**

Bio mass based energy systems for electrification of more than 500 villages & hamlets in India, Nepal, Uganda & Tanzania.

10. Experience related to sustainable mountain development, If any (200 words)

More than 100 rice mills being served by using rice husk in gasification in dual fuel mode.

11. Major Awards/Recognition (if any) at National / International level

Won more than 15 national & international awards

12. Members of Learned Societies (International and National) if any

Empanelled manufacturer and project developer with MNRE Government

13. Major Scientific / Technological Achievements<sup>2</sup> (if any)

An experienced entrepreneurs & visionary

<sup>2</sup>(New methods/ Theory/ Process established, Technology Developed, Socio-economic issues Addressed, Unique data base/centres established etc)

14. Publications/Patents (numbers only)

Scientific Papers		Policy Papers	Books		Technical Reports	Project Proposals for Fund Generation	Patents (if any)
International	National		Edited	Written			
NA							

15. Experience in Managing Research Projects

No of similar Projects Managed (with details)

S No	Project Details	Donor Agency	Duration	Project Budget (INR)
NA				

(Signature of Co-PI)

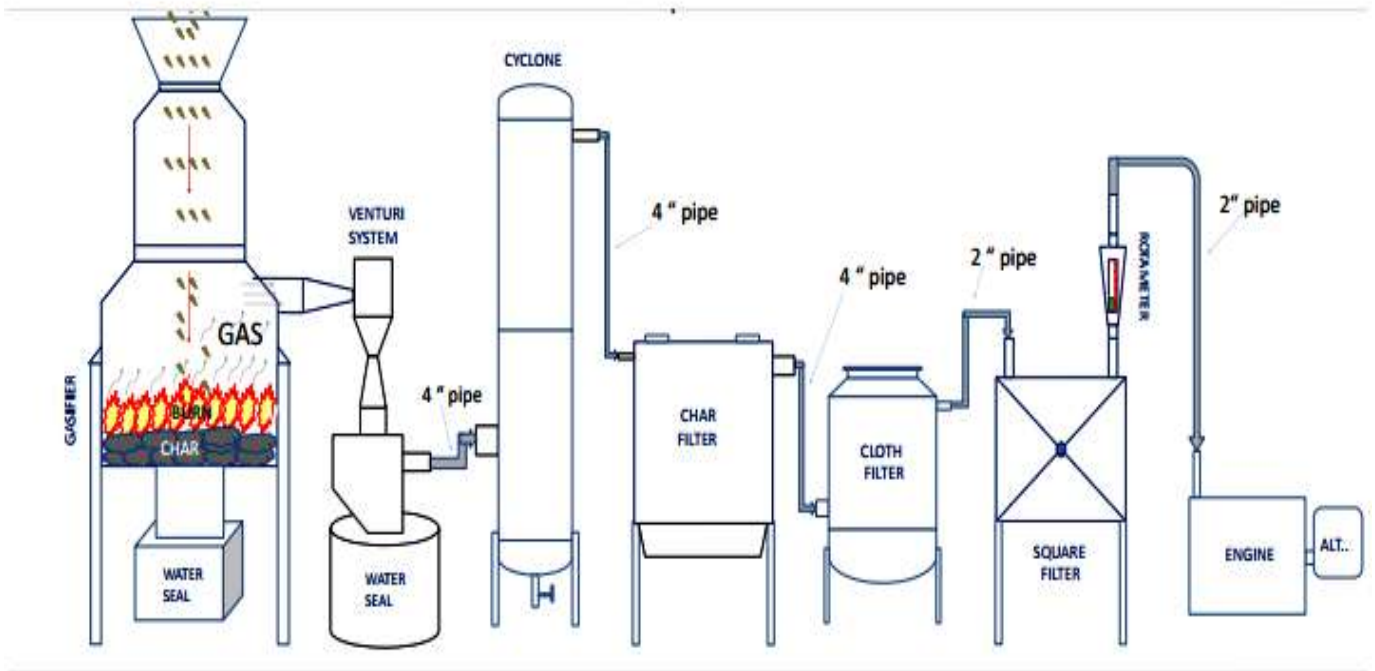


Name: Ankur Poddar

Date: 12/06/2018

Place: Buxar, Bihar

## The Gassifier Diagram





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