

PRESPL : PIONEERING THE INDIAN BIO-ENERGY SECTOR WITH INNOVATIVE REFINEMENT-ORIENTED BIOMASS SUPPLY CHAIN MANAGEMENT, FOR ENHANCING MULTI-SPECTRUM BENEFITS WITH SUSTAINABLE DEVELOPMENT & GROWTH

1. **Introduction.** Punjab Renewable Energy System Private Limited (PRESPL), is the 'Leading Indigenous' Indian entrepreneur-cum-contributor in Biomass Supply Chain Management, in India, since 2011. PRESPL has served the farmers and the industry with amicable Bio-Energy and Biomass solutions through acceptable business models; while enabling the villagers to gain entrepreneurial acumen, and PRESPL has spearheaded the Biomass Sphere by contributing to Policy Making, Technology Enhancements and has also taken up intricate and detailed Biomass Assessment Studies, across the spectrum of India and some abroad; to enable an accurate understanding of the varied trends in biomass availability, it's consumption pattern; while also identifying potential locations on basis of analysis of both secondary and primary levels data. Journey of PRESPL till date has been through the following timelines: -

- (a) **1961.** Bermaco set up as manufacturing company.
- (b) **2000.** Handled 165 MW EPC power project in Kochi & took over an ailing 10 MW plant in Jhalkheri, Punjab from PSEB under O&M Performance Contract.
- (c) **2002.** Successfully re-commissioned PSEB's 10 MW paddy-straw based power plant.
- (d) **2004.** Became involved in setting up captive power plants and in after-sales support.
- (e) **2005.** Bermaco Energy Ltd set up as a dedicated venture of the group into the Power sector & also, received Licenses for execution of 96 MW worth biomass projects in Punjab.
- (f) **2010.** Punjab Biomass Power Limited Commissioned 12 MW, India's first private Paddy-straw based Power plant.
- (g) **2011.** 'Incorporation' of PRESPL to cater for biomass fuel.
- (h) **2015.** PRESPL entered into Briquette manufacturing to cater to the ever-rising demands of varied process industries.
- (i) **2016.** PRESPL entered into Steam Supply Contract business in Top Grade process industries.
- (j) **2017.** PRESPL initiated new ventures for boiler O&M and Boot model.
- (k) **2018.** Working with OMCs for various differently modeled bio-fuels projects, including Biomass Assessment Studies.

2. **Focus Areas of PRESPL.**

- (a) Provide impetus to the Government and Industry initiatives in the Clean Energy Sector.
- (b) Adhere to Climate Change Agreements and Accords; in sync with Government policies and Pollution Control Board norms.
- (c) Contribute towards conservation of environment and reduction of pollution.
- (d) Create avenues for skill development and entrepreneurship in villages and enhance awareness amongst farmers, rural community and stakeholders.
- (e) Provide jobs in rural India and bring financial inclusion to people; while enhancing their living standards. The Village Level Entrepreneur (VLE) model created, executed, refined and tested by PRESPL, is one of a kind in the Biomass Sector in the world and has been highly successful too.
- (f) Provide competitive offtake models to industries and Government projects based on biomass.
- (g) Develop better Public-Private Partnerships through Joint Ventures and other Business-Models.
- (h) Effectively contribute towards 'Swachh Bharat' (A Clean India Initiative under aegis of the Government of India) and create Waste-to-Wealth opportunities in the Biomass Sphere.
- (i) Ensure 'Double Income' for farmers and generation of higher revenues for them in an endeavour to contribute more towards their doubling of their incomes in the years ahead.
- (j) Aid in creation of and contribution to the envisioned National Biomass Exchange.
- (k) Spread awareness about Carbon Neutrality, Biomass fuels, projects and industrial benefits under the ambit of Government policies and world institutions and treaties where India is a signatory.

3. **Mutual Benefits of a 'Strategic Partnership' with PRESPL.** The following key benefits accrue to a Client while selecting PRESPL engaging in projects in the future; albeit through a 'Strategic Partnership':-

- (a) Vast experience will be shared in the domain of Biomass Sphere.
- (b) Reviving and handling of sick Government Biomass / Energy projects will be smoother, in the future.
- (c) Commercially mutually-benefitting prospects for future Bio-Energy projects.

- (d) Leverage the vast Biomass Supply Chain being managed by and quantum of assured biomass available to PRESPL, in the Indian Sector as well as for exports; as and when the regulations are conducive.
- (e) Complete Project Management; from village fields to offtake industry.
- (f) Hybrid biomass energy-generation projects (Solar and Hydel) in the future.
- (g) Energy Co-generation Plants operation.
- (h) Establish Public-Private Partnership with joint venture in varied Biomass-related projects in India and abroad.
- (i) Enhanced accuracy of Biomass Studies in regions, states and nationally with resource and database sharing from governmental agencies and effective field trips and collation by PRESPL.
- (j) Give impetus to proposed Global and Domestic Bio-Energy Projects including Bio-Refineries which will primarily work on biomass.
- (k) Enable achievement of Government initiatives into fields of Climate Change, Environment including reducing use of fossil fuels and Bio-Plantation, Pollution Control, 'Swachh Bharat', Skill India, Make in India, while increasing jobs, financial inclusion etc.

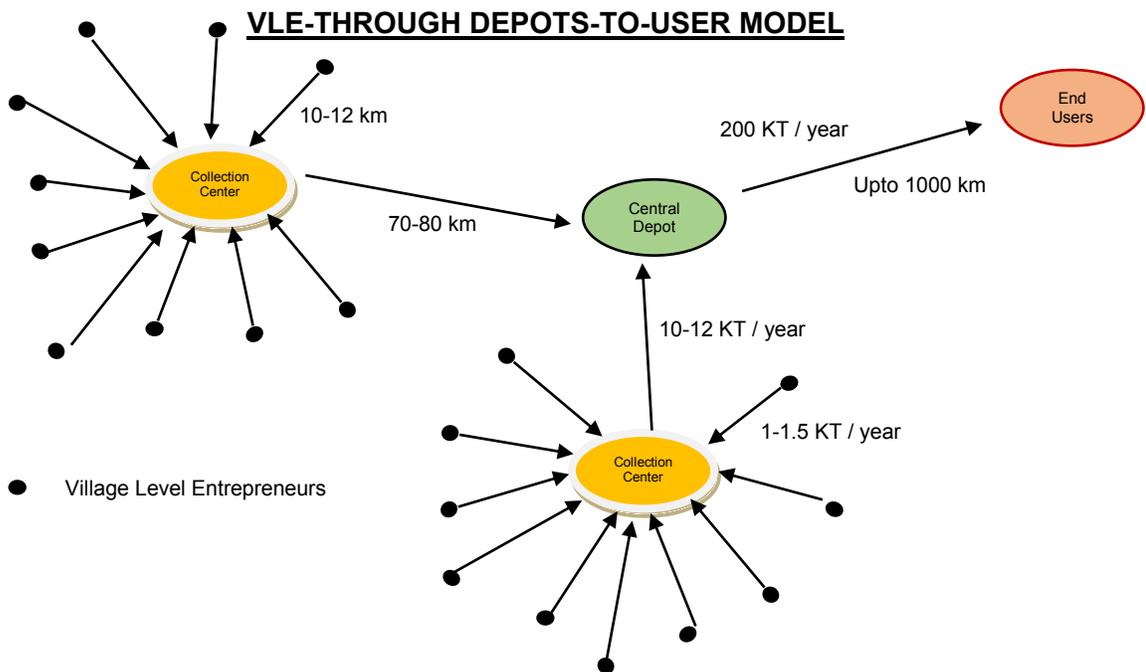
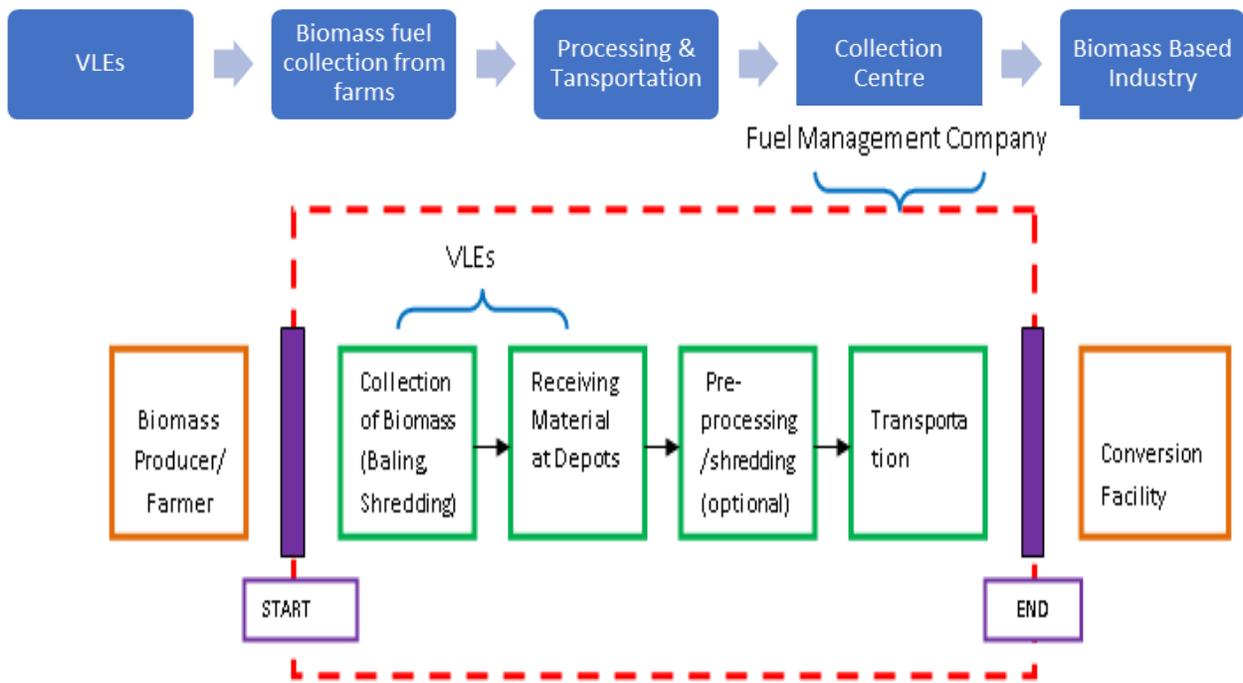
4. **Business Model.** In order to develop biomass supply chain to power plants and other process industries, identification and training of rural youth is done to develop them as "Village Level Entrepreneurs" (VLEs). VLEs are provided with necessary training, machinery such as shredder, balers etc. and are given responsibility of collecting biomass from individual farmers, processing and transporting to power plant and process industries. VLEs are paid at pre-determined rates for biomass supplied to the plant. This biomass model is unique and innovative on following account:

- (a) PRESPL enters into long-term fuel supply agreement with clients with pre-decided price and schedule of supply and guarantying quantity and quality of fuel supply. PRESPL acts as single point solution for all fuel needs of the client.
- (b) PRESPL is providing additional source of revenue to the farmers through sale of the feedstock; which otherwise used to be burnt or, left in open fields; leading to deadly particulate and methane emissions. Burning of biomass in boilers with necessary pollution control equipment, not only prevents pollution but also leads to clean and renewable power generation. For every 10 MW biomass-based power plant, about 56000 MT per annum of carbon dioxide generation is avoided.
- (c) Rural income and employment generation to whole rural chain involving VLEs, farmers and rural youth. For collection, storage and supply of biomass, many tractors, trolleys and other farming equipment are also involved by the local farmers; which results in additional use and source of income to the local farmers. Biomass power plant requiring 450 MT per Day, delivers an estimated 1421 "green jobs" within the rural community through the collection of biomass waste, transportation and collection operations and total income generation of US\$ 1.5 Million.

(d) Biomass residues such as cotton stalk, Juliflora, maize cob etc. have multiple end uses such as power generation, generation of Bio-Fuels and Bio-chemicals, Bio-Gas and Bio-CNG production; which have immense economic value.

(e) Training and development of more than 500 rural youths to become “Village Level Entrepreneurs” (VLEs) who collect, process and transport biomass to power plants and are paid for biomass delivered to the plant; resulting in both skill development and employment generation with a boost to rural economy. On an average basis, each VLE is able to deliver about 350 MT of chipped cane trash to the power plant and earns net income of about USD 2500 per annum. There is net income generation of USD 1.25 Million per annum to VLEs, on account of biomass aggregation and supply business.

5. **Biomass Supply Chain Management Model.**



6. **PRESPL Indulgence.** PRESPL participates and leads in the following models of Biomass Sphere: -

- (a) Biomass supply chain; from farmers through VLEs till industry, with adequate earnings and profits for stakeholders.
- (b) Operating and Maintenance (O&M) projects for broilers installed by the industry. The off-take is generally in form of Process Steam and billed at the rate of the steam supply.
- (c) Build, Own, Operate and Transfer (BOOT) model; wherein a project is installed and operated by PRESPL over long-term contract (5 to 10 years or, more with Extension Claus built-in); while the off-take is billed as per Contract Rates.
- (d) Biomass Assessment Studies are being done on a commercial basis for major industries including MNCs; both in India and abroad. These studies deal with regional and national greenspaces and give insights into the Biomass Sphere with ample leads into the future scenarios; all tailor-made to suit the client.
- (e) Bio-Plantation is a commitment-oriented drive of PRESPL; which fosters aims of the Government as well as the industry.

7. **Key Measures and Challenges of the Model.**

(a) **Key Measures.**

- (i) Creating awareness among the rural population, especially among the youth about biomass utility and sensitizing them about the health and environmental hazards of burning biomass in open fields.
- (ii) Empowering them with the help of appropriate training and skill-development programs to capitalize on opportunities available in biomass sector.
- (iii) To involve in energy plantations, ensuring job opportunities for rural youth as well as minimize environmental damage.
- (iv) To set up smaller, decentralized bio-energy plants in rural areas to generate jobs in rural sector and also encourage farmers to become entrepreneurs by setting up similar plants in their landholdings.
- (v) To arrange loans for potential entrepreneurs to capitalize the income opportunities in biomass sector.
- (vi) To participate in waste water management in rural areas ensuring minimal health hazards and groundwater / river water from getting contaminated.

(b) **Challenges.**

- (i) The biggest and most threatening challenge our country faces today is the "age old practice of burning the crop-residues, which has become a habit". PRESPL has observed in its project area of Punjab where paddy is grown on

large scale, that it is a general practice of farmers to burn down the dried paddy straw right in the fields for various reasons; be it their understanding that it acts as manure for forthcoming crop and improves the soil quality. In the past, there was no utility of crop-residues other than fodder or domestic fuel, so farmers did not know what to do with it other than burning. It has gradually become a habit from practice to burn it down, as little do they know about what environmental hazards this practice contributes to in the long run. Besides, it is also becoming a cause of concern for air traffic control.

(ii) Financial support through larger Working Capital to cater to large-scale Biomass Supply Chain and Bio Energy Projects operations.

(iii) Funding for larger operating costs to support the Biomass Supply Chain including creation of State-of-the-Art storage facilities, procurement of machines including imports etc.

(iv) Synergy in working with Government organisations including IREDA for initiating an environment through policy making and implementation of Green Energy and Pollution Norms, with reduction in use of fossil fuels. The time taken for financial assistance to fructify is a major challenge in the growth of the Biomass Sector; which calls for sustained Working Capital and dedicated Operating Costs for fresh projects.

(v) Greater cooperation and synergy development with Government agencies like NAFED etc which could co-partner in the Biomass Supply Chain.

(vi) Encouraging more entrepreneurs, through policy measures, in the Biomass Sector; both in Supply Chain and Bio Energy, to enable more benefits for the farmers and the Nation in the long run.

8. **Key Impacts and Financial Benefits.**

(a) **Key Impacts.**

(i) Approximately 1000 villages have participated in the Biomass Supply Chains initiated by PRESPL in the last seven years.

(ii) More than 500 Village Level Entrepreneurs (VLEs) are partnering with PRESPL in this endeavour.

(iii) More than three lacs MT of Biomass has been aggregated by PRESPL in the last seven years and the prospects have just gotten better and larger for the next few years.

(iv) PRESPL has gainfully assisted the Rural India Sector by generating more than 2500 green jobs of varied nature in last few years. Total man-days per season amounts to 6,26,086 and approximately 300 women have been employed with the PRESPL Workforce.

(v) Approximately one lac units of Process Steam has been supplied to industry through Biomass in last three years or so.

(vi) Carbon footprint has been reduced approximately by 0.19 Million Metric Tonnes where the Bio Energy Projects are currently running. This small change towards biomass use is an indicator of the challenges involved in aggregating biomass and creating offtakes; as it still is not a 'Recognised Sector'.

(vii) Awareness for processing agri-residues into the Biomass Supply Chain has been enhanced in more than 100 districts including Punjab, Haryana, Maharashtra, Karnataka, Goa, Bihar etc.

(viii) Major industry players like PepsiCo, Cipla, Sun Pharma etc have joined hands in partnership with PRESPL and have Biomass Process Plants running which is contributing positively towards the country's Climate Change initiatives.

(ix) The jobs generated by PRESPL have impacted approximately 20000 citizens and their livelihood prospects, through the various layers of involvement in the Biomass Supply Chain.

(x) The endeavour in the Biomass Supply Chain has given a boost to both machines production manufacturers and the transport agencies locally in the areas where projects are running.

(xi) Income of participating farmers has been enhanced by USD 1000 to 2500 per annum and these farmers have clearly understood the benefits of not burning crop residues and farm waste.

(xii) PRESPL has projected business propositions of more than 300 Crores for the next three years; subject to Government policies and acceptance of the business propositions by industry and financiers.

(b) **Financial Benefits.**

(i) Farmers get added double income and profits from the sale of agri-residue; with average per capita income growth by USD 1000 to 2500.

(ii) Employment benefits, through additional job creation with the Biomass Supply Chain Management structures, are enhanced. 750 to 1500 jobs per day are created only through the Biomass Supply Chain, till the Delivery Point; depending on the type of feedstock used.

(iii) Product sales for manufacturing sector dealing with manufacture of Biomass Sphere products and spares, is assured for a long-term in this Sector.

(iv) Internal Rate of Return (IRR) benefits (Ranging from 25 to 35 percent) for the Biomass Supply Chain companies and Investors is assured; given the enormous availability of feedstocks and scope for Bio-Energy Sector in India.

(v) Improving environment by reducing use of fossil fuels, bettering health prospects, ushering Clean Energy compliances, cost savings across the current expenditure spectrum etc; thereby accruing huge savings in the long run for any

economy and also citizens, which will eventually lead to better standard of living too.

9. **Envisaged Growth and Effective Contribution Towards Clean India by Year 2020.**

The Biomass Supply Chain has limited Government support but has immense potential to supervene Government policies towards Climate Change and 'Clean and Green India'. The Multi-National Companies (MNCs) in India are committed due to international norms to reduce their carbon footprint and this awareness is gradually dawning on the Indian industry as well. PRESPL through its initiatives in varied aspects related to Biomass, has been able to carve a niche in the Biomass Supply Chain and is pioneering numerous endeavours in interest of farmers, industry, financiers and the Government; all contributing to the overall National effort of Green Energy, Clean Energy, Clean India, Green India etc. As awareness spreads and due to vast amounts of biomass availability in India, PRESPL will continue to play a positive and impactful part in the 'Biomass Growth Story of India' and this surge will be ample if congenial working environment is created through Government policies and financial assistance through the mid-term, with evolving 'Strategic Partnerships' with the Indian industry too. The projected growth is as enunciated below: -

- (a) Triple the Biomass utilisation for Clean Energy in next five years.
- (b) Enhance export of Biomass in next three years.
- (c) Double the number of Village Level Entrepreneurs involved in the Biomass Supply Chain by year 2020.
- (d) Create a Biomass Exchange and State-of-the-Art Storage Facilities for Biomass stocking etc, in consonance with Government initiatives in the storage field of Biomass.
- (e) Achieve a quantum leap in employment avenues in the rural sector through Biomass Supply Chain and Bio Energy Projects in the next five years.

10. **Seeking Bio-Opportunities.** Summation of the positive effects of the pioneering work being done by PRESPL is tabulated below: -

- (a) Community involvement is much higher in this business model; which involves farmers at grassroot level, teams up with Village Level Entrepreneurs (VLEs); something which is unique to this model and has been devised by PRESPL since year 2011 and it shares partnerships with financial institutions and partners; all as stakeholders. This enhances the commitment of each player in the business.
- (b) The model encourages to spread awareness and ensure that farmers do not burn the agri-residue. This directly impacts the pollution levels and over a period of time, the pollution levels have decreased and with more such initiatives, the quality of air will improve. This endeavour, apart from creating a viable business model for all stakeholders, involves communities and builds a consensus for the Biomass Supply Chain.
- (c) The Neo-Concepts applied by PRESPL, promote enhancement of involvement of farmers, VLEs, financial institutions etc and over a period of time, promise to multiply the stakeholders exponentially; while meeting the stated objectives of the Govt of India and its commitment to Climate Change.

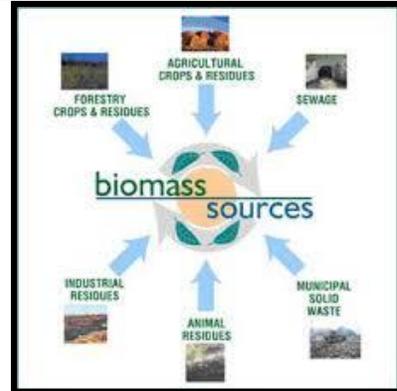
(d) The business model promotes manufacturing and greatly enhances 'Make In India' viability of machines involved in various processes of Biomass Supply Chain, as well as Bio Energy and Hybrid (Solar and Hydel) projects.

11. Biomass is an emerging sector in India which has tremendous scope for growth; given its umbrella of creating jobs and enhancing revenues for farmers and also accruing savings for industry, abundant and surplus availability, economy of creating and supporting off-takes, being co-opted with Hybrid Energy sources (Solar and Wind), ability to gain Carbon Neutrality, focus on achieving Clean Energy with huge health benefits for citizens, a policy-driven global impact to reverse the Climate Change etc. PRESPL is currently executing projects with CIPLA, PepsiCo, Lupin, Sun Pharma etc and is in talks for finalisation of projects with other major MNCs operating in or, with near-future business ambitions in India, including some big-ticket Biomass Assessment Studies too. The range of offtake includes power and steam and talks are underway for Hybrid Biomass project with Solar companies. PRESPL endeavours to usher in a brighter and greener future in the energy sector with primacy of use of biomass which has far-reaching socio-economic benefits for citizens. PRESPL is at a cusp of a quantum leap into the Biomass Sphere with renewed vigour and expansion and looks forward to 'Strategic Partnerships' both in the Bio-Space as well as the Financial Sector to promote the much-needed Climate Change alternatives to fossil fuel use and for Clean Energy.

PRESPL : ENERGISING THE BIOMASS SUPPLY CHAIN SECTOR IN INDIA SINCE 2011



**TOWARDS
A
BETTER
GREEN
FUTURE**



FROM 'BURNING CHALLENGES' TO CREATING AN ERA OF EVER-GROWING 'GREEN SMILES' IN OUR "CLEAN-GREEN INDIA"