Azadi Ka Amrit Mahotsav

ANNUAL REPORT 2020-21

SSS NIBE

Sardar Swaran Singh National Institute of Bio Energy, Kapurthala

(An Autonomous Institution of Ministry of New and Renewable Energy)

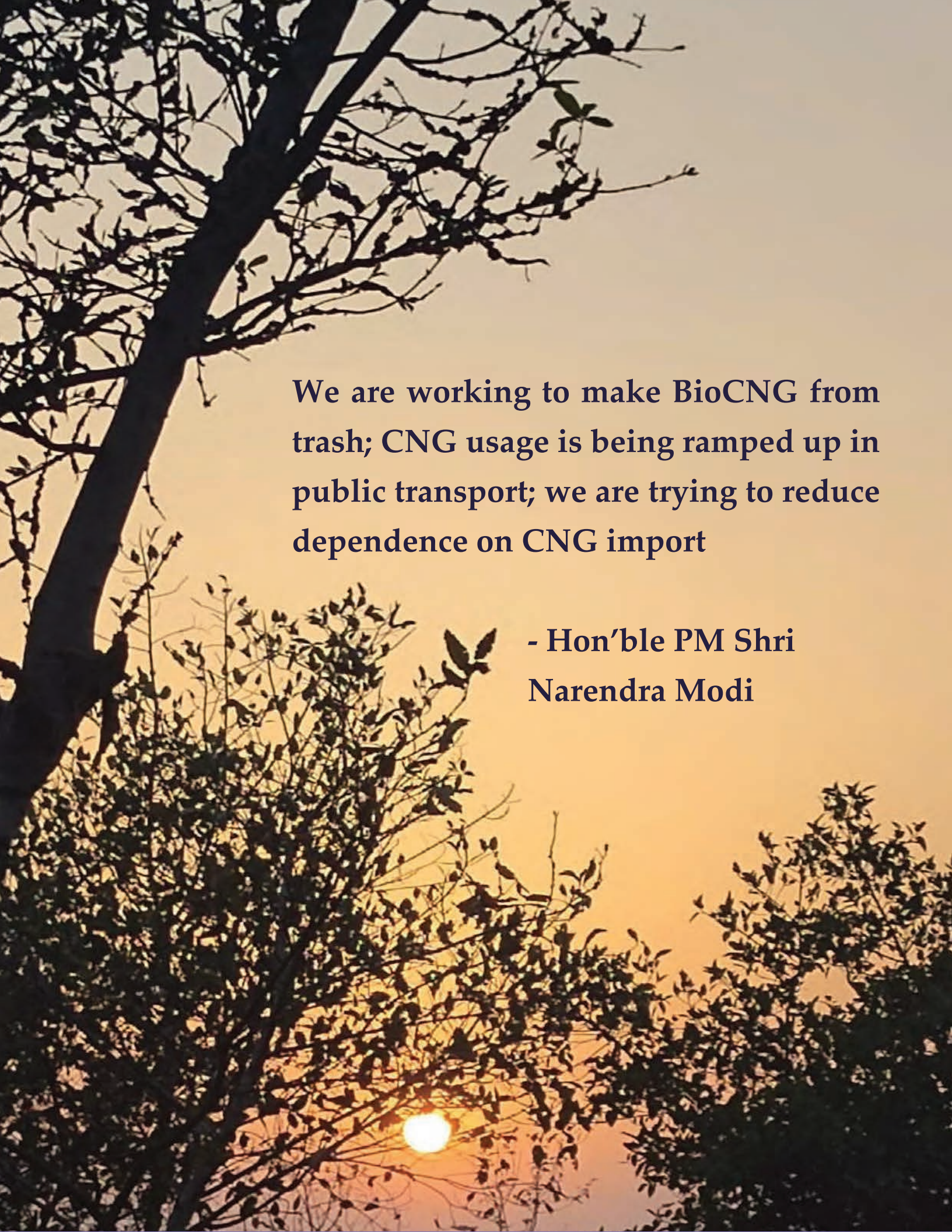
Annual Report
2020-21

ISO 9001:2008

SARDAR SWARAN SINGH
NATIONAL INSTITUTE OF BIO ENERGY

An Autonomous R&D Institution of
Ministry of New and Renewable Energy
Kapurthala - 144601

Inside



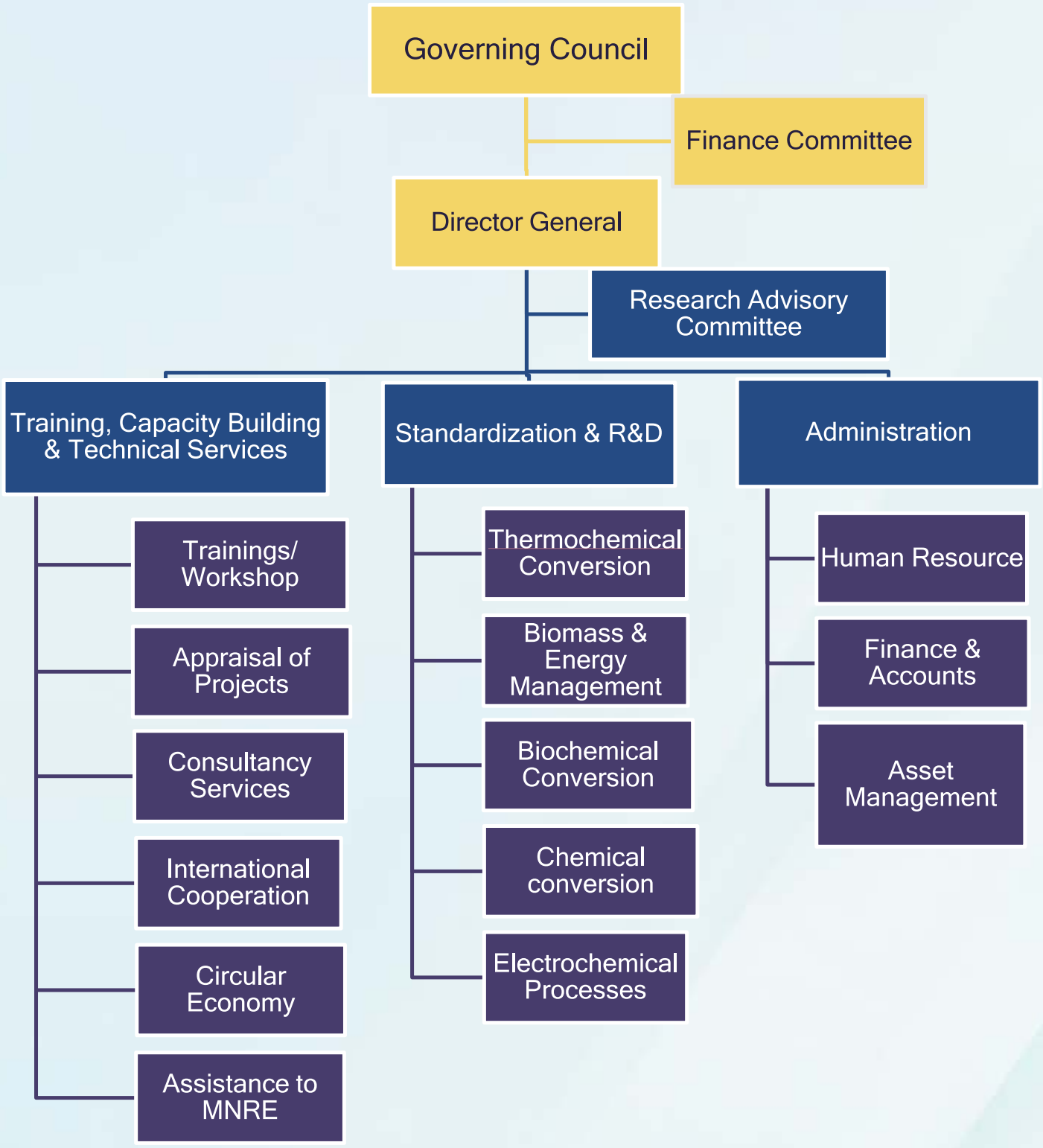
We are working to make BioCNG from trash; CNG usage is being ramped up in public transport; we are trying to reduce dependence on CNG import

- Hon'ble PM Shri Narendra Modi

Preamble

- Functional Structure
- From the Desk of Director General
- The Charter
- Governing Council
- SSS NIBE's Committees
- Institute Growth: At A Glance

Functional Structure



From the Desk of Director General

India is bestowed with favourable climatic conditions for agriculture; immense biomass is produced from agriculture. Biomass is an essential RE (Renewable Energy) source because it is widely available, carbon-neutral, capable of providing firm energy and generating significant employment in rural areas. About 32% of the total primary energy used in the country is still derived from biomass, and more than 70% of the country's population depends upon it for its energy needs. Biomass is the most commonly used energy source for several small-scale industries and is also fuel for independent power plants. Government of India has taken several initiatives to scale up production of energy through use of RE sources.

Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE) has been mandated for research in Bioenergy sector. SSS NIBE is committed to be significant part of the biomass research and promotion initiatives and strives to fulfil the need of the country in the coming years. During the year 2020-21, R&D activities were taken up in the frontier areas including activated carbon production from corncob, bioethanol and biogas production from Agro-residue, biomass cook stove performance testing and certification, biomass assessment and characterization, gasification, used cooking oil based hybrid fuel, valued chemical production etc. The research works were conducted in our laboratory and published in reputed journals.

During this year, the institute has taken up key initiatives to promote research and development.

Firstly, the institute has started Masters of Technology Program in Renewable Energy in joint collaboration with Dr B R Ambedkar National Institute of Technology, Jalandhar. The first batch has successfully completed their first semester of the course in January 2021.

Secondly, the Institute has collaborated with Lawrence Berkeley National Laboratory (LBNL), and Pacific Northwest National Laboratory(PNNL) USA under the **South Asia Group for Energy (SAGE)** programme on bioenergy resource and energy forecasting up to the year 2030 and to upgrade the existing cookstove testing facility at par with international standards, following appropriate ISO standards.

The institute also took a leading role in preparing all technical documents related to bioenergy as entrusted by MNRE time to time. The Institute participated in all technical programs and meetings of the Ministry of New and Renewable Energy, particularly related to bioenergy sector, for discussion on R&D, strategy and policy, progress and dissemination of knowledge and technology in the area. The Institute has successfully implemented e-office for all approval related activities and day to day office works.

The Institute utilized more than 95% of its grant-in-aid received from MNRE mainly on upgradation activities, infrastructure development and routine activities. During the same year, the MNRE and the Institute have taken up the recruitment of Full time Director General and additional 11 scientific positions on top priority.

In spite of limited resources, and challenges poses by COVID-19, the Institute has established its fame in the international arena with the publications and scientific research and reviews. The untiring efforts of SSS NIBE's team have yields many projects and its successful implementation. I congratulate scientists, engineers, administrative and supportive staff for their determined efforts, wholehearted involvement and their teamwork towards the institute.

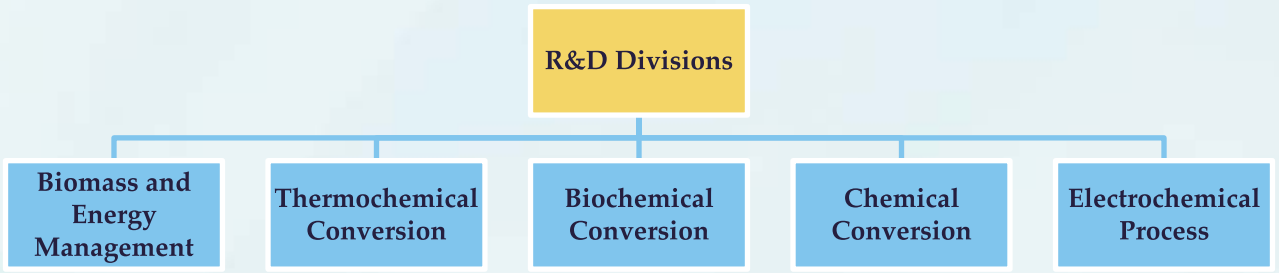
I am personally delighted to uncover the Annual Report of SSS NIBE for the FY 2020-21 Period.

Dinesh D Jagdale
Director General

THE CHARTER

Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE), Kapurthala is an autonomous R&D institute of the Ministry of New and Renewable Energy (MNRE), Govt. of India, created for carrying out R&D, testing, evaluation, and training in bioenergy. The Institute is situated in a campus of 75 acres with a unique solar passive structure office building at the 12th KM Stone, Jalandhar-Kapurthala national highway well equipped with the research infrastructure and an eco-friendly research environment.

The Institute has five research divisions catering all aspects of Bioenergy research including biofuel and value chain of biorefinery. The broad spectrum of these divisions includes biomass resource assessment & management, biomass characterization, gasification, combustion, pyrolysis, solid waste/solid-state bio-methanation, biohydrogen production, Compressed Bio Gas, Municipal Solid Waste (MSW) to Power generation, Hybrid biomass systems, testing & standardization and training for skill development in the bioenergy sector.



MISSION

SSS NIBE, knowledge based R&D institution of high quality and dedication, offers services and seeks to find optimum solutions for the major stakeholders across the entire spectrum of the bioenergy sector. It will support bioenergy sector in developing the knowledge for promoting new technologies. It will develop Human Resources for the bioenergy sector at all levels by imparting the training and allied activities to professionals of bioenergy sector

OBJECTIVES

- To establish "Sardar Swaran Singh National Institute of Bio-Energy" as an apex R&D institution responsible for conducting state-of-the-art research and development activities in all the areas relating to renewable / bio-energy sources, including human resources development at all levels, post-doctoral research and research leading to commercialization of bio-energy technologies and the activities entailing:

  i Technology Assessment, Resources Surveys and Assessment of Potential

  ii In-house R&D in all emerging Bio-Energy areas

iii Sub-contracting of R&D activities

iv Joint technical programmes with other national institutions and testing centres

v Setting up of specialized centres at SSS-NIBE and in different parts of the country for specific Bio-Energy areas

vi Testing and certification of devices and systems

vii Techno-economic evaluation of Bio-Energy equipment and systems

viii Creating database for Bio-Energy including information on patents

ix Compiling and dissemination of information on resources, technologies, products and applications

x Providing technical support to industry on new product design and development, and upgradation of product and manufacturing process

xi Organizing training programs, seminars and workshops

xii Cooperation with scientific and technical institutions abroad under bilateral and multilateral agreements

xiii Economic studies on Bio-Energy technologies and their environmental impact

xiv Assistance in curriculum development in Bio-Energy and undertaking concrete programmes for human resource development

xv Consultancy services in the Renewable Energy sector with specialization in Bioenergy.

xvi Providing technical support to MNRE in policy, planning implementation

- To promote and develop requisite expertise and capabilities in regard to such technologies and applications, as may be deemed appropriate, improve applied R&D skills and to provide, organize, manage scientific, technical, engineering, management and other related assistance in promotion, development, demonstration, dissemination and adoption of appropriate environmental friendly technologies.

- To provide various services including:

i Planning, formulation, appraisal and monitoring

ii Assessment, evaluation, implementation and management

iii Development of projects, products, technology, management, reliability, maintenance, testing, design and other scientific technical and engineering inputs

iv Management service, training, information, market development, etc.

v Organizing training, study tours, seminars, workshops, etc.

vi Applied research & Development.

vii Technical, scientific, managerial and engineering consultancy services.

GOVERNING COUNCIL 2020-21

PRESIDENT OF THE SOCIETY & CHAIRMAN

Sh. Indu Shekhar Chaturvedi, IAS
Secretary
Ministry of New and Renewable Energy, New Delhi

MEMBERS

Joint Secretary & Finance Advisor
Ministry of New and Renewable Energy, New Delhi

Secretary, Department of Bio Technology
New Delhi

Secretary, Department of Science & Technology

Principal Secretary, Department of Science, Technology & Environment, Govt. of Punjab

Vice Chancellor, Punjab Agriculture University
Ludhiana

Vice Chancellor, IKG Punjab Technical University
Kapurthala

Director, Dr B R Ambedkar National Institute of Technology
Jalandhar

Dr. S Dasappa
Center for Sustainable Technologies, IISc Bangalore

Sh Amitabh Tandon
Secretary, Indian Biomass Power Association, Chennai

MEMBER SECRETARY

Sh. Dinesh D Jagdale
Director General, SSS-NIBE & Joint Secretary
Ministry of New and Renewable Energy, New Delhi

SSS NIBE's Committees

Finance Committee

CHAIRMAN

Joint Secretary & Finance Advisor
Ministry of New and Renewable Energy, New Delhi

MEMBERS

Chief Controller of Accounts
Ministry of New and Renewable Energy, New Delhi

Joint Secretary (Bioenergy)
Ministry of New and Renewable Energy, New Delhi

Director General
Sardar Swaran Singh National Institute of Bio-Energy

Director, (SSS-NIBE)
Ministry of New and Renewable Energy, New Delhi

Vice Chancellor
Punjab Agriculture University, Ludhiana

Deputy Secretary, IFD
Ministry of New and Renewable Energy, New Delhi

Head of Department
Department of Chemical Engineering
Dr B R Ambedkar National Institute of Technology, Jalandhar

MEMBER SECRETARY

Head of Office
Sardar Swaran Singh National Institute of Bio-Energy

Building & Works Committee

CHAIRMAN

Director General
Sardar Swaran Singh National Institute of Bio-Energy

MEMBERS

Director, (SSS-NIBE)
Ministry of New and Renewable Energy, New Delhi

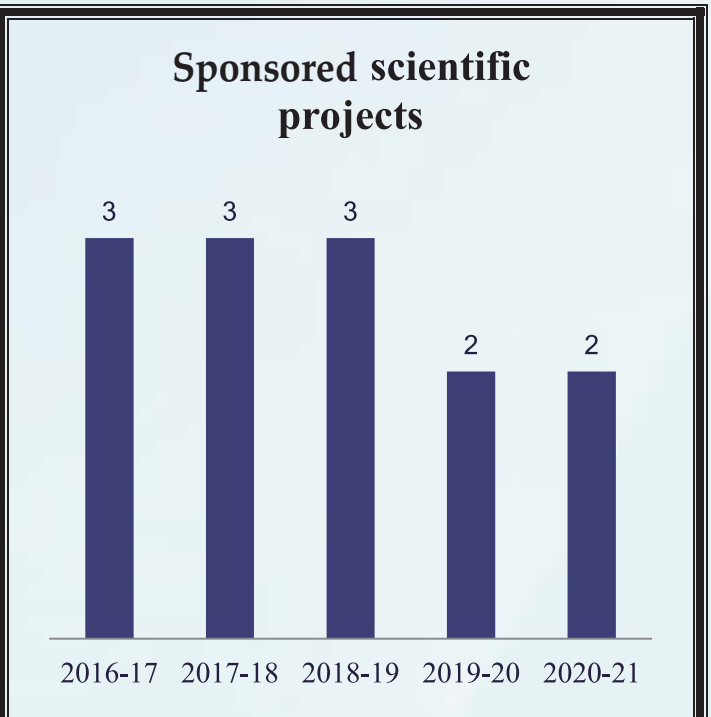
Executive Engineer (Civil)
CPWD, Jalandhar Circle

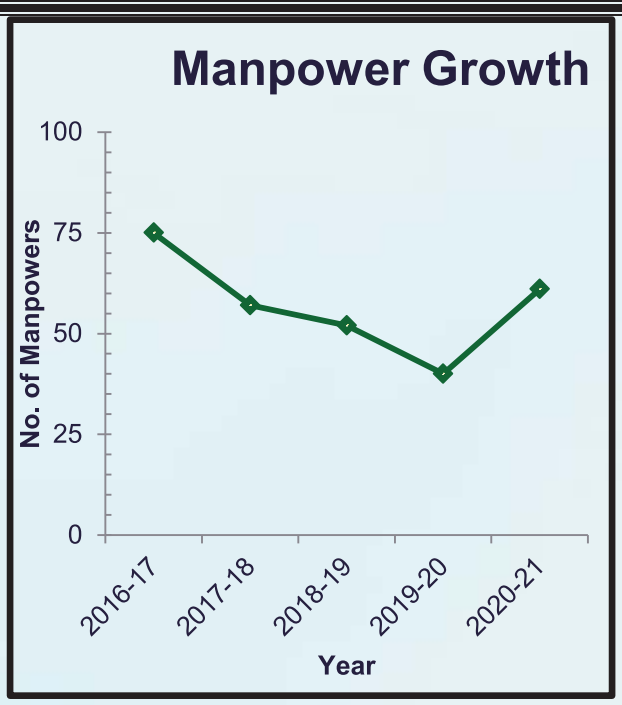
Assistant Engineer (Electrical)
CPWD, Jalandhar Circle

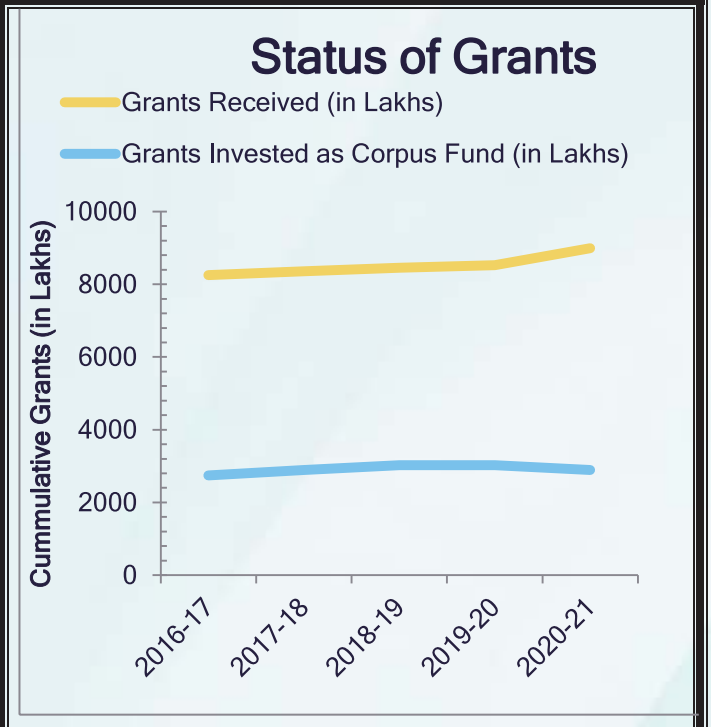
MEMBER SECRETARY

Assistant Engineer (Civil)
Sardar Swaran Singh National Institute of Bio-Energy

Institute Growth: At A Glance







Technological Highlights

- Laboratory facilities
- Division wise Progress
- Research and Development
- Academic Program
- International Collaborations

LABORATORY FACILITIES

The institute has three working divisions and during the FY 2020-21, the state-of-the-art research facilities were developed and upgraded for research in biodiesel, bioethanol, biomass gasification, biogas, cookstove research & testing, and other related areas of bioenergy. The upgradation included annual maintenance, calibration of equipments, procurement of consumables including chemicals, glassware, and plasticwares, spare parts and other required items.

A. Facilities available in Chemical Conversion Division

The equipment facilities available in Chemical Conversion division include:

- Gas Chromatograph
- Rams bottom Carbon Residue
- Oxidation Stability Apparatus
- High-Pressure High-Temperature Reactor
- True Boiling Point Distillation Apparatus
- Automatic Density Meter
- Radleys Reactor
- Flashpoint apparatus (automatic open cup)
- Rotary Vacuum Evaporator
- Computerized Diesel Engine Test Rig
- Exhaust gas analyzer
- FTIR
- Low-temperature Autoclave
- Fuel analyser for diesel index/cetane no

Lab facilities in the R&D I

Lab facilities in the R&D II

B. Facilities available in Biochemical Conversion Division

The biochemical Conversion Division has been established in R&D-II with the facilities of Analytical, Bioprocess, Microbiology, and Molecular Biology Laboratories. The equipment facilities available in Biochemical Conversion division include:

- High Pressure Liquid Chromatography
- Gas Chromatography
- UV-vis spectrophotometer
- Fibertech
- Bioreactor (3.0 & 7.5 L)
- Refrigerated Centrifuge
- Water Purification System
- Lyopholizer
- Micro-disintegrator
- Water Bath
- Autoclaves
- Environmental Shaker
- Bio photometer
- SDS-PAGE
- Microscope with a camera
- Incubator
- CO2 Incubator-cum-shaker
- BOD Incubator
- Hot Air Oven
- Horizontal Laminar Flow
- Automatic Colony Counter
- Deep Freezer
- Refrigerators
- Gradient PCR
- Real-Time PCR
- Horizontal Gel Electrophoresis
- Gel Documentation
- Electroporation Unit
- 2-D gel Electrophoresis

Lab facilities in the R&D I

C. Facilities available in Thermo-chemical Conversion Division

The Thermochemical Conversion Division has been established in R&D-III with the facilities for biomass characterization, biomass gasification, and Cookstove testing, etc. The equipment facilities available in Thermochemical Conversion division include:

- Differential Scanning Calorimeter
- Online Gas Analyzer
- Stack Monitoring System (for SPM measurement)
- Testing Hood for biomass Cookstove
- CHNS analyzer
- TG-DTA
- Bomb Calorimeter
- Muffle Furnace
- Multi Gas Analyser

The division also has 'National Cookstove Test Centre' for R&D and testing of biomass cookstoves.

National Cookstove Test Centre in R&D III

DIVISION WISE PROGRESS

1. Biomass and Energy Management Division

During FY 2020-21, a new project proposal has been formulated for gasification of Municipal Solid waste and power generation up to 100kW as per the requirement of the Institute. The project is conceptualized in technical collaboration and support of equipment from M/s Ankur Biomass Pvt Ltd. The project was submitted to DST under the technology demonstration program for financial support. The further details from DST are awaited.

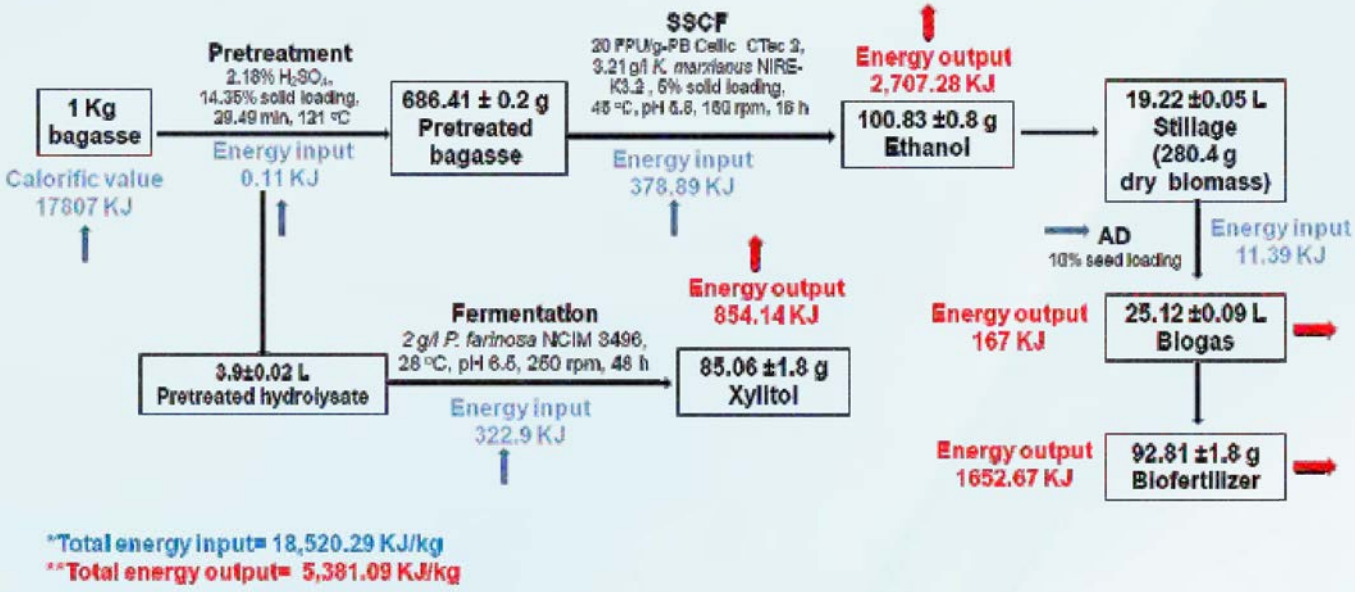
Biomass Gasifier Demo Plant (10 kW)

2. Biochemical Conversion Division

During FY 2020-21, several in-house R&D projects were developed by the newly recruited Research Fellows in the division under the mentorship & guidance of senior Scientists of the Institute. Key research areas includes Bio-refining of sugarcane bagasse, Scale-up for biogas production using thermophilic anaerobic digestion, Biogas upgradation to BioCNG etc. The detailed research analysis and findings are discussed below.

2.1 Biorefining of sugarcane bagasse for production of bioethanol and value-added products

This research was funded by the Department of Biotechnology (DBT), Ministry of Science and Technology under Indo-Brazil bilateral collaboration with IFSC/USP, Brazil and GNDU. The project has been completed on Oct 31, 2020 by fulfilling all its approved objectives. The project report has been submitted and approved by the committee.

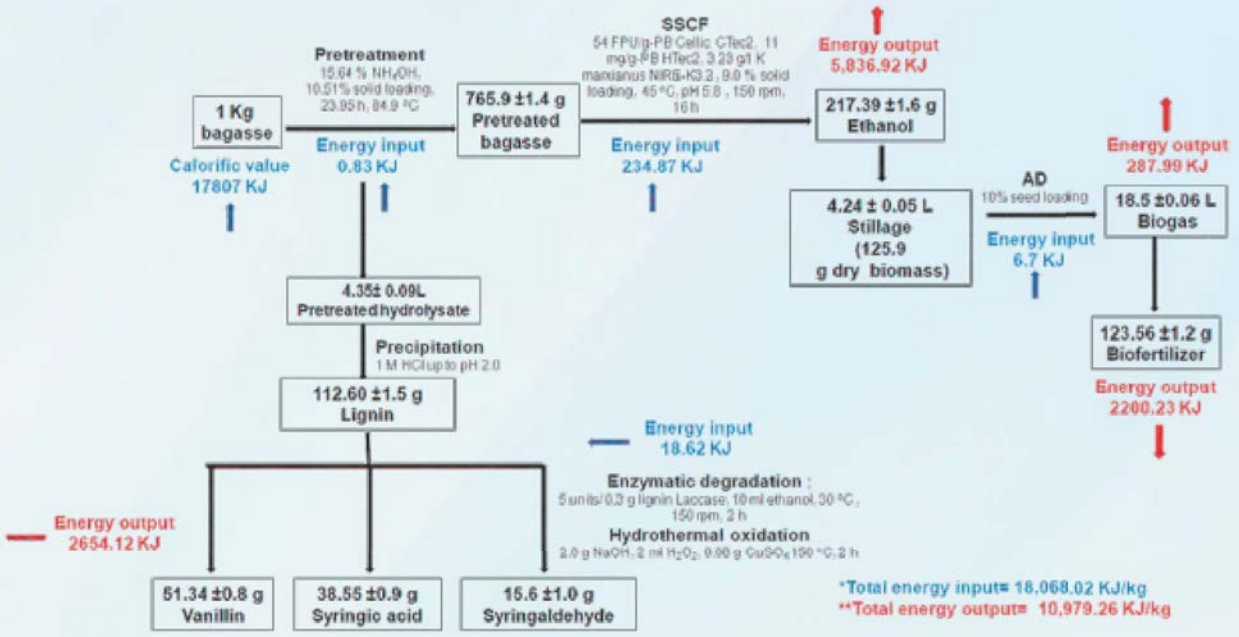


Mass balance of integrated biorefinery of SCB pretreated with dilute H_2SO_4 under optimized conditions

The project optimized variable parameters for different pretreatments of bagasse for enhanced release of both C6 and C5 sugars. However, the maximum sugar recoveries were observed though liquid ammonia and acid pretreatments. Liquid ammonia pretreatment had potential to recover a good proportion of hemicellulose in biomass in addition to the cellulose to release the good amount of xylose and glucose in saccharified hydrolysate collectively.

In this study, developed thermotolerant yeast strain K. marxianus NIRE-K3.2 has been proved to be promising strain for SSCF of biomass in terms of successful utilization of xylose in addition to

glucose, improved yield ethanol, productivity and fermentation efficiency. Overall performance of ammonia pretreated SCB showed the best results of all in terms of ethanol yield and fermentation efficiency. The study demonstrates the significant integrated biorefinery of sugarcane bagasse using thermotolerants.



Mass balance of integrated biorefinery of SCB pretreated with NH_4OH under optimized conditions

2.2 Scale-up and techno-economic study of biogas production using thermophilic anaerobic digestion

A Senior Research Fellow has been recruited under SSS-NIBE Bioenergy Fellowship to carry out scaling up a biogas plant for processing 1 ton paddy straw/ day, design and fabrication, and further techno-economic study. A DPR has been prepared for processing 1 ton paddy straw/ day and submitted for approval.

2.3 Biogas upgradation to BioCNG

A Junior Research Fellow has been recruited under SSS-NIBE Bioenergy Fellowship to carry out the research activities on analysing biogas potential in different feedstocks and biogas upgradation to bioCNG. Biogas potential of various feedstocks was studied by using developed thermophilic consortium. Feedstocks of kans grass, banana stem, mustard stem, Tobacco (after nicotine extraction) were analysed. After analysis, lab scale biogas plants were carried out for kans grass, banana stem, mustard stem and napier grass by using developed consortium under thermophilic conditions. In case of mustard stem, the feedstock was treated with hot water (at 100 °C for 30 min) for the pre-hydrolysis of biomass to enhance the biogas production. There was about 1.7-fold increase in biogas production when hot water treated mustard stem was digested.

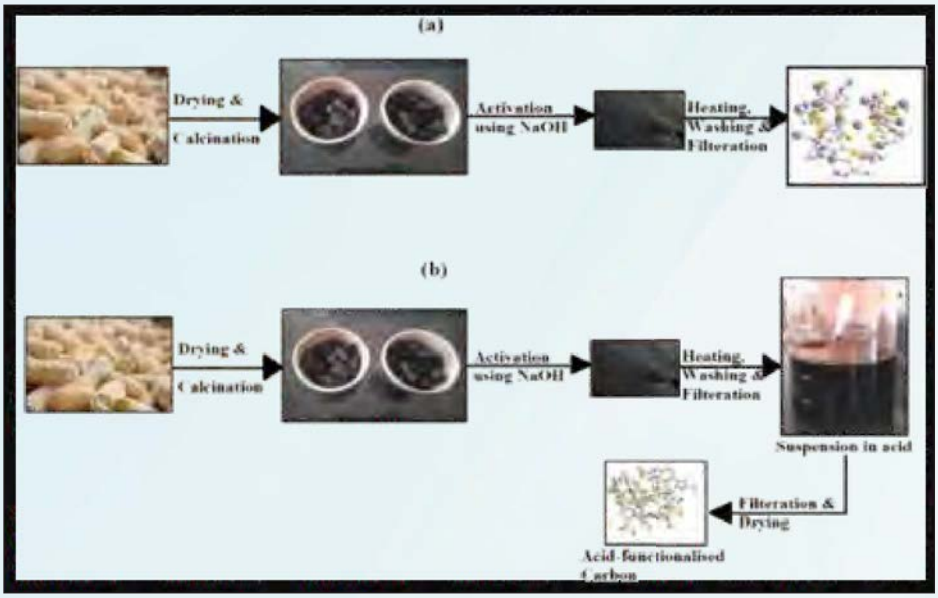
Along with this experiment work, literature was also reviewed for techniques which are used for the upgradation of biogas to bioCNG. Techniques used for biogas enrichment are Water Scrubbing, Pressure Swing Adsorption, Chemical Absorption, Physical Absorption, Cryogenic Separation, Membrane Separation, Biological Technique, etc. To implement a suitable technique for biogas upgradation the division is focusing on Amine scrubbing and Pressure swing adsorption (PSA). In amine scrubbing CO_2 is removed from raw biogas by chemical absorption process. Amines bind with carbon dioxide to form carbamates, which can be decomposed on heating. In PSA, CO_2 is separated from the biogas by adsorption on the surface. This separation is based on the affinity of gases towards adsorbent material like activated carbon surface, carbon & zeolite molecular sieve, silica gel, etc.

3. Chemical Conversion Division

During FY 2020-21, several in-house R&D projects were developed by PhD students registered at Dr B R Ambedkar, NIT, Jalandhar and newly recruited two Junior Research Fellows in the division. Key research areas include synthesis of a new catalyst material from waste biomass available in the region for producing value-added fuels and chemicals. The detailed research analysis and findings are discussed below.

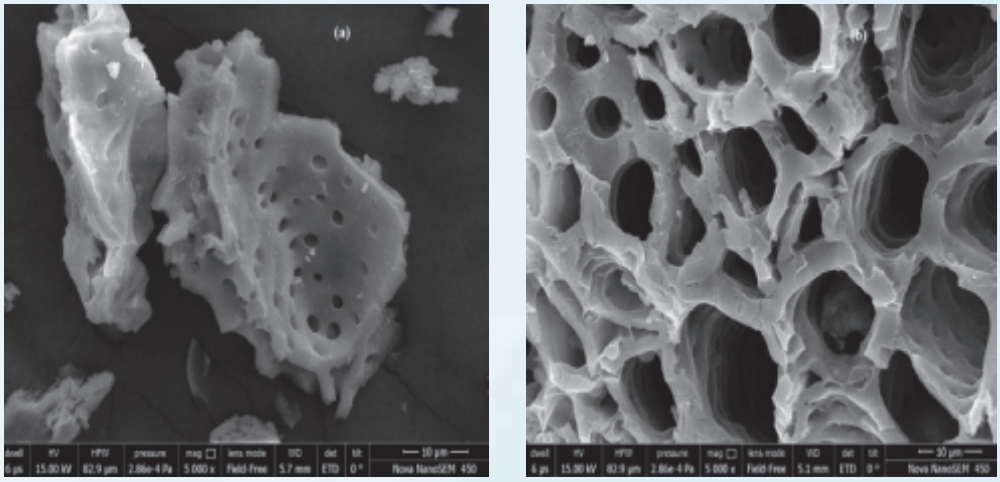
3.1 Activated Carbon from Corncob for Solketal and Dioxane Production

In the current ongoing research, the activated carbons, base-activated (AC-CC) and acid-functionalized (AAC-CC) were produced from corncob for the valorization of glycerol to solketal. Using methanol solvent and by estimating optimum conditions, reaction rate was determined. Based on model designed, the calculated activation energy of the reaction was found to be 23.902 kJ/mol-1 and 32.617 kJ/mol-1 for AC-CC and AAC-CC, respectively. The process for the experimentation is given in Figure below:



Experimental Process for getting activated carbon

During the research, final product solketal and dioxane mixture obtained from the two catalysts AC-CC and AAC-CC were 73% and 83% respectively.



AC-CC AAC-CC

Highly Porous Structure of Activated carbon from SEM micrograph

These activated carbons having surface area ~ 800 m^2/g can also have other properties for hydrogen storage and electrode materials for fuel cell, which will be investigated soon.

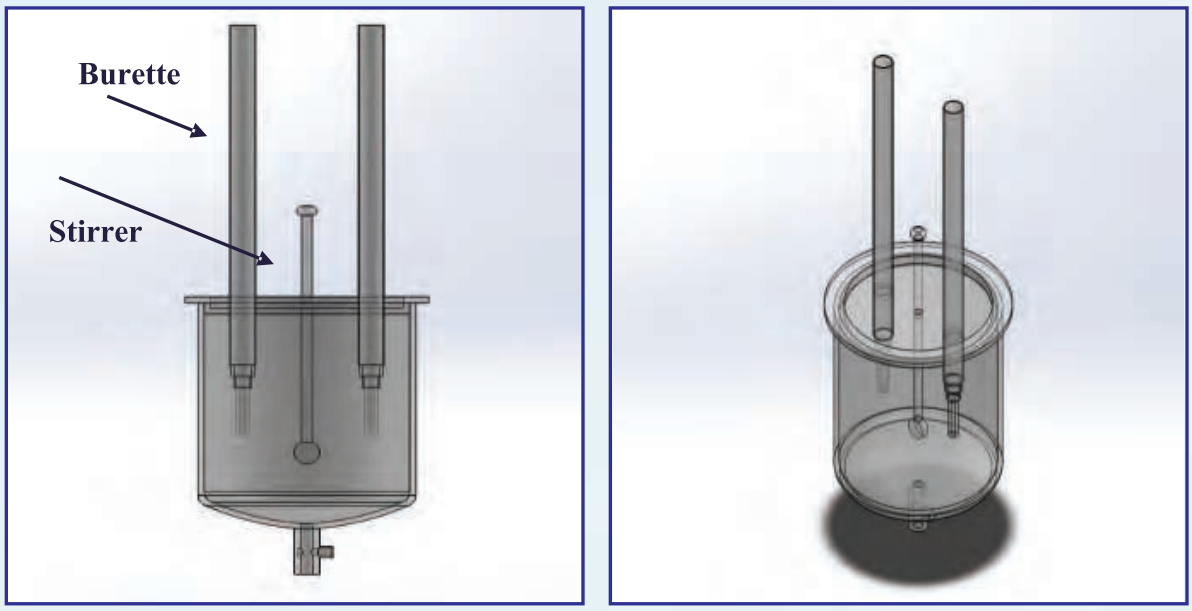
Raw Corncob used for experiments

3.2 Vegetable oil-alcohol formulated microemulsion

Hybrid microemulsion biofuels are such composition of vegetable oil/used cooking oil, butanol and ethanol which do not require any chemical reaction or sophisticated equipment for preparation. These vegetable oil-alcohol are fully renewable in nature, easy to produce, and has easy availability of its raw materials.

In this research, the division formulated microemulsion hybrid biofuel (MHBF) from used cooking oil, ethanol and n-butanol. For formulation of MHBF, a user-friendly reactor has been

designed through which even a farmer can easily prepare hybrid biofuel using this reactor for farm machinery application (CI Engine).



Pictorial view of designed reactor for formulation of MHBF

The research is going on to investigate the effect of MHBF, formulated from coconut oil (virgin/crude), aqueous ethanol, and 1-butanol on a direct injection diesel engine. The preliminary results show that BTE and BSFC for MHBF are slightly lower and higher than petro-diesel, respectively. In addition, the emission level (NO, SO_2 and CO_2) for this hybrid fuel was lower than petro-diesel except for an increase in CO emission from our research.

4. Thermo Chemical Division

The Institute has developed the biomass cookstove testing laboratory as per revised BIS@2013 and testing of commercial cookstove is ongoing as per request from different commercial entity. Biomass cookstove testing centre is well equipped and is having modern equipments for testing of different and important parameters such as CH_4, NO, SO_2, CO, CO_2, O_2, particulate matter, temperature, etc. The testing of Biomass Cookstove is carried out as per BIS Standards.

During the FY 2020-21, research on improved biomass cookstove was carried to improve the performance of in-house developed biomass cookstoves. The research was published in reputed peer reviewed journals. During the same year, the division also explored the scope of biomass gasification and developed the following projects to cater the ongoing energy requirement of the country.

Testing on Biomass Cookstove in National Test Center

4.1 Densification of agro-waste and its characterization

It is essential to identify and characterize alternative renewable fuels (like agricultural waste, organic matter and forest waste, or municipal solar waste etc. which is available bounteously) for clean and sustainable energy production. It is also important to identify and assess the major issues (like gas emission, ash behaviour, and moisture content etc.) related to unexplored fuels for their potential use in gasifier. Moreover, loose biomass like rice straw and baggase, requires proper processing for combustion in thermal power plants. Their densification and briquette formation would help to utilize such agro-waste efficiently for various purposes.

During 2020-21, research work was carried out to identify and characterize different biomass like paddy straw, corn stover,

Raw biomass used for characterization

sweet sorghum, millet, cotton stick, and mustard crop residue etc. to investigate the potential of agro-waste briquettes and its impact on fuel efficiency in gasifiers.

4.2 Lab scale solar reactor for biomass torrefaction under high concentration

The biomass torrefaction, pyrolysis, carbonization etc. are energy intensive processes, which requires external energy source to heat up the biomass to generate gases, tar and charcoal, depending upon the process used. During 2020-21, the institute developed a project to utilize concentrating solar technology as external heating source, thus making solar reactor for biocoal production. The high density biocoal generates less carbon emission and are renewable in nature, as it can easily be obtained from waste biomass. It is estimated that within the project, the biocoal can be used as replacement of traditional coal.

4.3 Improved Biomass Cookstove

The institute is working on the development of Improved Biomass Cookstove (IBC) with higher efficiency and low emissions as per BIS specifications. The R&D focuses on the designing of cookstove with efficient air supply to reduce the thermal losses and efficient burning of biomass. The new designs of IBCs are developed with varying insulating material. The first design included plaster of Paris (POP), while the other had glass wool (GW) as insulating material. The experimentations were carried out to identify the performance of both IBCs. The physical and chemical characteristics of new design of IBC were assessed in terms of thermal efficiency, power output, and emission rate in the National Cookstove Test Centre, situated in the Institute.

Raw biomass used for characterization

4.4 Solar Biomass Hybrid Air Dryer

SSS NIBE is working on development of Solar Biomass Hybrid Air dryer for drying of agro waste and vegetables in collaboration with Bharat Heavy Electricals Ltd. The R&D focuses on the design of solar thermal system along with biomass combustion chamber which can be used to provide heating for drying of agro-waste and vegetables. This will help in offering sustainable solutions for energy demand, specifically in colder regions.

Testing in R&D III

RESEARCH AND DEVELOPMENT

SSS-NIBE is playing a key role in research and development of bioenergy sector in the country. During 2020-21, a number of technology demonstration projects have been taken up by MNRE for bioenergy promotion. The institute also worked upon various technological demonstration project and the key features of the project are discussed below.

1. Project Completed

- Biorefining of sugarcane bagasse for production of bioethanol and value-added products (Indo-Brazil, Indian Partner: GNDU). PI: Dr. Sachin Kumar; Date of start: May 2016; Funded by DBT under Indo-Brazil bilateral collaboration with IFSC/USP, Brazil; Project cost: INR 129.264 Lakhs; Date of completion: October 2020.

The project report has been submitted and approved by the committee

2. New Projects Submitted

1. Microbial cell factories for ethanol and xylitol production: A Biorefinery approach, submitted to SERB, INR 78.65 Lakhs

2. Development of consolidated bioprocessing (CBP) thermotolerant yeast for effective lignocellulosic ethanol production, submitted to DST under Swarna Jayanti Fellowship, INR 125 Lakhs

3. A new approach for the Production of Aviation Turbine Fuel (ATF) from used cooking oil using esterification and catalytic hydro processing technique, submitted to SERB DST, Financial Outlay, 45.6 Lakhs INR

4. Highly porous activated carbons from corncob, Submitted to Corn Challenge -III, USA, Financial Outlay-19.2 Lakhs INR.

3. Progress of R &D activities:

- In the thermochemical conversion division biomass gasifier is in operation and works has been started with mixed feedstock for gasification and syngas generation.

- The division is also working on development of Solar Biomass Hybrid Air dryer for drying of agro waste and vegetables in collaboration with Bharat Heavy Electricals Ltd. The R&D focuses on the design of solar thermal system along with biomass combustion chamber for its commercialization.

- In the chemical conversion division, a few agro-residue based catalysts have been prepared and in the testing phase for production of fuel additives from crude glycerol.
- Ongoing work include biomass crop residues data analysis within the India for the assessment of bioenergy production potential through the different conversion technologies i.e. Bio-CNG, Bio-ethanol and combustion process.
- During 2020-21, a total of 15 publications across various journals, conferences, books, etc. were brought out by scientists working in the Institute.

Small scale Biogas Plant for Mess waste

4. In house projects

- Scale-up and techno-economic study of biogas production using thermophilic anaerobic digestion
- Biogas upgradation to BioCNG
- Design and Development of Solar Biomass Hybrid Air Dryer

- Biomass Characterization for standardization of pellets and briquettes
- Purification of Hydrogen from Syn gas
- Development of Biomass Hydrogen based Fuel Cell

ACADEMIC PROGRAM

The institute started an academic course of Masters in Technology of Renewable Energy, in joint collaboration with Dr B R Ambedkar National Institute of Technology (NIT) Jalandhar in Sept, 2020. The program and National Renewable Energy (NRE) fellowship for the students were approved by Hon'ble Minister, NRE. The course is floated in the 'Centre for Energy and Environment', Dr B R Ambedkar NIT Jalandhar. The intake capacity under the program is for 20 students, which include 5 sponsored candidates. The Academic Session 2020-21 was commenced from 21st Sept 2020 onwards with intake of 13 students through centralized admission process of NIT Jalandhar. At present, first two semesters of the program are completed. Within the course, six students have been allocated National Institute of Solar Energy, Gurugram and National Institute of Wind Energy, Chennai for their research work.

The courses (Renewable Energy) taken by institute's scientists in First Year are:

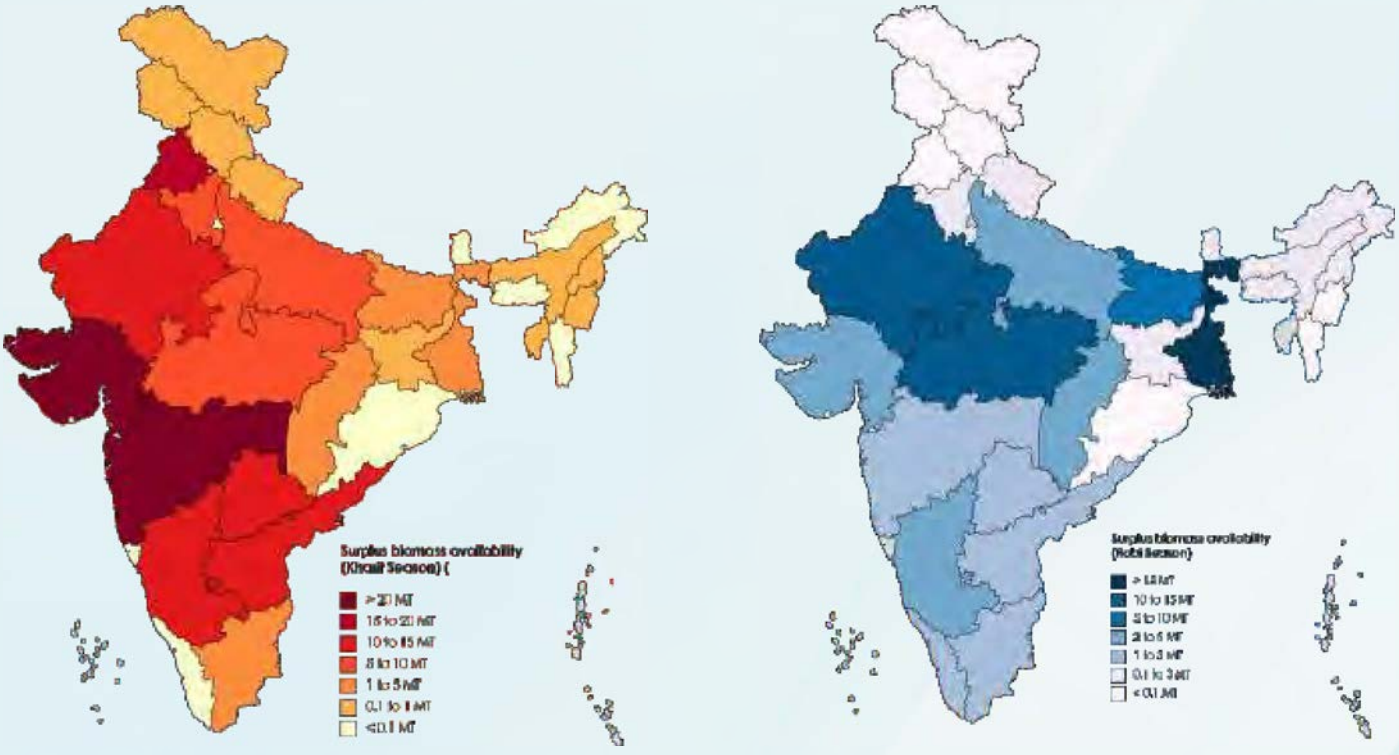
- Introduction to Renewable Energy systems
- Fundamentals of Energy and Environment
- Bio-Energy and Biofuels
- Renewable Energy Lab
- Solar Thermal Technologies & Applications
- Waste to Energy Conversion processes
- Fuels & Combustion Technology
- Fuel cell and hydrogen energy

INTERNATIONAL COLLABORATIONS

The Ministry of New and Renewable Energy has launched South Asia Group for Energy (SAGE) collaboration on July 7, 2020. SSS NIBE, being the research institute is developing collaboration with United States Agency for International Development (USAID), Lawrence Berkeley National Laboratory (LBNL) and Pacific Northwest National Laboratory (PNNL). In the SAGE program, three research areas are identified, which are given below:

1. Sustainable Farming of Bioenergy and Reduction in GHG with PNNL

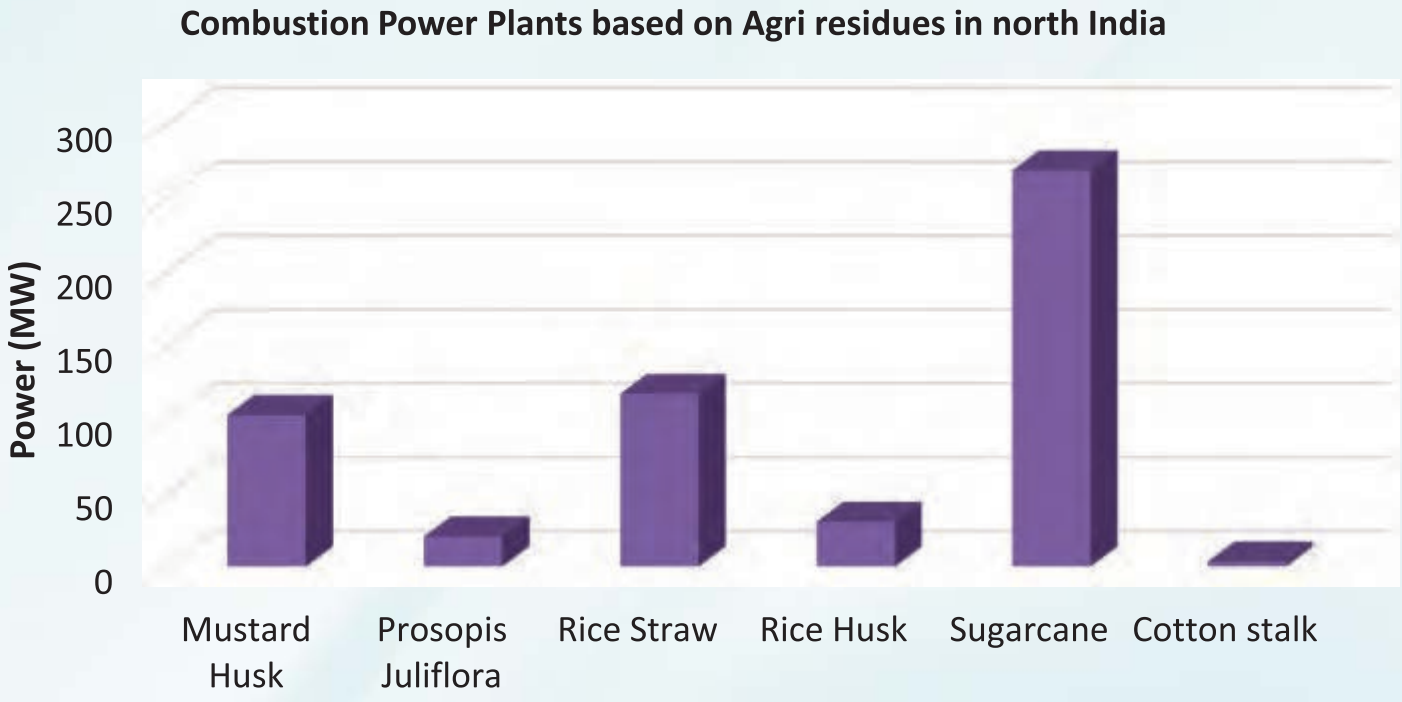
Under the proposed research, it is planned to develop status papers on recent developments in methods and protocols for biomass assessment and management and reciprocate stubble burning of rice straw through virtual mapping using modern GIS tools for pollution abatement scope and progress in Indian perspectives. A status paper in the subject with special emphasis of sustainable farming may be highly useful for policy / regulatory framework for deployment.



Availability of Surplus biomass in India

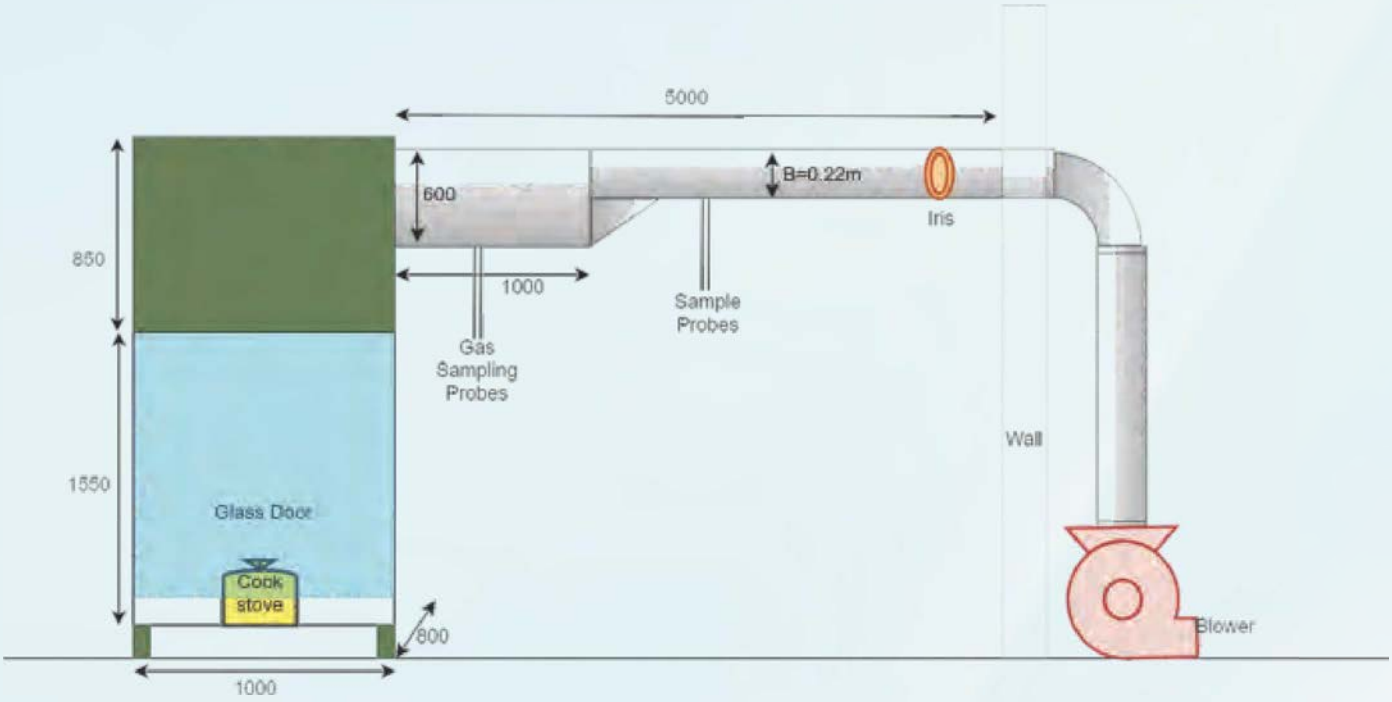
2. Biomass and RE hybrid energy systems with LBNL and PNNL

The main objective of the joint collaboration is to assess the feasibility and prospects of biomass-based hybrid systems in Indian and USA scenario. The feasibility would be accessed through technical and financial analysis through joint work between the institutes. The virtual kickoff meetings for the proposed project have been planned.



3. Biomass Cookstoves Testing with LBNL

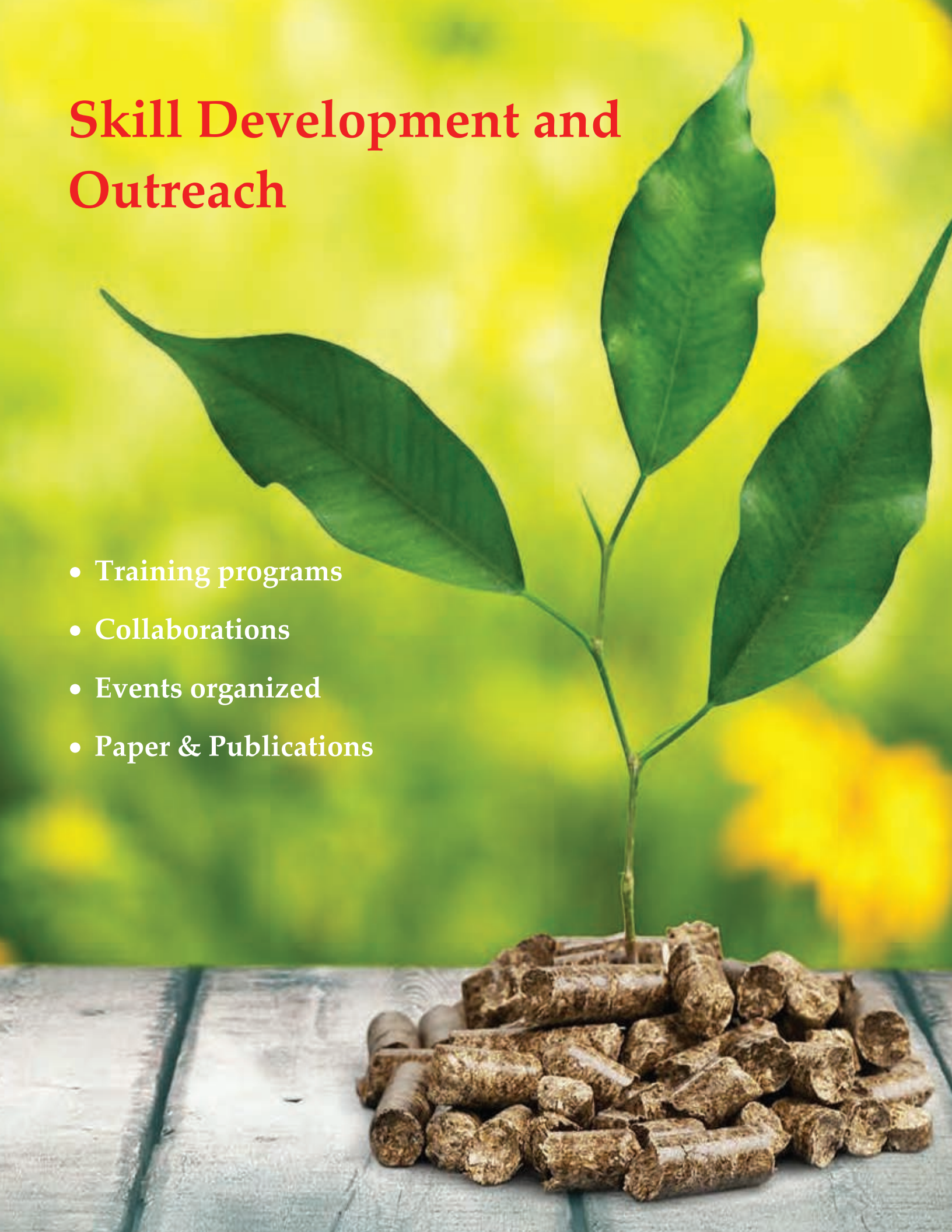
With the joint collaboration on cookstove testing facilities, SSS NIBE can serve as the gold-standard reference facility for all future regional testing facilities in India, the South Asian region, and beyond. It will also provide validation and support for development and testing of novel cookstove designs that can emerge locally, and be designed for the culture and cooking styles of diverse regions of India. LBNL will support with their technical expertise to establish institute's lab as per ISO standards for complete automation.



Upgrading existing Biomass test center

NIBE-SAGE collaboration meetings are ongoing weekly basis for cookstove, resource projection and biomass hybrid systems. LBNL Team has been training the Team of NIBE with strong intent to develop our cookstove lab at par with ISO standards. The next phase of collaboration will focus on collaborative projects/ study on biomass-based hydrogen, sustainable farming etc.

Skill Development and Outreach



- Training programs
- Collaborations
- Events organized
- Paper & Publications

TRAINING PROGRAMS

The SSS NIBE is committed for promotion of bioenergy. With this mandate, the institute is organizing outreach programs and events on various aspects of bioenergy. During 2020-21, the institute had organized three events (physical and virtual) as national level training programs.

Besides event organizing, the institute also worked as Knowledge Partner for Virtual Training Tour on Biogas, jointly organized by Indian Biogas Association (IBA) during October 7-8, 2020.

1. National Training Programme on Renewable Energy - 10-12 March 2021

A 3-days National Training Programme on "Renewable Energy" was organized at Sardar Swaran Singh National Institute of Bio-Energy, during March 10-12, 2021. The main objective of the national training programme was to introduce the importance and various applications of renewable energy including solar, wind and bioenergy, characterization of biomass and assessment, biomass gasification, fundamentals of solar, wind and biomass power generation, off-grid and grid power generation, waste utilization for energy production, financing for industrial projects and techno-economics for renewable energy projects and its utilization, including various policy issues to be addressed by various experts and Govt officers. The program was attended by officials from state nodal agencies, Academics, Research Scholars, Entrepreneur, Industry partners etc.

During the program, a field visit to 18 MW Bioenergy plant at Ferozepur and 7.2 MW Canal top SPV plant in Patiala was carried out. The program concluded on 12th March 2021, at 05:00 PM after the Valedictory Function. The certificates were distributed to the all the participants on the successful completion of the national training program.

दैनिक भास्कर कपूरथला फगवाड़ा 11-03-2021

तीन दिवसीय राष्ट्रीय प्रशिक्षण शिविर शुरू

कपूरथला | सरदार स्वर्ण सिंह राष्ट्रीय जैव ऊर्जा संस्थान कपूरथला में तीन दिवसीय राष्ट्रीय प्रशिक्षण शिविर शुरू हुआ। कार्यक्रम का शुभारम्भ करते हुए संस्था के मुखी डॉ. एके शर्मा ने प्रशिक्षुओं को कहा कि आज जैव ऊर्जा को पहले स्थान पर लेकर जाने की जरूरत है। भविष्य में परम्परागत ऊर्जा की कमी होने की सम्भावना है। आज भी 70 प्रतिशत गावों में लोग ऊर्जा पूर्ति के लिए बायोमास पर निर्भर है। संस्था के वैज्ञानिक डॉ. सचिन कुमार ने कहा कि आने वाले समय में जैव और अक्षय ऊर्जा कि आवश्यकता बढ़ जाएगी और हमें इसके लिए प्रयत्न करने होंगे। इस समारोह में देश भर से छात्रों और विशेषज्ञों ने हिस्सा लिया। वैज्ञानिक डॉ निशिकांत गायकवाड़ ने सभी विशेषज्ञों, प्रशिक्षुओं व संस्था के सदस्यों का आभार व्यक्त किया।

Coverage of National Training Program in Local Newspaper (Dainik Bhaskar 11.03.21)

Glimpse of National Training Program (10-12 March 2021)

2. National Training Programme on Biogas - 24-26 March 2021

A 3-day "National Training Programme on Biogas Technology and its Implementation" was held at the premises of Sardar Swaran Singh National Institute of Bio-Energy. The main objective of this national training programme was to introduce the importance and various applications of biogas, plant design, operation and maintenance, lignocellulosic and other waste utilization for biogas production, purification and bottling, off-grid and grid power generation, bio-CNG, financing for industrial projects, and techno-economics for biogas production and its utilization including various policy issues to be addressed by various experts and government officers.

The training was conducted in collaboration with Indian Biogas Association (IBA) in both classroom and virtual modes. The training programme was arranged in key note lectures on the relevant topics delivered by the invited experts. The topics covered under these key note lectures were:

- Biogas as Science and Industrial Process
- Feedstocks and Supply Chain Management
- Biogas Upgradation to BioCNG and Power Generation
- Biogas Plant Design and Operation & Maintenance

Field visit during Training Program

Interactions with the participants for field experiences/success stories, investment opportunities in bioenergy sector, institutional laboratories visit, site visit for industrial exposure were also covered under the agenda of this training programme.

दैनिक भास्कर कपूरथला फगवाड़ा 25-03-2021

दैनिक भास्कर कपूरथला.फगवाड़ा

सरदार स्वर्ण सिंह नेशनल इंस्टीट्यूट ऑफ बायो-एनर्जी कपूरथला में 3 दिवसीय राष्ट्रीय प्रशिक्षण कार्यक्रम

बायोगैस परीक्षण, प्रदर्शन व मानकीकरण पर जोर

सभी प्रतिभागियों ने संस्थान में प्रयोगशालाओं का भी दौरा किया, वैज्ञानिकों और अनुसंधान साथियों के साथ बातचीत की

बायोगैस प्लांट के लिए दौरे की व्यवस्था की

प्रतिभागियों को प्रमाण पत्र घरों में जाएंगे

Coverage of National Training Program in Local Newspaper

3. Induction Training Program for Newly Recruited Scientist B of MNRE - 29 March – 4th April

An "Induction Training Program for Newly Recruited Scientist B of MNRE" was organized at Sardar Swaran Singh National Institute of Bioenergy, from March 29 – April 4, 2021. The training was conducted with experts lecture in both classroom and virtual modes. The new recruits were informed about the various aspects of bioenergy, characterization of biomass and assessment, biomass gasification, biogas generation, plant design, operation and maintenance, purification and bottling, bio-CNG, and techno-economics for Bioenergy.

During the program, one day field tip to Biogas Plant in Haibowal, Ludhiana was carried out. Further, another field visit to hydro-energy plants in Nogli, Rampur Bushahr and Chabba, Shimla was carried out. The program concluded on 4th April 2021 after the Valedictory Function.

Field visits during Training Program

COLLABORATIONS

During 2020-21 SSS NIBE has signed Memorandum of Understanding (MoU) with different organizations to operate a collaborative venture for the development and dissemination of bio-energy through academic and research. The lists of MoUs signed are given as:

S. No.	MoU (with)	Date of MoU Signed	Date of MoU valid up to
1.	Dr B R Ambedkar National Institute of Technology, Jalandhar	4th November 2020	3rd November 2025
2.	Indian Biogas Association, Gurgaon	4th November 2020	3rd November 2023
3.	National Institute of Solar Energy	8th January 2021	7th January 2026
4.	National Institute of Wind Energy	8th February 2021	7th February 2026

Signing of MOU with National Institute of Solar Energy, Gurugram

Virtual Signing of MOU with Dr B R Ambedkar NIT Jalandhar

EVENTS ORGANIZED

1. Hindi Divas and Pakhwada

Hindi Diwas was celebrated on September 14 to pay tribute to the official language of India. The Institute also observed Hindi Pakhwada from 14th-28th September 2020. The program was coordinated by the Hindi Officer of the Institute. Many banners and posters were displayed at the Institute in all the primary locations so as to disseminate the information among all-level-workers. Activities were conducted with the motive to enhance the language skills and make learning more enjoyable. It was a great success with maximum participation from the SSS-NIBE Staffs which helped them in enhancing their varied skills. Quiz, Essay and Debate Competitions held during Hindi Divas Week from 14 September to 28 September, 2020.

Glimpses of Hindi Divas

2. Vigilance Week

An online Talk/Discussion on Constitution Day was organized in the Institute on 26th November 2020. A senior advocate, district court, Amritsar, was invited as expert speaker to deliver a talk on Constitutional Values.

Glimpses of Constitution Day

3. 30th Governing Council Meeting

The 30th Governing Council Meeting of the institute was held on 16th September 2020 at 04:30 PM at the Ministry of New and Renewable Energy, Block 14, CGO Complex, Lodhi Road, New Delhi under the Chairmanship of Shri Indu Shekhar Chaturvedi, Secretary, MNRE & Chairman Governing Council (GC), SSS-NIBE.

Governing Council Meeting

4. 17th Finance Committee Meeting

The 17th Meeting of the Finance Committee of Sardar Swaran Singh National Institute of Bioenergy, Kapurthala, Punjab was held on 14 Sept 2020 at 11:30 AM in the office of Joint Secretary, Ministry of New and Renewable Energy.

5. 31st Governing Council Meeting

The 31st Governing Council Meeting of the institute was held on 21st January 2021 at 4:00 PM at the Ministry of New and Renewable Energy, Block 14, CGO Complex, Lodhi Road, New Delhi under the Chairmanship of Shri Indu Shekhar Chaturvedi, Secretary, MNRE & Chairman GC, SSS-NIBE.

6. 2ndAnnual General Meeting

The 2ndAnnual General Meeting of the institute was also held on 21st January 2021 after 31st Governing Council Meeting at 5:00 PM at the Ministry of New and Renewable Energy under the Chairmanship of Shri Indu Shekhar Chaturvedi, Secretary, MNRE & Chairman GC, SSS-NIBE.

7. Other Activities

- International Yoga Day was celebrated from our respective homes on 21st June 2020 following COVID protocols.
- Independence Day was celebrated in the Institute on 15th August 2020.
- Vigilance Awareness week from 27th October, 2020 to 2nd November, 2020, Rashtriya Ekta Diwas on 29th October 2020.
- Constitution Day was celebrated on 26th November, 2020.
- Republic Day was celebrated in the Institute on 26th January 2021 and Dr. Anil Kumar Sarma, Scientist-E, SSS-NIBE hoisted the flag and graced the occasion. Further, prize was also distributed by Dr. Sarma to the winner of Quiz, Essay and Debate Competitions held during Hindi Divas Week
- Women day was celebrated on 8th March 2021

Glimpses of Events Celebrated in SSS NIBE

PAPER AND PUBLICATIONS

During 2020-21, a total of 15 publications across various journals, conferences, books, etc. were brought out by scientists working in the Institute.

Key research papers published in reputed journals

Kaur, Jaspreet, Anil Kumar Sarma, Mithilesh Kumar Jha, and Poonam Gera. "Rib shaped carbon catalyst derived from Zea mays L. cob for ketalization of glycerol." RSC Advances 10, no. 71 (2020): 43334-43342.

Jaspreet Kaur, Anil Kumar Sarma, Poonam Gera, M K Jha, Process optimization with acid functionalised activated carbon derived from corncob for production of 4 hydroxymethyl-2,2-dimethyl-1,3dioxolane and 5-hydroxy-2,2-dimethyl-1,3-dioxane, Scientific reports 11 (8567)

D Singh, AK Sarma, SS Sandhu -An experimental investigation of injection timings and injection pressures on a compression ignition engine fueled with hybrid fuel-1 derived from waste cooking oil, Environmental Progress & Sustainable Energy, 2021

Bhatta, Sandip, Dhananjay Pratap, Nikhil Gakkhar, and J. P. S. Rajput. "A Comparative Experimental Investigation of Improved Biomass Cookstoves for Higher Efficiency with Lower Emissions." In Proceedings of the 7th International Conference on Advances in Energy Research, pp. 961-971. Springer, Singapore, 2021.

Gakkhar, Nikhil, Manoj K. Soni, and SanjeevJakhar. "Second law analysis of an integrated parabolic trough photovoltaic thermal system." In AIP Conference Proceedings, vol. 2273, no. 1, p. 050008. AIP Publishing LLC, 2020.

Hans M, Garg S, Pellegrini VO, Filgueiras JG, de Azevedo ER, Guimaraes FE, Chandel AK, Polikarpov I, Chadha BS, Kumar S (2021) Liquid Ammonia Pretreatment Optimization for Improved Release of Fermentable Sugars from Sugarcane Bagasse. Journal of Cleaner Production, 281, 123922. Doi: 10.1016/j.jclepro.2020.123922. (IF: 7.246)

Hans M, Lugani Y, Chandel AK, Rai R, Kumar S (2021) Production of first- and second-generation ethanol for use in alcohol-based hand sanitizers and disinfectants in India. Biomass Conversion and Biorefinery. Doi: 10.1007/s13399-021-01553-3. (IF: 2.602)

Arora R, Behera S, Sharma NK, Singh I, Ransore V, Saiyyed R and Kumar S (2020) Bioprospecting Saccharification of Alkali Pretreated Paddy Straw Through Statistically Designed Parameters for Biofuel Production. Industrial Biotechnology, 16(6), 375-385.

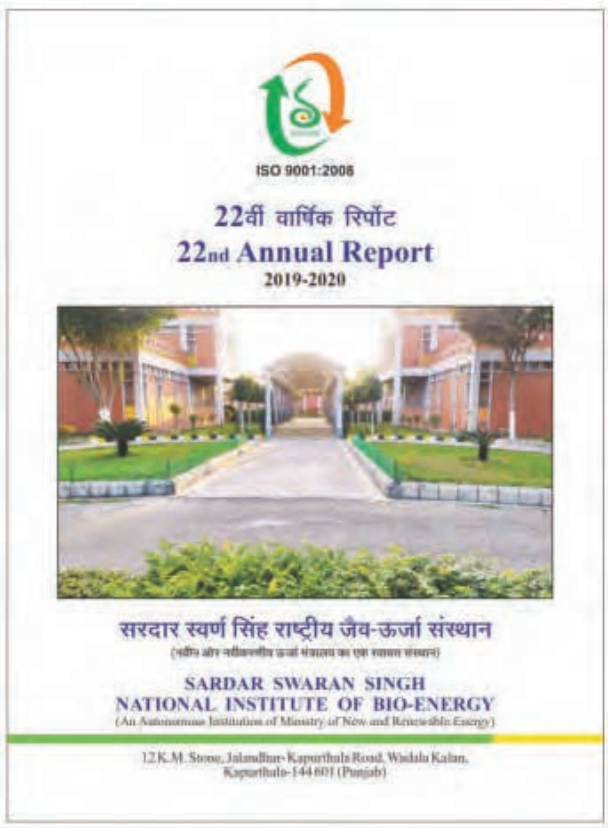
Lugani Y, Rai R, Prabhu A, Maan P, Hans M, Kumar V, Kumar S, Chandel A, Sengar R (2020) Recent advances in bioethanol production from lignocelluloses: a comprehensive review with a focus on enzyme engineering and designer biocatalysts. Biofuel Research Journal, 7(4), 1267-1295. doi: 10.18331/BRJ2020.7.4.5

Lugani Y, Sooch BS, Singh P, Kumar S (2021) Nanobiotechnology applications in food sector and future innovations. In: Ray RC (Ed.) Microbial Biotechnology in Food and Health. Academic Press, London, PP. 197-225.

Singh R, Hans M, Kumar S, Yadav YK (2020) Potential Feedstock for Sustainable Biogas Production and its Supply Chain Management. In: Balagurusamy N., Chandel A.K. (eds) Biogas Production. Springer, Cham. https://doi.org/10.1007/978-3-030-58827-4_8.

Bhardwaj S, Kumar S, Arora R (2020) Bioprospecting of Microorganisms for Biofuel Production. In: Yadav AN, Rastegari AA, Yadav N, Gaur R (eds) Biofuels Production – Sustainability and Advances in Microbial Bioresources. Biofuel and Biorefinery Technologies, vol 11. Springer, Cham.

The Annual Report of the year 2019-20 was published and laid in the Lok Sabha and Rajya Sabha during March 2021.



Annual Report 2019-20

Support Service

- Infrastructure upgrade
- Finance & Administration
- SSS NIBE's Team

INFRASTRUCTURE UPGRADE

1. Common Block Facility

During 2020-21, the Common Block facility was completed and the inauguration facility was carried out on 12th March 2021 through Sh Dinesh D Jagadale, Joint Secretary, MNRE and DG NIBE. The facility includes state of art Central Auditorium with more than 130 sitting capacity for audience. The facility is being used for training programs, events, and guest lectured from experts.

Inauguration of Common Block Facility

2. NKN Connection

During 2020-21, the institute implemented NKN (NIC) connection through M/s RAILTEL Corporation of India Ltd. The facilities are updated and secured networking is provided. Now with the implementation of NKN connection, the institute e-office is working smoothly for daily office work.

3. Video Conferencing facility

During 2020-21, the institute also installed the Video Conferencing facility in Committee room in Administrative Block for official meetings. A HD quality camera along with the necessary tools were installed for IP calling, Online Video Conferencing, Online events etc. The facility is being used for day to day online meeting.

Video Conferencing facility in Committee room

FINANCE AND ADMINISTRATION

Serving as the artery connecting scientific divisions of the institute, the activities of Finance and Administrative divisions are briefed as under:

- Budget & revised estimates for grant-in-aid, allocation & re-appropriation of funds, expenditure management& budget control, project financial management.
- Statutory compliances on GST and income tax etc., dealing with audits, drawing up balance sheet, laying of audited accounts on the table of Parliament.
- Framing of rules, schemes and grievance redressal, management of outsourcing agency, legal issues, court cases & RTI, recruitment, hiring of research staff and promotions
- Statutory compliances on EPF, societies registration, bills of establishment, facility management, activities related to official language, maintenance of vehicle, security, horticulture activities and housekeeping
- Store & purchase, procurement of goods and services, GEM, contracts etc.

SSS NIBE'S TEAM

Director General Office

Sh Dinesh D Jagdale	JS, MNRE& DG NIBE

Chemical Conversion Division

Dr Anil K Sarma	Scientist E & Head of Office
Sh Vijay Bajala	Technical Assistant
Sh Akash Deep Singh	Research Scholar
Sh Bhautik Gajera	Research Scholar
Sh Amrik Singh	Multi Tasking Staff

Biochemical Conversion Division

Dr Sachin Kumar	Scientist C
Ms Meenu Hans	Research Scholar
Ms Nisha Yadav	Research Scholar
Mr Ajay	Multi Tasking Staff
Smt. Shuchi Sahu	Technical Assistant

Thermochemical Conversion Division

Dr Nikhil Gakkhar	Scientist C
Sh Gopal Sharma	Technical Assistant
Sh Rakesh Godara	Research Scholar
Ms M Sreevidhya	Research Scholar
Sh Arshdeep Singh	Multi Tasking Staff

Civil and Maintenance division

Sh Ram Anuj Singh	Assistant Engineer (Civil)
Sh Puneet Sharma	Technician
Sh Manpreet Singh	Technician
Sh Baljit Singh	Technician

Administrative division

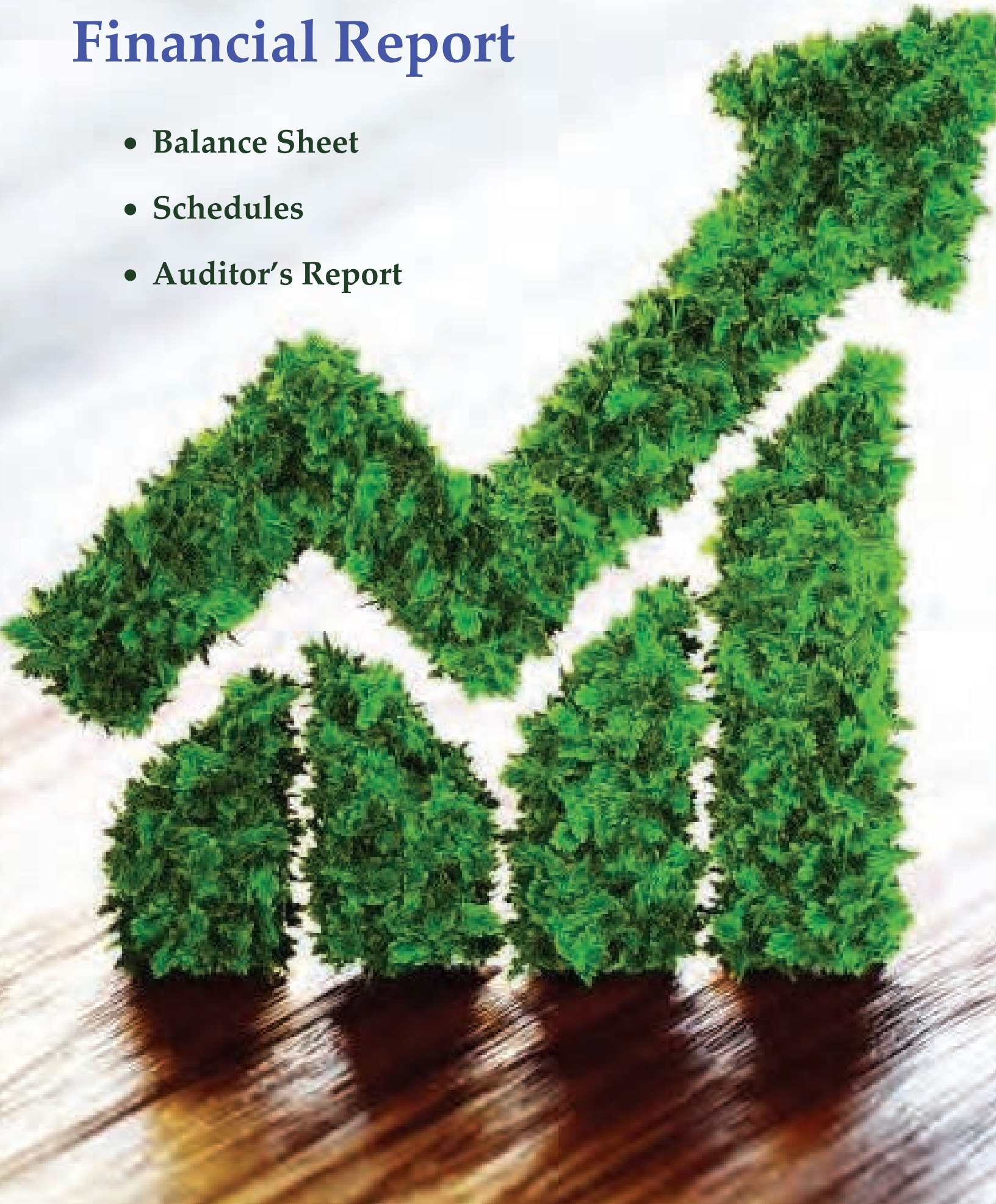
Sh Abhishek Gupta	CPIO
Sh Rupesh K Verma	Junior Executive Assistant
Sh Hitesh Sharm	Office Assistant (Admin)
Sh Mukesh Banga	IT Assistant
Sh Harkeerat Singh	Driver
Sh Amrjit Singh	Tractor Driver

Finance Division

Sh Sanjay Chauhan	Junior Executive Assistant
Sh Amandeep	Office Assistant (Accounts)

Financial Report

- Balance Sheet
- Schedules
- Auditor's Report



BALANCE SHEET

The annual audited accounts of the Institute for the year 2020-21 has been prepared and duly audited by Internal Auditors M/s. Puri& Gupta Chartered Accountant, Jalandhar and Statutory Auditor M/s. K. Bhagat & Co., Jalandhar. The detailed Auditor's Report, Balance Sheet, Income, Expenditure, Receipts & Payment Accounts Schedules are attached herewith.

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

BALANCE SHEET AS AT 31ST MARCH 2021

PARTICULARS	SCHEDULE	31st MARCH, 2021	31st MARCH, 2020
A. CAPITAL FUND AND LIABILITIES			
Corpus/Capital Fund	I	324,257,920.00	316,612,211.61
Reserve & Surplus	II	241,497,483.02	226,927,724.10
Current Liabilities & Provisions	III	4,612,270.92	2,387,923.00
TOTAL		570,367,673.94	545,927,858.71
B. ASSETS			
Fixed Assets	IV	180,531,247.13	182,822,440.00
Current Assets, Loans & Advances	V	87,026,091.81	60,549,702.10
Investment (Corpus Fund)	VI	302,810,335.00	302,555,716.61
TOTAL		570,367,673.94	545,927,858.71
Contingent Liabilities And Notes on Accounts	VII		

For SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO- ENERGY

For K.Bhagat & Co.

Chartered Accountants

Finance & Accounts Officer

Director General

Kuldip Bhagat
M.No.017902

Place: Jalandhar
Date: 20/10/2021
UDIN:-21017902AAAABR7641

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31.03.2021

(Amount in Rs.)

PARTICULARS		31st MARCH, 2021	31st MARCH, 2020
INDIRECT INCOME			
Grant Received from MNRE during the year for General Expenses		26,400,000.00	3,300,000.00
Interest Received from FDRs (Corpus Fund)		17,109,708.39	13,595,454.61
Less: Transferred to Corpus Fund		(7,095,708.39)	(13,595,454.61)
Interest Received from Sweep A/c (IREDA NIBE Award)		550,000.00	650,000.00
Less: Transferred to Corpus Fund		(550,000.00)	(650,000.00)
Interest Received		2,947,981.00	10,656,627.00
Grant received for Salary		11,500,000.00	3,300,000.00
Licence Fees		76,960.00	66,705.00
NIT Course Fee		313,875.00	-
Other misc income		-	4,500.00
Other Deductions/Recovery		-	14,775.00
Tender Fees(other ded)		-	5,500.00
Written off		-	79,919.00
Round off		2.79	0.50
Registration Fees		-	-
Hostel Fees		6,000.00	129,250.00
Overhead Charges of Project Indo-Brazil		50,000.00	50,000.00
Overhead Charges of Project Biorefinery approach		50,000.00	-
Testing Fees Received		26,250.00	30,000.00
Rent received		3,644.00	-
TOTAL	**A**	**51,388,712.79**	**17,637,276.50**
INDIRECT EXPENSES			
Advertisement		283,604.37	35,836.20
Audit & Legal Fees		106,950.00	393,999.00
Consumable Laboratory Workshop Exp.		203,827.00	77,289.84
Depreciation		19,512,310.00	20,890,510.00
Electricity & POL		2,425,330.00	2,584,524.50
Computer software exp		28,909.79	14249.16
Manpower,Hiring of Prof. Services		8,524,063.16	5,406,707.73
Other exp (Hospitality)		272,592.00	
Horticulture Expenses		100,337.00	63,424.00
Insurance Exp.		-	504.00
Computer hardware exp		76,505.21	
Meeting, Seminars, Workshop & Conference		388,568.00	251,465.62
Office/Guest House Exp.		-	-
Bank Interest		-	1083448.00
Refreshment (hospitality)		57,599.00	52,173.00
Repair & Maintenance		221,538.00	621,922.60

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31.03.2021

(Amount in Rs.)

PARTICULARS			31st MARCH, 2021	31st MARCH, 2020
Other deduction/recovery			11,874.00	
Salaries			11,444,873.00	6,903,555.00
Machinery & Equipment exp			632,996.63	
Stationary (Including Software Exp.)			5,912.00	24,474.00
Stipend			512,298.00	-
Telephone & Internet Exp.			1,703,539.91	340,998.96
Research & Development exp			-	29,310.51
Travelling Exp.			26,200.00	147,622.00
Interest on CGST/SGST/IGST				660.00
Other exp			51,954.00	219,879.00
Vehicle Maintenance			111,610.00	-
Late fee CGST/SGST			100.00	4,750.00
Contingency exp			1,969.00	27,127.00
Bank Charges			326.80	190.56
	TOTAL	**B**	**46,705,786.87**	**39,174,620.68**
Surplus Transfer to Reserve & Surplus		**A-B**	**4,682,925.92**	**(21,537,344.18)**

For

For K.Bhagat & Co.
Chartered Accountants

Finance & Accounts Officer

Director General

Kuldip Bhagat
M.No.017902

Place: Jalandhar
Date: 20/10/2021
UDIN:-21017902AAAABR7641

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

	PARTICULARS		31st MARCH, 2021	31st MARCH, 2020
I.	**CORPUS/CAPITAL FUND**			
	Opening Balance		304,289,811.61	290,694,357.00
	Add: Interest on FDR (Corpus)		7,095,708.39	13,595,454.61
	Add: IREDA NIBE Award		12,322,400.00	11,672,400.00
	Add: Interest on IREDA Fund		550,000.00	650,000.00
			324,257,920.00	**316,612,211.61**
II.	**RESERVE & SURPLUS**			
	Opening Balance		212,586,695.40	261,949,637.73
	Add: Grant Received for Capital Expenses		9,100,000.00	(27,825,598.15)
	Add: Surplus for Current year		4,682,925.92	(21,537,344.18)
		Sub Total	**226,369,621.32**	**212,586,695.40**
	RESERVE & SURPLUS- COMPLETED PROJECTS			
	Bio Diesel Project (Dr. A.K. Sarma)		4,472,153.00	4,472,153.00
	ICRISAT Project (Sh. R.A. Singh)		13,929.00	13,929.00
	Bio Crude Project (Dr. A.K. Sarma)		2,383,061.00	2,383,061.00
	National Renewable Energy Program Project		50,415.00	50,415.00
	Bio Ethenol Project (Dr. Sachin Kumar)		5,441,996.70	5,441,996.70
	Bio Gas Project (Dr. Sachin Kumar)		59,929.00	59,929.00
		Sub Total	**12,421,483.70**	**12,421,483.70**
	RESERVE & SURPLUS- ON GOING PROJECTS			
	Opening Balance Bio Butanol Project (Dr. Suvashish Behra)		-	**158,520.00**
	Add: Grant Received from MNRE during the year		-	(158,520.00)
	Less: Expenses for Bio Butanol Project (Excluding Fixed Assets)		-	-
		Sub Total	**-**	**-**

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

PARTICULARS		31st MARCH, 2021	31st MARCH, 2020
Opening Biorefinery Approach for generation of platform chemicals and bioethanol (Dr. Sachin Kumar)		240,920.00	575,710.00
Add: Grant Received from MNRE during the year		-	-
Less: Expenses Biorefinery Approach for generation of platform chemicals and bioethanol (Dr. Sachin Kumar)		87,845.00	(334,790.00)
	Sub Total	**153,075.00**	**240,920.00**
Fellowship Grant Dr. Sachin Kumar		220,300.00	220,300.00
Less: Advance Given to Dr. Sachin Kumar		-	-
	Sub Total	**220,300.00**	**220,300.00**
Opening B-ACER (Bio Energy Awards for Cutting Edge Research)		-	-
Add: Grant Received from MNRE during the year		-	-
Less: Advance to Mr Nilesh Kumar Sharma for 6 month visit to USA		-	
		-	**-**
Opening Balance Indo Brazil project		1,458,325.00	**3,807,674.00**
Add: Grant Received from MNRE during the year		1,360,741.00	878,658.00
Add: Advance Recovered from Meenu Hans		-	545,200.00
Less: Expenses for Project (Excluding Fixed Assets)		(1,812,862.00)	(2,446,408.00)
Less: Advance to GNDU		-	(1,326,799.00)
Add: Advance recovered from GNDU		1,326,799.00	0.00
	Sub Total	**2,333,003.00**	**1,458,325.00**
	Sub Total	**241,497,483.02**	**226,927,724.10**
III. CURRENT LIABILITIES & PROVISIONS			
Cheques Issued But not Presented		1,289,595.00	25419.00
Salary Payable		615,380.00	467,224.00
PSPCL		-	182,360.00
Security Solution Services		-	176,377.00
Statutory Audit Fee		9,660.00	9,660.00
Security		70,895.00	60,895.00
Airport Handeling Services, New Delhi		67,369.00	67,369.00
TDS & GST Payable		81,272.00	33,500.00
M/s National Service Station		-	11,671.00
M/s Vanmas Group		186,625.00	
Akay Scientific Store		48,090.00	-
M/s LabIndia Instruments pvt ltd.		120,750.00	
GS Food Junction		-	90,221.00
Kashmiri Lal & Sons		60,390.00	-
Nagina Industrial Corporation		4,700.00	
Chemicot Scientific Gases		3,810.00	3,810.00
M/s Hind Aman Security & Consultancy		-	293,956.00
Sigma Gases & Services		6,525.00	6,525.00
Malhi Highway Bus Service		14,500.00	-
M/s Centurion Scientific		49,560.00	
M/s Quadrant Televentures Ltd.		11,800.00	-

Sudhir Sales & Services Ltd	89,976.00	
EMD	418,000.00	418,000.00
Vijay Kumar Bharti	2,000.00	
Dr. RK Gupta	-	2,000.00
M/s Merck life Sciences pvt ltd	21,712.00	
Cgst payable	13,445.46	9,000.00
Sgst payable	13,445.46	9,000.00
Asian Music Centre	24,700.00	
Convoy Secure ltd	444,836.00	
Anil Mess Services	54,000.00	
Hotel Woodrina	37,400.00	
Arora Vikram & Associates	18,880.00	18,880.00
EPF Payable	76,757.00	57,884.00
Expences payable	746,345.00	444,172.00
K bhagat & Co.	9,853.00	
	4,612,270.92	**2,387,923.00**

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

PARTICULARS		31st MARCH, 2021	31st MARCH, 2020
V. CURRENT ASSETS, LOANS & ADVANCES			
A. **CURRENT ASSETS**			
Cash in Hand		7,502.00	7,472.00
Bank Balances			
In Saving A/c		3,902,226.54	495,264.34
In Current A/c		538,455.70	506,572.70
In Deposit A/c		88,165,000.00	60,872,743.00
	Total	92,613,184.24	61,882,052.04
Less: Deposit for Corpus		(12,872,400.00)	(12,322,400.00)
(Shown under Investment Corpus Fund)			
	Total (A)	**79,740,784.24**	**49,559,652.04**
B. LOANS, ADVANCES & OTHER ASSETS			
Advances Recoverable in Cash or in kind or for value to be received			
Deposit with CPWD		68,685.00	4,644,409.00
M/s Casa, New Delhi		300,000.00	300,000.00
M/s Deejay Corporation		63,279.00	63,279.00
M/s PEDA Chandigarh		-	1,742,000.00
Indian Biogas Association		22,050.00	-
M/s Indian Journals com			2,000.00
M/s Godrej & Boyce Mfg. Co. Ltd.		-	5,725.00
M/s B.N. Constructions		500,000.00	500,000.00
Deputy Commissioner Kpt		7,104.00	88,500.00
Executive Engineer PWD		1,200,000.00	-
M/s Arora Vikram & Associates		-	0
Sundry Advances/Recoverable		41,055.49	41,055.49
Income Tax Deposited (Under Appeal)		428,395.00	428,395.00
Methodex Systems pvt ltd		596,608.00	-
CGST Credit Ledger		525,913.09	223,916.46
IGST credit ledger		949,186.26	240,691.05
Interest Accrued on Security Deposit		268,834.00	201,235.00
Debanjan Sutradhar		1,770.00	
Priyam Bandyopadhyay		1,770.00	
Igst Recoverable		900.00	
SGST Credit Ledger		525,913.09	223,916.46
Security Gas		7,100.00	7,100.00
CGST input		15,781.26	450.00
Pushpa Gujral Science City		-	8,850.00
Railtell Corporation of India ltd		-	896,800.00
EPF employees share	-		
IGST input		359,984.12	98,650.60
SGST input		15,781.26	450.00
Advance to Staff		-	92,245.00
Amount Deductable from Staff		187.00	187.00
Prepaid Expenses		4,470.00	-
Grant receivable		400,000.00	400,000.00
Cheque Deposited but not credited		4,300.00	1,500.00
Postal Stamps in Hand		3,356.00	3,356.00
TDS Recoverable previous years		775,339.00	668,853.00
TDS Current Year		197,546.00	106,486.00
	Total (B)	**7,285,307.57**	**10,990,050.06**
GRAND TOTAL (A+B)		**87,026,091.81**	**60,549,702.10**

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

PARTICULARS		31st MARCH, 2021	31st MARCH, 2020
VI.	**INVESTMENTS (Corpus Fund)**		
A	Fixed Deposits with Banks	289,422,211.00	289,422,211.00
	Interest Accrued on FDR	*515,724.00*	811,105.61
B	IREDA- NIBE Award Sweep Account	12,322,400.00	11,672,400.00
	Interest under MOD of NIBE Award	550,000.00	650,000.00
	(Transferred from Deposit A/c)		
C	MOD with Bank for Corpus	-	-
	Interest under MOD for Corpus	-	-
	(Transferred from Deposit A/c)		
	TOTAL	**302,810,335.00**	**302,555,716.61**

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF BIO-ENERGY

(A Society Registered Under the Registration of the Societies Act, 1860)

IV: Fixed Assets and Depreciation Schedule as on 31.03.2021

RATE OF DEP	PARTICULARS	WDV AS ON 31.03.2020	ADDITIONS MORE THAN 180 DAYS	LESS THAN 180 DAYS	DEDUCTIONS/ ADJUSTMENT	WDV AS ON 31.03.2020	Depreciation	W.D.V. AS ON 31.03.2020
-	Land	7,500,000.00	-	-	-	7,500,000.00	-	7,500,000.00
-	Land & Site Related Dev Works	1,285,066.00	-	-	-	1,285,066.00	-	1,285,066.00
0.15	Plant Mach & Equp Office-I	47,760.00	-	-	-	47,760.00	7,164.00	40,596.00
	FURNITURE, FIXTURE,OFFICE & HOSTEL EQUIPEMENTS							
0.40	Computer & Printrer	11,592.00			-	11,592.00	4,637.00	6,955.00
0.10	Furniture & Fixtures	1,792.00			-	1,792.00	179.00	1,613.00
0.15	Office Equipments	1,046,554.00				1,046,554.00	156,983.00	889,571.00
0.15	Refrigerator	36,841.00				36,841.00	5,526.00	31,315.00
	Project Bio Crude Assets							
0.15	TBP Bio-Crude project	684,011.00			-	684,011.00	102,602.00	581,409.00
0.15	Gas Regulator	8,947.00			-	8,947.00	1,342.00	7,605.00
0.15	Hydrogen Gas Cylinder	7,048.00		-	-	7,048.00	1,057.00	5,991.00
	Project Bio Diesel Assets							
0.15	Diesel Engine Test Rig	444,207.00			-	444,207.00	66,631.00	377,576.00
0.15	Foundation Stone	25,318.00			-	25,318.00	3,798.00	21,520.00
0.15	Oxyen Gas Cylinder	2,372.00			-	2,372.00	356.00	2,016.00
0.15	Flash Point Apparatus	134,269.00			-	134,269.00	20,140.00	114,129.00
0.15	Kinematic Viscometer	100,454.00			-	100,454.00	15,068.00	85,386.00
0.15	Mechanical Stirrer	14,644.00			-	14,644.00	2,197.00	12,447.00
0.15	Petroleum Density Meter	269,743.00			-	269,743.00	40,461.00	229,282.00
0.15	Rotary Vaccume Evaporator	127,058.00			-	127,058.00	19,059.00	107,999.00
0.15	Soxhelt	21,066.00			-	21,066.00	3,160.00	17,906.00
	Prroject Bio Ethonal Assets							
0.15	Bio reactor	985,128.00			-	985,128.00	147,769.00	837,359.00
0.15	Gel Electrophoresis	75,042.00			-	75,042.00	11,256.00	63,786.00
0.15	Real Time PCR	427,009.00			-	427,009.00	64,051.00	362,958.00
0.15	SDS Page Electrophoresis	95,156.00			-	95,156.00	14,273.00	80,883.00
0.15	Gas Cylinder	4,394.00			-	4,394.00	659.00	3,735.00
0.15	Water Jacket Vessel	41,134.00				41,134.00	6,170.00	34,964.00
	Prroject Bio Gas Assets							
0.15	Infrared Thermometer	3,547.00	-		-	3,547.00	532.00	3,015.00
0.15	Equipments	23,774.00				23,774.00	3,566.00	20,208.00
	Project Bio Mass Cookstove Assets							
0.15	Gas Cylinder	34,654.00	-		-	34,654.00	5,198.00	29,456.00
0.40	Computer & Printrer	314.00				314.00	126.00	188.00
0.15	Office Equipments	35,115.00				35,115.00	5,267.00	29,848.00
	Project Indo Brazil Assets							
0.15	Equipments	1,111,280.00				1,111,280.00	166,692.00	944,588.00
	Scientific & Laboratory Equipments (12-13)							
0.15	Cook Stove	142.00			-	142.00	21.00	121.00
0.15	Fume Hood	26,348.00			-	26,348.00	3,952.00	22,396.00
0.15	Photo Bioreactor	4,150.00			-	4,150.00	623.00	3,527.00
0.15	Weight Scale 100 kg	2,170.00			-	2,170.00	326.00	1,844.00
0.15	Weight Scale 30 kg	1,550.00			-	1,550.00	233.00	1,317.00
	Plant & Machinery Equipments							
0.15	Air Compresser Machine	6,872.00			-	6,872.00	1,031.00	5,841.00
0.15	Fixed Drill Machine R/f 20mm	8,846.00			-	8,846.00	1,327.00	7,519.00
0.15	Gas cutting Set	9,811.00			-	9,811.00	1,472.00	8,339.00
0.15	Grinder Angle 100mm(Hand Grinder)	1,173.00			-	1,173.00	176.00	997.00
0.15	Hydrolic Power Hacksaw Machine	13,537.00			-	13,537.00	2,031.00	11,506.00

0.15	Lath Machine	92,890.00			-	92,890.00	13,934.00	78,956.00
0.15	Pana Machine(Arc Welding Set)	21,480.00			-	21,480.00	3,222.00	18,258.00
0.15	Pedestal Grinder 300mm	8,430.00			-	8,430.00	1,265.00	7,165.00
0.15	Tractor,Trolly & Equipments	212,075.00				212,075.00	31,811.00	180,264.00
0.15	Borewell with 2HP Submersible Pump	12,552.00			-	12,552.00	1,883.00	10,669.00
0.15	Drill Machine (GBM 10 MM Heavy)	1,026.00			-	1,026.00	154.00	872.00
0.15	Fire Extinguishar	34,718.00			-	34,718.00	5,208.00	29,510.00
0.15	Grass Moving Machine	440.00			-	440.00	66.00	374.00
0.15	Hmpv Fitting Lamp	16,440.00			-	16,440.00	2,466.00	13,974.00
0.15	Leveller	2,445.00			-	2,445.00	367.00	2,078.00
0.15	Projector	84,989.00			-	84,989.00	12,748.00	72,241.00
0.15	Tiller	3,403.00			-	3,403.00	510.00	2,893.00
0.15	Vehicle Car Ambessador (New)	133,368.00			-	133,368.00	20,005.00	113,363.00
0.15	Workshop Tools	122,700.00			-	122,700.00	18,405.00	104,295.00
0.15	Drill Hammer Rotary 26(hand Grinder)	4,066.00			-	4,066.00	610.00	3,456.00
0.15	Gas & Four Cylinders	2,856.00			-	2,856.00	428.00	2,428.00
0.15	Electrical Equipments	103,334.00			-	103,334.00	15,500.00	87,834.00
0.10	Guest Houes Assest/ Office Equipment.	66,964.00			-	66,964.00	6,696.00	60,268.00
0.10	Leddger	13,135.00			-	13,135.00	1,314.00	11,821.00
0.10	Plant Mach & Equp Office-II	3,154.00			-	3,154.00	315.00	2,839.00
	Scientific & Laboratory Equipments							
0.15	Air Oven (250 degree)	10,944.00			-	10,944.00	1,642.00	9,302.00
0.15	Bomb Calorimeter	137,749.00			-	137,749.00	20,662.00	117,087.00
0.15	Circ,Refrig,6Lt,STD(Auto Clave)	29,932.00			-	29,932.00	4,490.00	25,442.00
0.15	Data Acquisition System	96,566.00			-	96,566.00	14,485.00	82,081.00
0.15	Digital Ph.Meter	13,484.00			-	13,484.00	2,023.00	11,461.00
0.15	Incubator Bacteriological	11,387.00			-	11,387.00	1,708.00	9,679.00
0.15	Kern Analytical Balance (220gm)	13,318.00			-	13,318.00	1,998.00	11,320.00
0.15	Laboratory Refrigerator	162,948.00			-	162,948.00	24,442.00	138,506.00
0.15	Laminar Airflow Horizontal	14,164.00			-	14,164.00	2,125.00	12,039.00
0.15	Megnetic Stirrer	8,833.00			-	8,833.00	1,325.00	7,508.00
0.15	Platorm Scale(Platform Balance)	4,169.00			-	4,169.00	625.00	3,544.00
0.15	Precision Laboratory Balance(610gm)	7,605.00			-	7,605.00	1,141.00	6,464.00
0.15	Water Bath	32,972.00			-	32,972.00	4,946.00	28,026.00
0.15	Automatic Sieve	81,374.00			-	81,374.00	12,206.00	69,168.00
0.15	Bio-Diesel Preparation Unit(England)	188,766.00			-	188,766.00	28,315.00	160,451.00
0.15	Biomass Gassifier	248,595.00			-	248,595.00	37,289.00	211,306.00
0.15	CHN Analyzer (Germany)	512,794.00			-	512,794.00	76,919.00	435,875.00
0.15	Fibretech Apparatur	59,175.00			-	59,175.00	8,876.00	50,299.00
0.15	Incubator Shaker(USA)	198,472.00			-	198,472.00	29,771.00	168,701.00
0.15	Micropipette	14,965.00			-	14,965.00	2,245.00	12,720.00
0.15	Portable Biogas plant	22,655.00				22,655.00	3,398.00	19,257.00
0.15	2 Gel Electrophrosis	282,278.00				282,278.00	42,342.00	239,936.00
0.15	Automatic Colony Counter	398,491.00				398,491.00	59,774.00	338,717.00
0.15	Bio Photometer	146,764.00				146,764.00	22,015.00	124,749.00
0.15	Co2 Incubator Shaker	346,830.00				346,830.00	52,025.00	294,805.00
0.15	Gas Flow Meter	298,176.00				298,176.00	44,726.00	253,450.00
0.15	Dry Bath	23,437.00				23,437.00	3,516.00	19,921.00
0.15	Electroporation Unit	70,118.00				70,118.00	10,518.00	59,600.00
0.15	Filter Paper Type SMP Sysytem	81,036.00				81,036.00	12,155.00	68,881.00
0.15	Flue Gas Analyser	678,424.00				678,424.00	101,764.00	576,660.00
0.15	FTIR Spectometer (FTIR 660)	641,374.00				641,374.00	96,206.00	545,168.00
0.15	Gradient PCR (Mastercycler Nexus GX2)	184,692.00				184,692.00	27,704.00	156,988.00
0.15	Hot Plate Cum Magnetic Stirrer	19,196.00				19,196.00	2,879.00	16,317.00
0.15	Precision Microbalance	57,391.00				57,391.00	8,609.00	48,782.00
0.15	Ultrasonic Cleaner	13,248.00				13,248.00	1,987.00	11,261.00
0.15	Refrigerated Centrifuge (Germany)	125,086.00				125,086.00	18,763.00	106,323.00
0.15	TG DTA (STA6000)Singapore	284,367.00				284,367.00	42,655.00	241,712.00
0.15	Ultra Low Freezer(Deep Freezer)(USA)	108,148.00				108,148.00	16,222.00	91,926.00

0.15	U V Vis Spectrophotometer(Singapore)	166,143.00				166,143.00	24,921.00	141,222.00
0.15	Autoclave	44,898.00				44,898.00	6,735.00	38,163.00
0.15	Auto Emission Analyzer	109,034.00				109,034.00	16,355.00	92,679.00
0.15	BOD Incubator	148,861.00				148,861.00	22,329.00	126,532.00
0.15	Carbon Monoxide Indicator	4,436.00				4,436.00	665.00	3,771.00
0.15	Circulatory Water Bath	54,068.00				54,068.00	8,110.00	45,958.00
0.15	Gas Chromatography	934,569.00				934,569.00	140,185.00	794,384.00
0.15	Microscope	50,181.00				50,181.00	7,527.00	42,654.00
0.15	Muffle Furnace 1200 (1400)	12,768.00				12,768.00	1,915.00	10,853.00
0.15	Muffle Furnance 1100 (1400)Degree	9,484.00				9,484.00	1,423.00	8,061.00
0.15	Vaccum Oven	48,092.00				48,092.00	7,214.00	40,878.00
0.15	Gas Regulator	2,449.00				2,449.00	367.00	2,082.00
0.15	Water Purificati0n System	256,103.00				256,103.00	38,415.00	217,688.00
0.15	Equipments	20,141.00				20,141.00	3,021.00	17,120.00
0.15	Automatic cell counter	191,229.00			-	191,229.00	28,684.00	162,545.00
0.15	Fluorescence Microscope	631,627.00				631,627.00	94,744.00	536,883.00
0.15	Hot air oven	234,786.00				234,786.00	35,218.00	199,568.00
0.15	incubator 104	46,040.00				46,040.00	6,906.00	39,134.00
0.15	irox diesel	1,021,687.00				1,021,687.00	153,253.00	868,434.00
0.15	Micro balance	822,159.00				822,159.00	123,324.00	698,835.00
0.15	Moisture analyzer	259,892.00				259,892.00	38,984.00	220,908.00
0.15	Muffle Furnance 1400	185,699.00				185,699.00	27,855.00	157,844.00
0.15	phase contrastmicroscope	425,349.00				425,349.00	63,802.00	361,547.00
0.15	Shaking Water Bath	170,069.00				170,069.00	25,510.00	144,559.00
0.15	Staked Enviroment Shaker	1,112,755.00				1,112,755.00	166,913.00	945,842.00
	Scientific & Lab. Equipments (For Bio-Dieseal Project)							
0.15	Circular Saw Ma chine	7,414.00				7,414.00	1,112.00	6,302.00
0.15	Differntail Scanning Calormiter	988,450.00				988,450.00	148,268.00	840,182.00
0.15	Gel Documents	324,346.00				324,346.00	48,652.00	275,694.00
0.15	High Mast Light	1,312,162.00				1,312,162.00	196,824.00	1,115,338.00
0.15	Homogenizer	148,512.00				148,512.00	22,277.00	126,235.00
0.15	HPLC	575,579.00				575,579.00	86,337.00	489,242.00
0.15	Lyophilizer	262,323.00				262,323.00	39,348.00	222,975.00
0.15	Oxidation Stabilty Apparatus	332,715.00				332,715.00	49,907.00	282,808.00
0.15	Ramsbotton Carbon Residue Apparatus	289,590.00				289,590.00	43,439.00	246,151.00
0.15	Street Light	1,449,457.00				1,449,457.00	217,419.00	1,232,038.00
0.10	Furniture & Fixture	10,069,625.00				10,069,625.00	1,006,963.00	9,062,662.00
0.40	Computer/Peripherals	2,026.00	32,794.06			34,820.06	13,928.00	20,892.06
0.15	Library Books	1,012,560.00		60,390.00		1,072,950.00	156,413.00	916,537.00
0.15	Cycle	76.00				76.00	11.00	65.00
	Misc Eqiupments (Cellphone)					-		
0.10	Misc Fixed Assets	43,458.00				43,458.00	4,346.00	39,112.00
0.10	Guest House Misc Assets	20,858.00				20,858.00	2,086.00	18,772.00
0.15	Guest House Equip Mach-I	3,810.00				3,810.00	572.00	3,238.00
0.10	Guest House Equip Mach-II	60.00				60.00	6.00	54.00
0.15	Land Site Related Dev Tubewell	247,785.00				247,785.00	37,168.00	210,617.00
0.10	Civil Works Building & Built Up Space	131,701,747.00	1,000,000.00	14,955,248.00		147,656,995.00	14,017,937.00	133,639,058.00
0.15	Mobile	1,247.00				1,247.00	187.00	1,060.00
0.10	Inaugration of Gate	7,174.00				7,174.00	717.00	6,457.00
0.15	Air Conditions	809,600.00				809,600.00	121,440.00	688,160.00

0.15	Hair refrigerator 601 Ltr	20,837.00				20,837.00	3,126.00	17,711.00
0.15	Digital Electronic Balance ML 204	32,010.00				32,010.00	4,802.00	27,208.00
0.15	Helium Gas Cylinder with Regulator	9,733.00				9,733.00	1,460.00	8,273.00
0.15	Online UPS 15KVA	73,933.00				73,933.00	11,090.00	62,843.00
0.10	Development of Gate	1,250,096.00				1,250,096.00	125,010.00	1,125,086.00
0.15	Panasonic Fax	2,686.00				2,686.00	403.00	2,283.00
0.15	Washing Machine	8,582.00				8,582.00	1,287.00	7,295.00
0.15	Gas Purification	24,588.00				24,588.00	3,688.00	20,900.00
0.15	Liquid Nitrozen	25,781.00				25,781.00	3,867.00	21,914.00
0.15	Bike Passion	18,970.00				18,970.00	2,846.00	16,124.00
0.15	Machinery (Assets)			17,894.07		17,894.07	1,342.00	16,552.07
0.15	Process Equipment		114,000.00			114,000.00	17,100.00	96,900.00
0.15	LG refrigerator	25,807.00				25,807.00	3,871.00	**21,936.00**
0.10	Sign Board	50,486.00				50,486.00	5,049.00	45,437.00
0.15	Water Purifiers	49,561.00				49,561.00	7,434.00	42,127.00
0.10	Stainless steel Doors	148,248.00			-	148,248.00	14,825.00	133,423.00
0.15	Rear Disk Rod	2,752.00	-			2,752.00	413.00	2,339.00
0.15	Sheet Cutting Machine	15,578.00	-			15,578.00	2,337.00	13,241.00
0.10	Water tank	-	12,000.00	-	-	12,000.00	1,200.00	10,800.00
0.15	Sheet Rolling Machine	23,355.00	-			23,355.00	3,503.00	19,852.00
0.10	Construction	830,992.00				830,992.00	83,099.00	747,893.00
0.15	Audio Video Conferencing Sys			1,139,286.00		1,139,286.00	85,446.00	1,053,840.00
0.40	Scanner	332.00				332.00	133.00	199.00
-	Office Buildings (Work in Progess)	2,333,100.00			68,685.00	2,264,415.00	-	**2,264,415.00**
0.15	Plant Assets			9,834.00		9,834.00	738.00	**9,096.00**
	Sub-Total	182,770,796.00	1,158,794.06	16,182,652.07	68,685.00	200,043,557.13	19,512,310.00	180,531,247.13

AUDITOR'S REPORT

The annual audited accounts of the Institute for the year 2020-21 has been prepared and duly audited by Internal Auditors M/s. Puri& Gupta Chartered Accountant, Jalandhar and Statutory Auditor M/s. K. Bhagat & Co., Jalandhar

SARDAR SWARN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

(AN AUTONOMOUS INSTITUTION OF MINISTRY OF NEW AND RENEWABLE ENERGY)
KAPURTHALA PUNJAB-144601

1. Accounting Convention

The Financial statements are prepared on the basis of historical cost conversion in accordance with the generally accounting principles and on the accrual method of accounting.

2. COMPLIANCE U/S 11(2) OF INCOME TAX ACT, 1961 FOR THE AMOUNT EARMARKED IN F.Y. 2015-16:

For compliance of section 11(2) of Income Tax Act, 1961 a sum of Rs. 1,60,00,000/- had been earmarked in F.Y. 2015-16 for construction of building mainly for Director's residence, hostel block etc. This amount was required to be utilized before 31.03.2021. Institute has utilized Rs. Rs. 1,59,55,248/- during the year under consideration and Rs. 44,742/- remains unspent which shall deemed to be income of the year under consideration.

3. Institute has received interest on corpus fund which has been kept in FDR with bank. The total amount of Interest received during FY 2020-2021 on FDR is Rs. 1,71,09,708.39/- out of which Rs. 1,00,14,000 has been transferred to income and expenditure account under the head Interest on FDR (Corpus Fund) and the same has been utilized for expenses of institute.

3. FIXED ASSETS

Fixed Assets are valued at cost of acquisition inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisition.

4. DEPRECIATION

Depreciation on fixed assets has been provided on Written down Value method as per rates specified in the Income Tax Act, 1961.

5. GOVERNMENT GRANTS

Governments of India, Ministry of New & Renewable Energy has sanctioned the establishment of Sardar Swaran Singh National Institute of Renewable Energy [SSS-NIRE] as an autonomous Institute of Ministry under the Societies Registration Act, 1860. During the year 2020-21, Rs. 115 Lakhs has been received for Salary.Rs.91 Lacs has been received for creation of Capital Asset and Rs.2.64 Crores has been Grant received for General Expenses. Total Grant received during the Year Rs.4.70 Crores. This makes a total grant of Rs. 89.95 Crores received from Ministry. Year

wise Grants received along with Interest earned which had been converted from Capital Fund to Grant –in-Aid has been given in following table:

YEAR WISE DETAILS GRANT RELEASED FROM MNRE TO SSS-NIRE

YEAR	GRANT RECEIVED (In Rs)	CUMMULATIVE GRANT (In Rs)
1998-1999	7,50,00,000	7,50,00,000
1999-2000	20,00,000	7,70,00,000
2000-2001		7,70,00,000
2001-2002	1,00,00,000	8,70,00,000
2002-2003	2,00,00,000	10,70,00,000
2003-2004	3,00,00,000	13,70,00,000
2004-2005	2,83,00,000	16,53,00,000
2005-2006		16,53,00,000
2006-2007		16,53,00,000
2007-2008	3,67,00,000	20,20,00,000
2008-2009	3,50,00,000	23,70,00,000
2009-2010	7,00,00,000	30,70,00,000
2010-2011	4,00,00,000	34,70,00,000
2011-2012	5,00,00,000	39,70,00,000
2011-2012 [Int. Utilized]	1,50,47,499	41,20,47,499
2012-2013	15,00,00,000	56,20,47,499
2013-2014 [Int. Utilized]	74,66,375	56,95,13,874
2013-2014	8,00,00,000	64,95,13,874
2014-2015	12,00,00,000	76,95,13,874
2015-2016	4,68,58,799	81,63,72,673
2015-2016[Int.Utilized]	91,41,201	82,55,13,874
2017-2018	1,00,00,000	83,55,13,874
2018-2019	1,00,00,000	84,55,13,874
2019-2020[Int.Utilized]	70,00,000	85,25,13,874
2020-2021	4,70,00,000	89,95,13,874

6. TAXATION

In view of there being no taxable income under Income Tax Act, 1961, provision for Income Tax has not been considered necessary. However, it is found from the Income Tax portal that the organization has pending outstanding liability of Income Tax which is as under:-

S No	Assessment Year	Amount (in Rs)
1	2015-2016	3,05,65,450.00
2	2016-2017	5,47,460.00

Appeal for the A.Y 2015-16 has been filed before Commissioner of Income Tax (Appeals) decision of which is still pending. In connection to A.Y 2016-17, assessment has been made under section 143(3) vide order 27.11.2018 with nil demand but demand of Rs.5,47,460/- has been still reflected inIncome Tax Portal.

Further, Portal is also showing default w.r.t. TDS payments also, details of which are as under:-

S No	Financial Year	Amount (in Rs)
1	2015-2016	130.00
2	2017-2018	120.00
2	2018-2019	6,100.00
3	2019-2020	48,510.00
4	2020-2021	22,100.00
	TOTAL	**76,960.00**

7. BALANCE CONFIRMATION FROM VENDORS

Balance confirmation from the various vendors is not available. To avoid the unnecessary incidences, it is essential to get the account statements of all the vendors at regular intervals. Submission of the accounts statements should be made mandatory for all the vendors in the future.

8. CURRENT ASSETS

Following is the list of Debtors/Loans & advances where in advances have been given for more than a year and have not been adjusted during the years.

Particulars	Date of Advance	Balance as on 31.03.2021(In Rs)
M/s. Casa New Delhi	17.07.2003	3,00,000.00
Sundry Advances	31.03.2015	41,055.49
Deejay corporation	2012	63,279.00
B.N. Construction	21-10-2014	5,00,000.00

The above advances are outstanding since long time, we recommend that proper action should be taken up for recovery from above parties and there should be regular review of the all the advances and to ensure that vendors are fulfilling their commitments as per the terms of work orders.

9. CURRENT LIABILITIES

Following is the list of creditors which are not paid for more than a year.

Particulars	Detail	Bal. as on 31.03.2021
Airport Handling Services	18.09.2012	67,369.00
Chemicot Scientific Gases	31.03.2016	3,810.00
Sigma Gases & Services	31.03.2018	6525.00
Arora Vikram & Associates	16.12.2019	18880.00
Statutory Audit FeesPayable	31.03.2017	9660.00

OTHER OBSERVATIONS

- In most of cases, GST Number of the Institute is not mentioned on the bills.
- Institute has claimed GST Input of Goods and Services which is not utilized for providing taxable services. As per the provisions of Goods and Service Tax Act, if Outward Supply is exempted then GST input used for providing the supply is not eligible for claim. So it is hereby advised to claim of input of only those bills which are related with taxable supply. Otherwise, it should be part of expenses and duly recorded in respective heads.
- During the Audit, Institute has received interest on electricity deposit duly shown in 26AS but amount deposit as electricity security deposit not found in books of accounts.
- Bank Balance Confirmation Certificate has been obtained from PNB bank and has shown a Closing Balance of Rs.2643/- But there is no entry in our Books of Accounts. It is required to confirm the nature of these deposits and why the same are not been accounted for in Books of Accounts.

11. Following is the detail of cheques deposited but not cleared as on 31.03.2021.

Sr.No.	Particulars	Instrument/Demand Draft No.	Amount
1.	Anil Mess Services	080117	4300.00

12. Following is the detail of cheque issued but not presented as on 31.03.2021:

Sr.No.	Particulars	Instrument/Demand Draft No.	Amount
1.	Salary and Allowances Payable	BP No.275	20,000.00
2.	M/s Guru Nanak Taxi Stand	BP No.277	7,000.00
3.	Punjabi Brother's Kapurthala Taxi Stand	BP No.276	8,000.00
4.	M/s Anil Mess Services	BP No.280	54,595.00
5.	Executive Engineer PWD	BP No.279	12,00,000.00
	Total		**12,89,595.00**

Place : Jalandhar City
Dated : 14.10.2021
UDIN: 21017902AAAABR7641

For K. Bhagat & Co.
Chartered Accountants
Partner

Reply of Observations of Statutory Auditor as per Audit Report for F.Y.2020-2021

Sr.	Auditors Observations (Clause 10 of Report)	Action Taken by NIBE
1.	In most of cases, GST Number of the Institute is not mentioned on the bills.	The matter is taken up with the respective divisions. The GST number has been also circulated to the vendors for inclusion in bills.
2.	Institute has claimed GST Input of Goods and Services which is not utilized for providing taxable services. As per the provisions of Goods and Service Tax Act, if Outward Supply is exempted then GST input used for providing the supply is not eligible for claim. So it is hereby advised to claim of input of only those bills which are related with taxable supply. Otherwise, it should be part of expenses and duly recorded in respective heads.	The matter has been noted and is taken up with Internal Auditor as well. It is proposed to sort the issue within FY 21-22
3.	During the Audit, Institute has received interest on electricity deposit duly shown in 26AS but amount deposit as electricity security deposit not found in books of accounts.	The NIBE has taken up the case with PSPCL. The details of the interest and security deposit will be updated within FY 21-22
4.	Bank Balance Confirmation Certificate has been obtained from PNB bank and has shown a Closing Balance of Rs.2643/- But there is no entry in our Books of Accounts. It is required to confirm the nature of these deposits and why the same are not been accounted for in Books of Accounts	The matter was taken up with OBC Bank during Jan 2021. The delay (till end of FY 2020-21) in clearance was mainly due to merger of bank with Punjab National Bank. The matter is taken up again and the balance of Rs. 2643/- will be transferred in main account of Project to settle the accounts within FY 21-22.

ONLINE PRESENCE

SSS National Institute of Bio Energy
@SssNibe

While we at @sssnibe are working in research and development in the field of Bioenergy, we had some wonderful guests at our door step.
Our National Pride, @mnreindia newly joined Scientist B.

@sssnibe Committed for a Bioenergy future.

4:47 PM · Mar 31, 2021 · Twitter Web App

SSS National Institute of Bio Energy
@SssNibe

3 Day National Training Program Concluded on High Note, With Inauguration of Common Facility Block at @SssNibe, by Sh Dinesh Jagdale Joint Secretary, Ministry of New and Renewable Energy.

@mnreindia
#skilldevelopment #training #renewableenergy

6:50 PM · Mar 12, 2021 · Twitter Web App

SSS National Institute of Bio Energy
@SssNibe

Three days National Training Program on Renewable Energy started on 10th March at @SssNibe !!!

#Skilldevelopment #Training #renewables #energy
@mnreindia @biogasindia @minmsme

9:12 AM · Mar 11, 2021 · Twitter Web App

Sardar Swaran Singh National Institute of Bio Energy, Kapurthala

(An Autonomous Institution of Ministry of New and Renewable Energy)

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