

4 Duration of Project

Sr. No.	Activity Block	Time Required (in months)
1	Finalization of design, BoM, and procurement	1
2	Hardware assembly integration and coding	2
3	Testing and debugging	1
4	Pilot deployment in field conditions (3 zones)	2
5	Data collection, refinement, and optimization	1
6	Final reporting, publishing, IP filing	1
	Total Time: _____8_____ months	

5 Budget Estimate

5.1 Recurring Expenditure (Consumable, Contingencies etc.)

Sr. No.		Total Proposed Cost in Lakhs (₹)
1.	Manpower (Only Research Staff)	5.0
2.	Field Work/ Travel	2.0
3.	Stationary	1.0
4.	Cloud hosting,Sms Gateway,Servers	2.0
5.	Contingency	0.45
	Total	10.45

5.2 Non-Recurring Expenditure

Sr. No.	Name of Equipment/ Facilities to be Procured	Make and Model of the Equipment	Total Proposed Cost in lakh	Justification for Procurement	Whether the Proposed Equipment Already Exist in the Department (Yes/No)
1.	Bin	Plastic	0.4	Required for the physical collection of waste. Two bins support segregation (wet/dry) or expand capacity.	No
2.	Microcontroller	Arduino uno	1.0	For multi-sensor handling and data processing	No
3.	Ultrasonic Sensor	HC-SR04 ultrasonic module	0.5	Measures the garbage level inside the bin to detect fullness	No
4.	Charger and Cable	micro USB-5V	0.2	Required for recharging the battery and powering the system during development and maintenance	No
5.	PIR Sensor	HC-SR501 human IR motion detector	0.3	Detects human presence to automate lid operation or track usage	No
6.	Servo Motor	SG90 micro servo	0.3	Operates the bin lid automatically upon sensing motion or proximity	No
7.	Male Header	40 pin	0.4	Essential for making modular and reliable sensor connections on the PCB or breadboard	NO
8.	Box	ABS plastic project box	0.2	Protects the electronics from environmental	N0

				damage and ensures safe installation	
9.	PCB Hscr	custom PCB for integration	0.65	Custom-designed printed circuit board for integrating sensors and microcontrollers neatly	No
10.	LoRa Module	Ra-02 SX1278 433 MHz	1.0	Enables long-range wireless communication for smart monitoring via LoRaWAN gateways	No
11.	Flow Solder	40X1 Flow Solder	0.4	Used for soldering connections on the PCB for robust component attachment	No
12.	Charging Modules	TP4056 charging module	0.4	Safely manages charging of Li-ion batteries in the system.	N0
13.	Battery	Battery 18650 3,7v	0.3	Provides portable power supply for off-grid or solar-powered usage.	N0
14.	Solar Panel	5v 1A	1.0	Enables green energy harvesting for sustainable operation of the smart bin	N0
15.	Bin 02	Plastic dustbin	0.4	For internal wiring between components, ensuring flexible and durable connections	No

16.	Multistand Wire	26 AWG	0.3	Enhances the signal range and stability of LoRa communication	No
17.	LORA Antenna	433Mhz SMA	1.0	A powerful microcontroller with built-in Wi-Fi and Bluetooth for advanced features like web dashboard or app control	No
18.	Microcontroller	ESP32/Gsm	1.0	General-purpose board for soldering and mounting small circuits, sensor headers, and connectors.	No
19.	Dot PCB green	General purpose	0.5		No
	Total =9.5				

Total Budget Estimate (A + B) = ₹ _____2000000_____

It is understood and undertaken that Non-Recurring expenditure should not exceed 15% of the proposed project cost. AICTE support is only at a reasonable level to enable faculty members and research scholars in the project. AICTE expects that this support will result in a multiplier effect leading to major projects for support from other agencies. AICTE does not encourage hiring of secretarial manpower for the project.

Signature of the Applicant

Head of the Institution
Signature & Seal

Place: _____

Date: _____