



## राजस्थान राज्य प्रदूषण नियन्त्रण मण्डल

4, संस्थानिक क्षेत्र, झालाना डूंगरी, जयपुर

फोन नं.: 5101871,5101872, ईपीबीएक्स: 5159600,5159699 फैक्स: 5159694-97

F-12(Project-133)/RPCB/PSC/186

DATE: 31/5/18

### Award Letter

Subject: IInd prize in Green-a-thon – 2018 : Job Work of the Project of Rs. 10.00 Lacs to Second Prize Winner Team - Krimanshi.

**Team Members:-**i. Sh. Nikhil Bohra, B.Tech (Biotechnology),  
ii. Sh. Samarpit Agarwal, MBA Marketing & Finance.

Sir/Madam,

Rajasthan State Pollution Control Board is pleased to assign job amount to Rs. 10.00 lacs as IInd prize in the event Green-a-thon – 2018 (Rajasthan IT day, 2018) to your team (Member as referred above). The project proposals submitted by your team to the State Board were examined and the State Board is pleased to accept your proposal to carry out research project as job work in association with RSPCB for "The team propose to up cycle wastes like fruit leaves, fruit and fruit remains, and vegetable wastes into nutritive feed silages and supplements for cattle rearing, and propose to collect 1) daily fruits and vegetables, leaves, stems and stalks waste from urban mandis in and around Jaipur and 2) Wastes from juice shops and hotels and 3) Seasonal farm wastes from Rabi and Kharif crops from farms in Jaipur district" with following terms & conditions:-

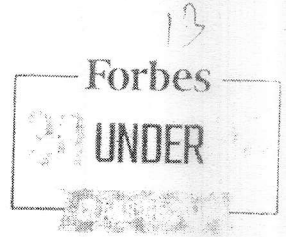
1. That the project will be executed as per your project report submitted on 27.04.2018 which is now the part of this work order (annexure-1).
2. That the total award money to be given for the project shall be Rs. 10.00/- lacs.
3. That the State Board will appoint a mentor for supervision and guidance during project execution. The project work shall proceed as per guidelines given by the mentor.

*(Signature)*

*(Signature)*

KRIMANSHI TECHNOLOGIES PRIVATE LIMITED

27  
Project 133



To,

The Member Secretary,  
Rajasthan State Pollution Control Board,  
Jhalana Institutional Area,  
Jhalana Doongri, Jaipur,  
Rajasthan 302004

Dated: 27<sup>th</sup> April 2018

Sub: Regarding submitting final project plan for project execution and fund utilization

Dear Sir,

We are glad to be selected as one of the projects to be funded under Green-a-thon 2018. It has been a great pleasure of mine to brainstorm our project with you and to get your valuable feedback to iterate our proposal.

Please find attached our detailed project proposal with this email with details of ask of Rs. 10 Lakhs and the fund utilization plan. We look forward to your acceptance of the proposal and the release of first tranche of grant award.

Thanking you!

Yours Truly,

Nikhil Bohra,  
CEO,

krimanshi

Krimanshi Technologies Pvt. Ltd.

# krimanshi

1. Name of Project:- Krimanshi
2. Details of Project team (Name, Contact No., Email ID, education):-
  - o Nikhil Bohra, 7742863302, [nikbohra88@gmail.com](mailto:nikbohra88@gmail.com), B. Tech. Biotechnology
  - o Samarpit Agarwal, 9928849428, [samarpit.agarwal@gmail.com](mailto:samarpit.agarwal@gmail.com), MBA Marketing and Finance
3. Detail of Firm (if any):- Krimanshi Technologies Pvt. Ltd.
4. Project Summary:- Everyday, hundreds of tons of fruits and vegetables are brought into our cities to urban mandis, say Muhana Mandi in Jaipur. Along with the fruits and vegetables, leaves, stems and stalks also make their way into mandis which work as support to cover and provide stability to the major product during transportation. But these products are of no nutritional importance to humans, nor do they have any aesthetic value and are discarded at the mandi. We propose to upcycle such wastes like fruit leaves, fruit and fruit remains, and vegetable wastes into nutritive feed silages and digestive supplements for cattle rearing. Now this waste becomes a menace for Mandis where the City Nagar Palika gives additional contracts to the cleaning and disposal of such wastes. We propose to collect 1) daily waste from urban mandis in and around Jaipur and 2) Wastes from juice shops and hotels and 3) Seasonal farm wastes from Rabi and Kharif crops from farms in Jaipur district.
5. Problem Statement with respect to environment:- Each year millions of tonnes of farm waste is burnt off in India. Tonnes of grains and vegetables are left to rot either due to poor logistics and storage, or merely due to an excess yield. In addition to this, thousands of tons of vegetable, fruit and allied waste from urban and rural mandis is dumped off in landfills. It's sad to mention that despite all this, much of India's cattle is poorly fed. The idea of bridging the evident gap between the excess and the deficient is what motivated us to bring about this movement. Krimanshi is a triple bottom line company venturing into cattle feed production from farm, forest and urban wastes. We focus on manufacturing low-cost, high-quality concentrate feed and silage for cattle. With a direct link to farmer-producer organizations in western Rajasthan (India), our potential network

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25

can span upto nearly 2000 farmers. And although spreading this movement has been a challenge, we have witnessed some great results. From a 20% increase in milk production in our pilot project to creating livelihood for the unemployed and upcycling food waste, this movement has been making a gradual and sincere impact in its domain. With increased momentum our movement has the potential to address cattle rearing, waste management and unemployment simultaneously.

6. Objective:- To standardize and certify upcycled edible food waste, fruit waste, mandi waste, farm crop residues to start manufacturing nutritious low-cost cattle feeds solutions

7. Details of applicability area/Scope:-

We estimate a total of 10 tons or more of waste is generated daily in urban fruit and vegetable mandis in Jodhpur alone while the waste generated in hotels and juice shops is still unaccounted for. This waste is in form of dry and wet waste; including fruit and vegetable leaves, remains, crushed pulps etc. Now these are perishable wastes and start decaying in no time. These are usually dumped along with other wastes and are a cause of major Greenhouse Gas Emissions. We have already run a small pilot in Jodhpur to test the manufacturing, palatability and effect of upcycled wastes. **We are proposing to standardize the manufacturing process and to certify the products from esteemed research organizations.**

We propose to collect 1) daily fruit and vegetable waste from urban mandis in and around Jodhpur/Bikaner and 2) Wastes from juice shops and hotels and 3) Seasonal farm wastes from Rabi and Kharif crops from farms in Jaipur district. We will then upcycle them into nutritive silages or digestive mixtures depending on the physical properties and get the initial products standardized and certified.

8. Details of any prior permission required from the government:- NA; though the product development has to be standardized and certified.

9. Registration status under startup policy, if any:- Krimanshi Technologies is incubated at Startup Oasis Jaipur and is supported under INVENT program sponsored by DFID and Govt. of India.

10. Background information:- We work under the name as Krimanshi Technologies, a Jodhpur based social venture.

We started with the name "Cattle Mettle" ([www.cattlemettle.com](http://www.cattlemettle.com)) to bring back the real potential of our cattle population and aim to enhance milk production at grassroots by

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24

helping farmers make informed decisions about cattle's nutritional requirement and fulfilling it through right quality feeds at right costs. We are on a bold mission to reduce the cost incurred on feeding cattle by 20-30% by incorporating locally available food resources have been rendered as waste taken from mandi, juice shops, hotels, farms and forests and, be a part of next White Revolution. Our next step is to incorporate biotech add-ons to the feeds to increase overall absorption and efficacy of the feeds.

We have won one of the most coveted International prizes from the **United Nations Industrial Development Organization for Agri-business Innovations** at the EXPO Milano 2015 in Italy. We have recently been featured in **Forbes 30 under 30 Asia list of 2018** manufacturing technologies. We are incubated under INVENT program funded by DFID and Government of India at Startup Oasis, Jaipur.

**Operations:** We are currently procuring forest wastes like Mesquite pods (vilayati babool pods) and mandi wastes (fruits and leaves wastes) in Jodhpur and manufacture cattle feeds and silages. We are supplying feeds and silages to few dairies in and around Jodhpur. We have witnessed a 20% increase in the milk production with the induction of our feeds. We have recently inducted FPO under Ambuja Foundation in Jaitaran region in Pali which has over 2000 farmer members and have started conducting workshops and training. We are now trying to expand our activities by inducting farm wastes at a larger scale to enhance our production capacity and supplies.

11. Technology description:- Conventionally, silage had been made from grass crops, including maize, sorghum or other cereals, using the entire green plant (not just the grain). It is a fermented, high-moisture stored fodder which can be fed to cattle, sheep and other such ruminants. But in arid regions like Rajasthan, the fodder had always been stored in dried form, devoid of the qualities of the actual green plant fodder. However, tons of plant wastes come to every major mandi every day. These plant remains from mandis are of much nutritive value which can further be supplemented to be used as cattle fodder. Mixing these with other added components like molasses, minerals, calcium, salt, urea etc. to improve its quality and digestibility. This process could save millions of tons of plant remains from getting dumped, ensure supply of nutritious low cost fodder round the year across our nation and bring down the cost of milk production in longer run. Not only this, the large volumes of urban food wastes from hotels and juice shops could also be used to manufacture nutrient rich cattle feeds. Juice shop wastes can

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be mixed directly in silages or dried to manufacture digestive powders which could further enhance natural immunity among cattle.

As setting up of cooperatives and milk collection systems were the reason behind first white revolution, this practice of silage production from agri wastes ensuring nutritious fodder supply could trigger the next white revolution making India net exporter of milk and milk products.

12. Status of R&D:- We have run trials of silage production and dried digestive waste from banana leaves and oranges/mausambi wastes from mandis and juice shops in Jodhpur. We have achieved minimal fungal contamination levels in silage production which we were able to sell at Rs 8/ KG compared to other green fodder available at Rs 20/ KG. Animals showed gradual acceptability with increase in milk levels. We are yet to standardize and certify the products.

13. Technology acceptance at international/national level:- Lab researches are available for support of fermentation technologies in silage production from crop residues, banana leaves, palm leaves, pineapple wastes and many other fruit and vegetable wastes. Fruit wastes have also shown to increase the natural immunity among cattle. But these projects never took off at a larger scale due to operational and business constraints. With decrease in grazing lands and increase in costs of feeds, it is a high time for us to work on business process innovation and standardize mass scale production of upcycled food, fruit and vegetable waste to make it a viable proponent. Attached are the International reference of using different kinds of wastes in feed production:

- o <http://www.fao.org/wairdocs/TLRI/x5490E/x5490e0v.htm>
- o <https://ems.ctahr.hawaii.edu/gs/nandler/getmedia.ashx?moid=3795&dt=3&g=12>
- o [http://www.fftc.agnet.org/library.php?func=view&id=20110729161002&type\\_id=4](http://www.fftc.agnet.org/library.php?func=view&id=20110729161002&type_id=4)
- o [https://www.huffingtonpost.com/2011/12/05/orange-peels-cattle-feed\\_n\\_1129567.html](https://www.huffingtonpost.com/2011/12/05/orange-peels-cattle-feed_n_1129567.html)
- o <https://www.feedipedia.org/node/680>

14. Work plan (Methodology, time schedule):-

Tasks	Details	Month 1	Month 2	Month 3
Process Setup	Setup of machinery and establishing waste collection supply chain			

*Handwritten signatures and initials:*  
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22

Production	Production of silage and digestive mixtures			
Product testing	Silage and digestive mixture testing for all cattle feed test standards			
Field testing	Testing of standardized feeds on animas in field			

15. Details of place where work to be performed:- We propose to run a validation pilot in Jodhpur, manufacturing silage and cattle feeds from upcycled mandi waste and other fruit and vegetable wastes. We will follow an exhaustive testing regime to ensure the quality of the silage and digestive mixtures formed followed by extensive testing of feeds on cattle to understand the final impact on cattle health and milk production.

16. Detailed Budgetary Estimation:- (Break up of expenses on various heads)

Testing and Standardization:

Testing	Quantum	Cost	Units	Numbers	Total
Daily biochemical tests for Silage for 45 days	As per cattle feed standards	2000	5	30	300000
One time test for dried powders	As per cattle feed standards	2000	5	3	30000
Effect on cattle	Physical and Haemoglobin	1000	1	30	30000
Effect on milk production	Milk quantity and Fat%	100	1	50	5000
					<b>365000</b>

Operations:

Cost Heads	Description	Cost	Units	Numbers	Total
Solar Dryer	5 layered dryer for wastes	140000	1	1	140000
Thrasher	To chop wastes	30000	1	1	30000
Compressor/ Vacuum	To create vaccum	30000	1	1	30000
Pulverizor	To powder dried wstes	60000	1	1	60000
Labor	Full time	10000	2	3	60000
Researcher	Full time	15000	2	2	60000
Rent	Premises	15000	1	3	45000
Packagings and other RM	for silage	1.5	1000	90	135000
Travel and Misc	Field	250	2	90	45000
Consumables and Communications	Couriers, Sampling etc	200	5	30	30000
					<b>635000</b>

Total funds required: 3,63,000 + 7,14,000 = 10,00,000


- 17. How the project work be funded:- The project would be funded initially by grant and private equity in next steps. We are currently raising 1.2 Cr. for next 18 months to scale and have already got 43 lakhs in commitment so far.
- 18. Expected outcome:- Every transformation begins at the roots. Our aim at Krimanshi is to bring about cumulative changes across dairy farming domain and beyond. Our vision can be stated in one simple sentence: Better dairy production, employment opportunities and waste upcycling. Dairy farming is one such domain where the impact of input is quite direct and immediate. Our first and primary focus is providing good quality feed to India's poorly fed livestock. Looking at the results of our pilot project, a 10-20% increase in milk production can be projected with a 10% saving on feed costs. On a practical scale imagine this: With our program, a dairy farmer will be able to earn an extra USD per cow each day while saving at least USD 5 in feed cost per cow each month. The potentials of our venture are both intensive and extensive. Another dimension of our movement is creating employment opportunities. We are trying to create jobs especially for waste scavengers. Currently we have projected at least 16 direct and indirect jobs in waste collection, processing and logistics. Our third focus is especially dear to us due to its ecological value. The raw material for our product is majorly derived from waste upcycling. For this we are targeting agricultural waste, food waste and forest waste as well. Our whole vision is to bring a holistic solution to three different issues at hand.
- 19. Viability of project in terms of expenses and benefits:- We work at 10% margins at present. With better efficiency and scale that we will achieve in next 6-9 months, we could further decrease the cost of feeds and fodders and yet continue working at 10-15% margin level. The deeper essence of our work is to provide larger cost benefits to end users – dairy farmers.
- 20. Benefits from the projects (Estimated, financial etc.):
  - o Validation of production with proper standardization and certification.
  - o Liaison of inter-governmental organizations which would help in opening up new cross-functional opportunities
- 21. Details of any support required from RSPCB:-
  - o Place to work: It would be an added advantage for us if we could get a space to operate right at the source of waste generation. i.e. mandi.

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20

6

- Funding and scale: We are just at the beginning of the mammoth task ahead to manage our agri wastes. We aim to standardize and certify the products and scale to Jaipur. Our larger aim is to scale to other important mandis in state as well like Kota region and Hanumangarh region. We will need assistance from RSPCB to identify major hot-spots of waste generation and to establish in-situ processing units to upcycle wastes.
- Networking and Connections: Any social business is a success due to cross-linkages and market connections. Since we are upcycling waste into dairy inputs, we would like RSPCB to help us communicate the work across different Government bodies and help us benefit cattle and dairy farmers at large. We also need support to reach out to right partner for product certification and standardization.

22. Proposed release of funds expected from the RSPCB:-

Tranche 1	At start till feed standardization	6 lakhs
Tranche 2	At start of animal trials	3 lakhs
Tranche 3	At completion	1 Lakh

23. Details of recognition/patent of technology:-

- Forbes 30 under 30 Asia List, class of 2018
- United Nations Industrial Development Organization's International Agribusiness Award 2015 at Expo Milan, Italy
- Commonwealth Youth Asia Finalist 2016
- Asia-Africa regional winner at GSVC 2015 at UC Berkeley, USA
- Finalists for USAID's Securing Water for Food Program, Mass-Challenge Switzerland and NUS DBC Social /venture Competition, Singapore

24. Whether any technical support, hand holding is required for implementation of the projects:-

- Establishing waste supply chain
- Networking with cross departmental Government bodies

25. Enclosed :- Presentation Deck

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22<sup>nd</sup> April 2018

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