

**CITYCOMPOST / VERMICOMPOST  
PRODUCTION FROM MUNICIPAL  
ORGANIC/ GREEN WASTES IN PPP  
MODE UNDER RKVY**

**Project Cost. Rs. 780.00 Lakh  
YEAR : 2018-19 TO 2019-20**

**Submitted by  
Directorate of Horticulture,  
Odisha, Bhubaneswar**

## Executive summary

**Name of the project - Citycompost/ Vermicompost production from municipal organic/ green wastes under Rastriya Krishi Vikash Yojana in PPP mode.**

**Propose of Project -** In Bhubaneswar, from the vegetables markets, there is a huge accumulation of solid wastes in which the organic/ green waste is about 80%, which causes loss of resources and increased environmental risks. By open dumping and land filling of these green wastes causes environmental degradation and harmful diseases.

Composting is the most appropriate economical solution to overcome the problem due to these municipal wastes and reduce the volume of waste generated as well as provide nutrients for plants.

1. The organic / green waste will be segregated from the solid waste generated at 10 vegetables mandis of Bhubaneswar and Cuttack and will be converted to Citycompost and Vermicompost.
2. People/ Farmers/ Entrepreneurs will be given necessary training on such Organic composts and Organic farming to set up their own organic waste composting units. If required practical demonstration on Organic farming will also be arranged.

### **A. Proposed area-**

Total land requirement for this proposal is 6 Hectare and the project can be implemented if suitable Govt. land is allotted.

- (i) 1 Hectare land is required at 10 Nos. different vegetables markets of Bhubaneswar and Cuttack (10000-15000 sq. ft area / location).
- (ii) 5 Hectare land is required for Main Citycompost and Vermicompost Production Centre; at a radius of 30-40 km from Bhubaneswar.

<b>Estimated cost</b>	-	<b>960.00 lakhs</b>
<b>RKVY contribution</b>	-	<b>780 lakhs</b>
<b>PPP Entrepreneur share</b>	-	<b>180 lakhs</b>
<b>Scheme</b>	-	<b>Rastriya Krishi Vikash Yojana</b>

Sl. No.	Description	Area (Ha/ Sq.ft)	Cost norms	Total (In Lakhs)
<b>A</b>	<b>Land for project:</b>			
a	Land for main processing unit of Citycompost	4 Ha	Owned by Govt.	
b	Land for civil infrastructure at main processing unit	0.4Ha	Owned by Govt.	
c	Land for Green Waste Re-Producer Composting Machine and shredders installation nearby 10 vegetable markets 10000sq.ft area / location)	0.4Ha	Owned by Govt.	
<b>B</b>	<b>Civil Works</b>			
a	<b>Land development</b>		PWD	2.00
b	<b>Civil works at main processing unit</b>			
(i)	Fencing/ Compound wall, main gate	RMT	PWD	40.00
(ii)	Building & Civil Works for Offices, Laboratory, Raw materials and finish product store rooms, Machine room, treatment rooms, Training Hall with Accessories, Watchman's shed		PWD	160.00
(iii)	Water System (Bore well and supply system with over head reserve tank)	2Nos.	Agriculture	6.00
(iv)	Electrification with transformer		Electrical	7.00
(v)	Drainage for excess water collection system		PWD	4.00
(vi)	Concrete yards for drying and processing	2000sqm	PWD	45.00
(vii)	Cottages for Earthworms rearing and Vermicomposting	2000sqm	PWD	50.00
(viii)	Residential accommodation for labours	70sqm	PWD	5.00
(ix)	DGSET (25 KVA)		DGS & D	25.00
c	<b>Civil works at vegetable markets place</b>			
(i)	Sheds for GWRCM and shredders	10Nos.	PWD	30.00
(ii)	Concrete yards/ floor for preparation and processing	10 Nos.	PWD	15.00
<b>C</b>	<b>Plant &amp; Machineries</b>			
a	Augur/ Front end loader	1No.	As per actual	13.50
b	Re-Producer Composting Machine	20 Nos.	As per actual	175.00
c	Shredders	20Nos.	As per actual	100.00
d	JCV	2Nos.	As per actual	25.00
e	Vibroseivers	3Nos.	As per actual	12.00
f	Machineries for Vermicompost		As per actual	10.00
<b>D</b>	<b>For Testing Laboratory</b>			
a	Laboratory Equipment			27.00
<b>E</b>	Earthworms Cultures	1000Kg		10.00
<b>F</b>	Preliminary Expenses			4.00
<b>G</b>	Pre-operative Expenses including transaction and advisory services			6.50
<b>H</b>	Contingency			8.00
<b>Total</b>				<b>780.00</b>

	<b>RECURRING EXPENDITURES: to be born by selected entrepreneur</b>			
	<b>Manpowerfor 2 Years:</b>			
<b>A</b>	<b>Manpower:</b>			
<b>a</b>	<b>At main Production site</b>			
(i)	Production Manager @ Rs. 20000/month	1 No.		4.80
(ii)	Production Supervisor @ Rs.12000/ month	3 Nos.		8.64
(iii)	Accountant @ Rs.10000/month	1 No.		3.60
(iv)	Marketing Manager @ Rs. 20000/month	1 No.		4.80
(v)	Marketing Staffs @ Rs.12000/month	2 Nos.		12.96
(vi)	Security Guard @ Rs.7000/month	2Nos.		3.36
(vii)	Permanent labours	10Nos.		14.40
<b>b</b>	<b>At vegetable markets place</b>			
(i)	Site Manager @ Rs.25000/month	1 No.		6.00
(ii)	Supervisor @ Rs.12000/ month	12Nos.		34.56
(iii)	Machineries operators @ Rs.12000/ per month	10 Nos.		28.80
(iv)	Assistant operators @ Rs.8000/ per month	10 Nos.		19.20
(v)	Permanent labours @ Rs.6000/ per month	20 Nos.		28.80
<b>c</b>	<b>Contingencies</b>			10.08
	<b>Total</b>			<b>180.00</b>
	<b>G. Total</b>			<b>960.00</b>

N.B: Inter componential changes will be made as per the requirements.

## 1. **Background and Context:**

Bhubaneswar topped the list of the first pack of 20 cities selected by the Urban development Ministry, Govt. of India under the Smart Cities Mission.

The city of Bhubaneswar strives to ensure a clean, safe, sustainable and a green environment where all city people can live in a good health, where its citizens are ensured of a high quality of life by having a stimulating environment for the pursuit of all forms of science, art and literature.

City waste is one of many wastes. In Bhubaneswar, there are so many vegetables markets, where production of organic/ green municipal waste continues to rise, which causes loss of resources and increased environmental risks. By open dumping of organic waste and land filling of these green wastes will cause environmental degradation and harmful disease.

Composting is the most appropriate economical solution to overcome the problem due to municipal waste. Composting reduce the volume of waste generated as well as provide nutrients for plants, also helps in segregation of waste at source. In term of the factor affecting the composting process, temperature, pH, moisture contents and carbon nitrogen ratio are the main factors that contribute to the efficiency of the composting process. This project proposal shows information on the composting for treating wasteasameans of pointing the environmental pollution concerns. Adding additives to the compost have also received much attention in recent years as they enhance the rate of degradation.

Composting is one of the best technologies to treat waste in a more sustainable way, from many decades composting has been used as a recycling Solid waste Organic matter it improves the soil fertility, soil structure and it also maintain the moisture content of the soil. Composting is a natural process that turns organic material into a valuable humus substance, this substance called **compost**(from city waste it is **City compost**) and the waste is composed with the help of worms is known as **Vermicompost** is a wonderful conditioner for soil, during composting microorganisms such as bacteria and fungi break down complex organic.

In view of the above it is proposed to establish oneCitycompost production unit from municipal organic wastes of Bhubaneswar municipalityin PPP mode under Rastriya Krishi Vikash Yojana.

## 2. **Problems to be addressed:**

### ▪ **We know that we have a serious garbage problem.**

But the problem is not about finding the right technology for waste disposal. The problem is how to integrate the technology with a system of source-level segregation so that waste does not end up in landfills, but is processed and reused. It is clear that there will be no value from waste, as energy or material, if it is not segregated. But this is where our waste management system stops short.

- **Green garbage has unpleasant odors, contains microorganisms, sometimes infectious and does rotting faster.**

Organic/ Green waste is one of many Solid waste of our Bhubaneswar city. Altogether the Bhubaneswar alone produces about 400 tons of solid waste a day. Organic/ green waste is barely 13-15% of that gigantic stream. Almost any garbage is at best unpleasant.

- **Burying organic waste in landfill is a big problem**

When organic waste is dumped in landfill, it undergoes an aerobic decomposition (because of the lack of oxygen) and generates methane. When released into the atmosphere, methane is 25 times more potent a greenhouse gas than carbon dioxide.

- **The biggest problem is to segregate Green/Organic and Solid Waste.**

BBSR consists of approximately 10 big vegetables mandis. We realize that BMC has to collect a lot of garbage, which entails the complex issues involving its disposal. The waste generated at this mandis which includes 80% Organic and 20% other waste is currently collected by authorized contractors and dumped outside the city limits (as the city simply does not have facilities to handles the volume of garbage generated daily). The dry leaf litter which is seasonal is swept and collected on street corners. This leaf litter is then either burnt on the street or it is collected with the regular waste. The disposal procedures adopted by BMC does not discriminate between the recyclable components of the garbage which constitute a substantial portion of the total quantity. This leads to non-utilization of precious biodegradable materials in the short run and creates the problem of requirement of more and more dumping space in future.

- **Alternate solution of chemical fertilizers and conventional farming**

The indiscriminate use of chemical fertilizers for incremental growth of agricultural output is increasingly affecting not only the habitat & soil but also having a lasting impact on overall human health. It has been found throughout the world that the use of chemical fertilizers and other chemicals is harmful to soil productivity and also a cause of water and air pollution. On the other hand, compost causes no harm to environment and provides suitable nutrients to soil. Adding additives can also help to speed up the biodegradation of waste and enhance the quality of the finished compost as well.

### **3. Aims and Objectives:**

The purpose is to collect fruits and vegetable wastes from different vegetables mandis of Bhubaneswar city with following aims:

- To make vegetables mandi areas clean with removal /disposal of these organic wastes.
- Managing our BBSR City's Organic/ Green waste is to convert into City compost and Vermicompost using waste converter units.

- Availability of high quality Organic fertilizers to our farmers as alternate source of chemical fertilizers.
- To check Pesticides residues in food that may cause carcinogenic damage to consumers.
- **To Check Damage to Soil Health:** Due to excessive use of fertilizers and insecticides, all the elements of agro-eco system get polluted by the conventional method. City compost and Vermicompost relies on on-farm and non-chemical inputs to achieve productivity with no health or environmental hazards.
- **To Reduce Cost of Cultivation:** As organic farming system relies on appropriate management practices with local resources i.e. City compost and Vermicompost, it gives freedom from purchased inputs and ensures low cost of production. It will raise farmer's income and create potential market for organic produces.
- **To build up the capacity of organic growers for production of quality produce.** This will generate huge job opportunity for both skilled and non-skilled work force. The farmers will get an opportunity to increase their average income.
- **To check Pesticides residues in food that may cause carcinogenic damage to users:** Diversity, intercropping, effective rotations, use of trap crops in combination with physical, mechanical and local resource based botanical and biological alternatives will be effective low cost organic tools for pest management.
- **To empower farmers through FPOs in post harvest management, value addition and direct marketing:** Facilitating FPOs for direct trade with organic retail chain and processing units through direct longterm agreements, buyer-seller meets and marketing arrangement.
- Best quality City compost and Vermicompost will make available to BMC for various plantation programmes with nominal price. This is a win-win situation and this would fulfill the criteria of making **BBSR a GREEN ORGANIC CITY** in the truest sense of the term.
- Fulfils the objectives of "SWACHHBHARAT MISSION"

#### 4. Strategy

##### A. Procedure to be followed-

(i) **At vegetables markets of Bhubaneswar:** After segregation and shredding of coarse wastes, the green/ organic wastes will be fed to the Green Waste Re-Producer Composting (GWRC) Machines installed at these 10 locations. Here the segregated organic waste is bio-mechanically treated with appropriate bio-culture and organic media from which raw compost is produced.

These raw composts will be transported to the Citycompost and Vermicompost production centre.

(ii) **Citycompost Production Centre:** Here raw compost will be placed into the compost curing system and will be treated with appropriate bio-culture and organic media to convert into Citycompost. Earthworms will be released into some part of matured compost to produce Vermicompost.

#### **B. Implementation procedure:**

In view of the above it is proposed to establish one “Citycompost and Vermicompost production utilizing municipal organic wastes of Bhubaneswar municipality in PPP mode under Rastriya Krishi Vikash Yojana”. The total estimated cost is Rs.960Lakhs, out of which funds under RKVY will be invested to create all Fixed assets i.e. Land development, Building & Civil Works for Offices, Laboratory, Raw materials and finish product store rooms, Machine room, treatment rooms, Training Hall with Accessories, Watchman’s shed, Laboratory equipment, plants and machineries etcwith an estimated cost of Rs.780Lakhs. The Private Partner selected through EOI will invest around 180Lakhs for all Recurring Expenditures in three years like Manpower, cultivation expenses and marketing expenses etc. The profit earned will be shared between Govt. and the entrepreneur in a suitable proportion to be decided later on.

#### ▪ **Post harvest management, value addition and market facilitation**

○ Efforts will be made to identify various Government schemes which can provide financial assistance to such noble project for setting up this kind of Citycompost units at all Municipality and Panchayat level.

○ Farmers will be made aware of such Organic compost and Organic farming and set up their own organic waste composting units. If required necessary trainings and on-hand practical demonstration on operation of such machines will also be arranged.

#### ▪ **Skill training for Organic cultivation at every Municipal and Panchayat**

As a part of capacity building the interested farmers, beneficiaries will undergo the necessary skill training on utilization of Citycompost and Vermicompost at their organic farming. Demonstrate site along with technical guidance would provide them an opportunity for learning while doing. The skill training and the apprenticeship would help them rising ready to organic plant grafts/ samplings of various fruit crops/ Vegetables/ Spices species.

#### **5. Target Beneficiaries**

○ Supply of these City compost and Vermicompost to farmers with affordable price those are adopting Organic Farming.

○ Best quality City compost and Vermicompost will make available to BMC for various plantation programmes with nominal price. This is a win-win situation and this would fulfill the criteria of making **BBSR a GREEN ORGANIC CITY** in the truest sense of the term.



- The City compost and Vermicompost can be utilized for in-house gardening, landscaping, or for green initiatives such as eco-housing, eco-township, eco-hotel etc or as Corporate Social Responsibility (CSR) initiatives such as social forestry, mine area / wasteland rejuvenation for Bio-energy plantation etc.
- Various Govt. Departments of Odisha like Dept. of Agriculture, Dept. of Horticulture, Dept. of Soil Conservation, Dept. of Forest, Dept. of Watershed, etc. require various Organic and Bio-Inputs for their plantation activities & promoting and popularizing the green concepts in Odisha.
- Farmers cultivating Paddy under SRI Technology, Paramparagat Krishi, they are searching for high quality certified Vermicompost for their cultivation in good affordable price.

## **6. Management**

The Vermicompost and Citycompost Production centre will be managed in Public Private Partnership Mode (PPP) for which the Techno-entrepreneur will be selected through Expression of Interest. The Enterprise must be having at least 10years experience with waste management and production of Vermicompost and Citycompost. The entire production and marketing part will be managed by the Enterprise only and it will be monitored by the staffs of Directorate of Horticulture and Directorate of Agriculture, Govt. of Odisha. The project will be implemented by Asst. Director of Horticulture, Bhubaneswar.

### **The Organic waste management system comprises of:**

- Infrastructure at Main Production Centre:
  - Land development
  - Boundary Wall
  - Entrance Gate with Security shed,
  - Electrification with Transformer
  - Solar Electric systems
  - DG Set.
- Buildings at Main Production Centre:
  - Main building for Laboratory, Offices
  - Raw materials and finish product store rooms
  - Machine room for machineries
  - Training Hall for farmers, entrepreneurs with Accessories
  - Farmers Hostel
  - Watchman's shed,
  - Pump House
- Infrastructure nearby Vegetable Markets:
  - Spaceto install Green Waste Re-Producer Composting Machines
  - Space for Shredder
  - Space for storing raw compost
  - Boundary Wall

- Electrification provision
- DG Set.
- Shedsnearby Vegetable Markets:
  - Shedfor Green Waste Re-Producer Composting Machines
  - Shed for Shredder
  - Laboratory, Offices
  - Shed for Raw compost
  - Shed for DG set
- Machineries for
  - Curing system
  - Fogging system
  - For Vermicompost/ Citycompost production
- Post-Production Management
  - Pack House –cum- Sorting Grading Unit
  - Training facilities like; Training Hall and Hostel.
  - Practical training on production of Vermicompost/ Citycompost and its application of Organic cultivation.
- Irrigation
  - Bore Well
- All the infrastructures, Buildings (except training hall with accessories and farmers hostel), Main building for Offices, Laboratory, Raw and finish product store rooms, Machine room, Farm Machineries, Protected Structure, Post-Harvest Management Units and Irrigation Infrastructures will be handed over to entrepreneur.
- The Training Hall and Farmers Hostel will be managed by the ADH, Bhubaneswar for imparting training.
- He will allow and take responsibility of practical training to the farmers on cultivation, Post-Harvest Management Units, Operation of Farm Machineries and other scopes available.
- He will pay a percentage of the profit incurred out of the business.
- He will sale the Vermicompost, Citycompost as per his own decision. Govt. may support to sell the finished product at Govt. sectors subject to requirement and feasibility.
- He will maintain all the books of record and transparency in the business and will allow for inspection and supervision at any time.
- Yearly audit of the accounts should be taken up by the entrepreneur and will be intimated to the Directorate.
- He will ensure proper maintenance of infrastructures provided. He will incur all expenses including electricity and water supply charges.
- Any change in the structure of the infrastructure need approval from the Department.

- He will deposit a security amount as decided.
- He will solely responsible for the safe custody of the infrastructures in the CoE. Under any circumstances, department will not be responsible for any loss or damage occurs in any form.
- The contract period shall be decided during signing of the agreement and the same can be extended based on satisfactory performance. However the contract can be terminated with three months' notice from either side with proper cause.
- There will be an advisory board and Executive Committee for guiding the implementation.

## 7. Finance:

- Based on the various techno-economic parameters, the economics of the project has been worked out.
- The items of income include:
  - Sale of Vermicompost and Citycompost
- The expenditure includes:
  - The cost of raw materials,
  - Transportation (Both inward & outward)
  - Power & Fuel
  - Packing distribution, wages and salary, repairs and maintenance, insurance, advertisement and other overheads.

Sl. No.	Description	Area (Ha/ Sq.ft)	Cost norms	Total (In Lakhs)
<b>A</b>	<b>Land for project:</b>			
a	Land for main processing unit of Citycompost	4 Ha	Owned by Govt.	
b	Land for civil infrastructure at main processing unit	0.4Ha	Owned by Govt.	
c	Land for Green Waste Re-Producer Composting Machine and shredders installation nearby 10 vegetable markets 10000sq.ft area / location)	0.4Ha	Owned by Govt.	
<b>B</b>	<b>Civil Works</b>			
a	<b>Land development</b>		PWD	2.00
b	<b>Civil works at main processing unit</b>			
(i)	Fencing/ Compound wall, main gate	RMT	PWD	40.00
(ii)	Building & Civil Works for Offices, Laboratory, Raw materials and finish product store rooms, Machine room, treatment rooms, Training Hall with Accessories, Watchmashed		PWD	160.00
(iii)	Water System (Bore well and supply system with over head reserve tank)	2Nos.	Agriculture	6.00
(iv)	Electrification with transformer		Electrical	7.00

(v)	Drainage for excess water leachate collection system		PWD	4.00
(vi)	Concrete yards for drying and processing	2000sqm	PWD	45.00
(vii)	Cottages for Earthworms rearing and Vermicomposting	2000sqm	PWD	50.00
(viii)	Residential accommodation for labours	70sqm	PWD	5.00
(ix)	DG SET (25 KVA)		DGS & D	25.00
<b>c</b>	<b><i>Civil works at vegetable markets place</i></b>			
(i)	Sheds for GWRCM and shredders	10Nos.	PWD	30.00
(ii)	Concrete yards/ floor for processing	10 Nos.	PWD	15.00
<b>C</b>	<b>Plant &amp; Machineries</b>			
A	Augur/ Front end loader	1	As per actual	13.50
B	Re-Producer Composting Machine	20 Nos.	As per actual	175.00
C	Shredders	20Nos.	As per actual	100.00
D	JCV	2Nos.	As per actual	25.00
E	Vibroseivers	3Nos.	As per actual	12.00
F	Machineries for Vermicompost		As per actual	10.00
<b>D</b>	<b>For Testing Laboratory</b>			
A	Laboratory Equipment			27.00
<b>E</b>	Earthworms Cultures	2000Kg		10.00
<b>F</b>	Preliminary Expenses			4.00
<b>G</b>	Pre-operative Expenses			6.50
<b>H</b>	Contingency			8.00
<b>Total</b>				<b>780.00</b>
	<b>RECURRING EXPENDITURES: to be born by selected entrepreneur</b>			
	<b>Man power for 3 Years:</b>			
<b>A</b>	<b>Manpower:</b>			
<b>a</b>	<b>At main Production site</b>			
(i)	Production Manager @ Rs. 20000/month	1 No.		4.80
(ii)	Production Supervisor @ Rs.12000/ month	3 Nos.		8.64
(iii)	Accountant @ Rs.10000/month	1 No.		3.60
(iv)	Marketing Manager @ Rs. 20000/month	1 No.		4.80
(v)	Marketing Staffs @ Rs.12000/month	2 Nos.		12.96
(vi)	Security Guard @ Rs.7000/month	2Nos.		3.36
(vii)	Permanent labours	10Nos.		14.40
<b>b</b>	<b>At vegetable markets place</b>			
(i)	Site Manager @ Rs.25000/month	1 No.		6.00
(ii)	Supervisor @ Rs.12000/ month	12Nos.		34.56
(iii)	Machineries operators @ Rs.12000/ per month	10 Nos.		28.80
(iv)	Assistant operators @ Rs.8000/ per month	10 Nos.		19.20
(v)	Permanent labours @ Rs.6000/ per month	20 Nos.		28.80
<b>c</b>	<b>Contingencies</b>			10.08
	<b>Total</b>			<b>180.00</b>

N.B: Inter componential changes will be made as per the requirements.

The income as well as expenditure for each year are worked out and subjected to cash flow analysis. For expected outcomes to a tune of 4000MT Citycompost, 2000MT Vermicompost, the relevant techno-economic parameters are furnished in Project Report. The Income and Expenditure statement, the calculation of working capital requirements, Cash accruals are worked out.

## 8. Time Frame

Sl. No.	Description	Area (Ha/ Sq. ft)	Amount (in lakh)	2018-19	2019-20	2020-21
<b>A</b>	<b>Land for project:</b>					
1	Land for main processing unit of Citycompost	4 Ha				
2	Land for civil infrastructure at main processing unit	0.4Ha				
3	Land for GWRCM and shredders installation nearby 10 vegetable markets 10000sq.ft area / location)	0.4Ha				
<b>B</b>	<b>Civil Works</b>					
4	Land development		2.00	2.00		
	<i>Civil works at main processing unit</i>					
5	Fencing/ Compound wall, main gate	RMT	40.00	35.00	5.00	
6	Building & Civil Works for Offices, Laboratory, Raw materials and finish product store rooms, Machine room, treatment rooms, Training Hall with Accessories, Watchman's shed		160.00	110.00	50.00	
7	Water System (Bore well and supply system with over head reserve tank)	2Nos.	6.00	6.00		
8	Electrification with transformer		7.00	7.00		
9	Drainage for excess water leachate collection system		4.00	4.00		
10	Concrete yards for drying and processing	2000sqm	45.00	45.00		
11	Cottages for Earthworms rearing and Vermicomposting	2000sqm	50.00	50.00		
12	Residential accommodation for labours	70sqm	5.00	00	5.00	
13	DGSET (25 KVA)		25.00	25.00		
	<i>Civil works at vegetable markets place</i>					
14	Sheds for GWRCM and shredders	10Nos.	30.00	30.00		
15	Concrete yards/floor for preparation and processing	10 Nos.	15.00	15.00		
	<b>Plant &amp; Machineries</b>					
16	Augur/ Front end loader	1	13.50	13.50		
17	Re-Producer Composting Machine	20 Nos.	175.00	175.00		
18	Shredders	20Nos.	100.00	100.00		
19	JCV	2Nos.	25.00	25.00		
20	Vibroseivers	3Nos.	12.00	12.00		
22	Machineries for Vermicompost		10.00	10.00		

	<b>For Testing Laboratory</b>					
23	Laboratory Equipment		27.00	27.00		
24	Earthworms Cultures		10.00	10.00		
25	Preliminary Expenses		4.00	4.00		
26	Pre-operative Expenses		6.50	6.50		
27	Contingency		8.00	6.00	2.00	
	<b>Total</b>		<b>780.00</b>	<b>718.00</b>	<b>62.00</b>	
	<b>RECURRING EXPENDITURES:</b>					
	<b>Manpower for 2 Years:</b>					
<b>A</b>	<b>Manpower:</b>					
<b>a</b>	<b>At main Production site</b>					
(i)	Production Manager @ Rs. 20000/month	1 No.	4.80	2.40	2.40	
(ii)	Production Supervisor @ Rs.12000/month	3 Nos.	8.64	4.32	4.32	
(iii)	Accountant @ Rs.10000/month	1 No.	3.60	1.80	1.80	
(iv)	Marketing Manager @ Rs. 20000/ month	1 No.	4.80	2.40	2.40	
(v)	Marketing Staffs @ Rs.12000/ month	2 Nos.	12.96	6.48	6.48	
(vi)	Security Guard @ Rs.7000/ month	2Nos.	3.36	1.68	1.68	
(vii)	Permanent labours	10Nos.	14.40	7.20	7.20	
<b>b</b>	<b>At vegetable markets place</b>					
(i)	Site Manager @ Rs.25000/month	1 No.	6.00	3.00	3.00	
(ii)	Supervisor @ Rs.12000/ month	12Nos.	34.56	17.28	17.28	
(iii)	Machineries operators @Rs.12000/ month	10 Nos.	28.80	14.40	14.40	
(iv)	Assistant operators @ Rs.8000/ month	10 Nos.	19.20	9.60	9.60	
(v)	Permanent labours @ Rs.6000/ month	20 Nos.	28.80	14.40	14.40	
<b>c</b>	<b>Contingencies</b>		10.08	6.00	4.08	
			<b>180.00</b>	<b>90.96</b>	<b>89.04</b>	
	<b>G. Total</b>		<b>960.00</b>	<b>808.96</b>	<b>151.04</b>	<b>00.00</b>

## 9. RISK ANALYSIS

In this proposed project, vermicompost and Citycompost will be prepared from the city garbage. In a long term perspective, the developed infrastructure will contribute in socio-economic development of the locality in general. As there is a perpetual demand for organic fertilizers with to other Govt. Departments, the possibility of suffering loss is next to nothing.

Initially due to lack of awareness among the general public, it may be difficult to get the organic waste separately. Since the organic waste will be collected and processed within machines at vegetables mandis, there will not be any impact on the bad odour and pollution.

In the project it is envisaged to cover 10 vegetables mandis of BBSR and Cuttack, which may not be possible in the first year. So in the first year maximum efforts is to be undertaken to bring maximum mandis as possible in

to the ambit of the project. The balance mandis will be added on the second year of the project. Besides, there is to be at least one year moratorium period to Entrepreneur for the sharing of profit with the Govt.

#### **10. EXPECTED OUTCOMES**

Based on the various techno-economic parameters, the economics of the project have been worked out. The items of income includesale of Citycompost andVermicompost. While the expenditure includes the cost of raw materials, transportation, power, fuel, packing distribution, wages and salary, repairs and maintenance, insurance, advertisement and other overheads. The income as well as expenditure for each year are worked out and subjected to cash flow analysis. For 4000MT Citycompost and 2000MT of Vermicompost, the relevant techno-economic parameters are furnished in Project Report.The Income and Expenditure statement, the calculation of working capital requirements, Cash accruals are worked out and furnished in Project Proposal.

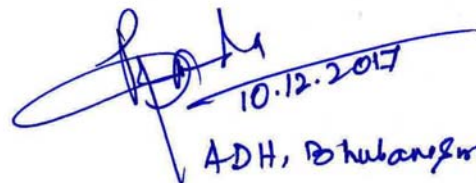
#### **11. FINANCIAL ANALYSIS**

The Cash Flow Statement covering the Net Present Worth (NPW) and Internal Rate of Return (IRR) have been worked out for the project. Normally the NPW should be positive and IRR should be greater than 25%. For the model project under consideration, the IRR is more than 30%.

#### **12. EVALUATION:**

The project proposalCitycompost/ Vermicompost production from municipal organic/ green wastesunder Rastriya Krishi Vikash Yojanawould be considered a workable model of Public-Private Partnership.

The project will be periodically inspected and evaluated by experts from different departments recommended by Dept. of Agriculture and Farmer's Empowerment, Govt. of Odisha.

  
10.12.2017  
ADH, Bhubaneswar