

उन्नत भारत अभियान

ग्रामीण विकास एवं प्रौद्योगिकी केंद्र भारतीय प्रौद्योगिकी संस्थान, दिल्ली

हौजखास, नयी दिल्ली- 110016



UNNAT BHARAT ABHIYAN

INDIAN INSTITUTE OF TECHNOLOGY, DELHI National Coordinating Institution

Address: V-405, IIT Delhi Main Rd, Block 5, Hauz Khas, New Delhi, 110016

Tel: +91-11-2659 1121/1157, Fax: +91-11-2659 1121 Email: unnatbharatabhiyaniitd@gmail.com

Date: October 18, 2022

To

Mrs. Manisha Joshi

Vivekanand Education Society's Institute of Technology, Chembur

Subject: Financial Sanction of Technical Intervention project (No. RP-03525G) under UBA 2.0

Dear Sir/Madam

- 1. This is to intimate you that Technology Intervention proposals under the category of "Technology Customization": Project-No: RP-03525G entitled, "Bio Toilet: An Ecological Initiative" submitted by you under the *Unnat Bharat Abhiyan 2.0 Program*, has been approved by Others SEG and funded by the National Coordinating Institute UBA 2.0 (IIT Delhi) against UTR No.: SBIN322207939391 vide dated 26/07/2022.
- 2. You can use the grant for fulfilling the project objectives under the approved heads as per the proposal, using the established procedure of your institute and as per the UBA guidelines, within 6 months from the date of receiving of funds. Kindly note that the utilization of funds allowed under the head "General Contingency" should not be more than 10% of the total sanctioned fund.

Note: TA/Honorarium is strictly not permitted in this project.

- 3. Any product/service developed under the sanctioned project must have UBA logo on it.
- 4. Detailed information of faculty in-charge and students/volunteers, who will be coordinating/working under the sanctioned project, shall be shared in the project report submitted by your institution.
- 5. The project implementation location/site shall be selected in consideration with gram panchayat officials/ members.
- 6. Please take care that the position holders/Panchayat officials shall not be benefitted in person. Also, ensure that the project shall not be controversial in terms of beneficiaries. Selection of beneficiaries shall include the Marginalized communities or EWS Category as well.

- 7. Few videos and images shall be shared to the SEG Coordinator (for updating the status of the project), also the report shall contain good quality pictures of the project site/product/service and feedback from the villagers/beneficiaries.
- 8. For the projects related to training camps, awareness, rally etc., the in-charge shall share the material/posters/modules to be used in the villages, for the knowledge of SEG Coordinator and further comments, if any.

You are required to submit the completion report/5-6 photographs/3 min videos of the project within two months after the completion of the project to the competent authority of NCI-IIT Delhi, UBA2.0 cell. Without the submission of the completion report, the opportunity for funding of a new project will not be facilitated.

Prof. Vivek Kumar

National SEG Coordinator

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Unnat Bharat Abhiyan (UBA 2.0)

National Coordinating Institute

Indian Institute of Technology, Delhi

UTR No. SEG, RES under UBA 2023

GEN	29344						
S. No.	Account No.	Amount	Beneficiary Name	Date	Status	C Number / UTR No.	Bank Name
1	34204318792	80000	TOC H INSTITUTE OF SCIENCE TECHNOLOGY	17-03- 2023	Credit Success	C032332598176	STATE BANK OF INDIA
2	037802000001300	100000	THE PRINCIPAL, IFET COLLEGE OF ENGINEERING	17-03- 2023	Credit Success	C032332598177	INDIAN OVERSEAS BANK
3	6546486620	100000	BON SECOURS COLLEGE FOR WOMEN- Departmental Activities A/C	17-03- 2023	Credit Success	C032332598178	INDIAN BANK
4	20105101831	50000	SARCHITNIS, MVP SAMAJ NASIK COLLLEGE O F ENGINEERING	17-03- 2023	Credit Success	C032332598179	BANK OF MAHARASHTRA
5	911010044631194	100000	CUMMINS COLLEGE OF ENGINEERING FOR WOMEN	17-03- 2023	Credit Success	C032332598181	AXIS BANK
6	1248101556540	100000	PRINCIPAL,NIRMALA CO	17-03- 2023	Credit Success	C032332598182	CANARA BANK
7	137501000020006	100000	ST.JOSEPH'S COLLEGE-MISCELLANEOUS	17-03- 2023	Credit Success	C032332598183	INDIAN OVERSEAS BANK
8	843410110000242	50000	CMRIT - PRINCIPAL ACCOUNT	17-03- 2023	Credit Success	C032332598184	BANK OF INDIA
9	8500101002773	100000	THEREGISTRAR	17-03- 2023	Credit Success	C032332598185	CANARA BANK
10	0229101132845	100000	V.E.S.INSTITUTEOFTECHNOLOGY	17-03- 2023	Credit Success	C032332598186	CANARA BANK
11	2159000100074225	50000	MIET-RESEARCH & DEVELOPMENT	17-03- 2023	Credit Success	C032332598187	PUNJAB NATIONAL BANK

12	39367200288	50000	AMRITA VISHWA VIDYAPEETAM	17-03-	Credit	C032332598188	STATE BANK OF
				2023	Success		INDIA
13	9913294148	100000	SHRI VILE PARLE KELAVANI MANDAL'S INSTITUTE	17-03-	Credit	C032332598189	KOTAK
			OF TECHNOLOGY DHULE	2023	Success		MAHINDRA
							BANK
14	510101004890034	25000	JSSATE COLLEGE A C	17-03-	Credit	C032332598190	UNION BANK
				2023	Success		OF INDIA

Title: Ecofriendly Bio-Toilet System

Date: 1/10/2023

Submitted By:

Vivekanand Education Society's Institute of Technology, Chembur, Mumbai

Bio Toilet: An Ecological Initiative

1	Name of the Institute (in Block letters)	VIVEKANANDA EDUCATION SOCIETY'S INSTITUTE OF TECHNOLOGY
2	AISHE Code	C-33895
3	Title of the Project	Bio Toilet: An Ecological Initiative
4	Name of Subject Expert Group (SEG)	IIT Delhi
5	Name of the Regional Coordinating Institute (RCI)	IIT Mumbai
6	Name of village(s) where project development activities were carried out	Asanas
7	Project Duration (with date)	From October 2022
8	Project Budget	₹ 50,000
9	Brief Introduction of the Project (Minimum 100 words)	There are many villages in our country where proportion of open defecation practice is higher in rural areas than in urban areas. The ignorance has prevented basic infrastructure like water supply. One of them being Asanas village located in Palghar District in the State of Maharashtra. Due to lack of water supply and improper sewage connections the villagers face numerous issues of open defecation as they do not have access to toilets. Open defecation—and lack of sanitation and hygiene in general—is an important cause of various diseases. To resolve this problem our UBA Team of VESIT designed and planning to install an Ecofriendly Bio-Toilet in Asanas village to create awarenesss about the sanitation for prosperous health of each individual.

10		
10		Lack of awareness, infrastructure and funds is a major
	Project	issue which may be solved by training and education
		programs. The government has been trying to uplift
		the villages for decades by providing affordable
		subsidies. But just subsidies are not enough, we need
		a sustainable solution that can go on for a long time
		without obstructions. With more awareness about the
		scope of sanitation, more villages can make it out of
		darkness. Our motive was introducing a bio-toilet
		system which disposes human waste and saves
		energy, conserves water and produces energy in the
		form of fertilizers and recycled water for plants.
		These bio-toilet systems meet the need for a basic,
		easy-to-install and hygienic human waste disposal
		mechanism in areas with no nfrastructural facilities,
		such as sewage treatment plants. It also addresses the
		need for a cheaper and easy-to-operate alternative to
		the traditional waste disposal system. The sanitation
		systems can be installed in places where conventional
		-
		toilets facilities cannot be made available.

11	(a) Current status	We have successfully designed Ecofriendly Bio- Toilet in Asanas Village. Model is ready in our institute. Only we are waiting for tank building by village people.

(b) Achievement of the project (Minimum 150 words)

We embarked on this project for the welfare of the village. Young children are particularly vulnerable to ingesting feces of other people that are lying around after open defecation, because young children crawl on the ground, walk barefoot, and put things in their mouths without washing their hands. Feces of farm animals are equally a cause of concern when children are playing in the yard. Open defecation badly harms health of children and their life quality, including psychological issues. There are strong gender impacts connected with a lack of adequate sanitation. In addition to the universal problems associated with open defecation, having to urinate in the open can also be problematic for females. The lack of safe, private toilets makes women and girls vulnerable to violence and is an impediment to girls' education.

After installation of these Bio-toilets in Asanas village to help everyone from the problem of open defecation and also to women feel safer. The success of the project will inspire the neighbouring villages and communities to adopt similar sustainable practices, further spreading the benefits of toilets will increase the awareness among the individuals about the sanitation. Bio-Toilets have a longer lifespan and require minimal maintenance, ensuring the sustainability of the project over the years.

12	Project Outcomes (Minimum
	100 words)

After completion of project:

- 1)Energy saving as we are using solar panel for electricity.
- 2) Water saving as recycled water can be used for flash or use for planation.
- 3)Recycled solid waste will be useful for fertilizers.
- 4)Sanitation and hygiene.

13 Description of Project (Minimum 150 words) (Technology, Methodology, etc.)

The purpose of this report is to provide an overview of the progress made in developing the control panel for "Bio-toilet". The control panel serves as a critical component in automating various processes within the system, enhancing efficiency, and ensuring seamless operation.

Components Acquired: For the successful implementation of the control panel, we have acquired several essential components:

- 1. Timer Switch
- 2. Float Switch
- 3. MCB Switches
- 4. Control Panel Box
- 5. Magnetic contactor
- 6. Filter
- 7. Pump

Work done till now:

Timer Switch for Stirrer Control: One of the primary functionalities of the control panel is to regulate the stirrer. We have successfully completed the prototype for the timer switch, which enables us to control the stirrer's operation. This functionality is crucial for ensuring precise and consistent mixing processes.

Magnetic Contactor: While significant progress has been made, the completion of the water level control using the float switch. The Magnetic Contactor is a critical component that will facilitate the interaction between the control panel and the float switch for water level control.

Integration of Float Switch and Magnetic Contactor: We have integrated the float switch and the magnetic contactor to establish water level control functionality. This integration allowed the control panel to monitor and adjust water levels effectively.

Prototype Completion for Water Level Control: With the float switch and magnetic contactor in place, we completed the prototype for water level control. This aspect of the control panel is essential for ensuring the proper functioning of the entire system, preventing overflows or inadequate water levels.

Control panel: The development of the control panel is completed.

Photos with captions of the project activities (maximum of 6 photographs of high resolution)

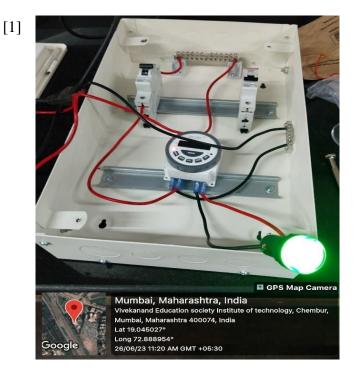


Figure 1: Control panel with automatic and manual modes

Mumbai, Maharashtra, India
VESIT, Habiu Advani Memorial Complex, Collector's Colony, 2VWQ+6H8,
Collector Colony, Chembur, Mumbai, Maharashtra 400074, India
Lat 19.045701*
Long 72.889069*
10/08/23 01:12 PM GMT +05:30

Figure 2: Sand and carbon filter



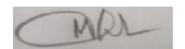
Figure 3: 0.5 Hp Blower



Figure 4: Monoblock Pump

15	Description of each	
	photo in maximum of 25 word	[1] Figure 1 depicts the intended control panel for automating and manually operating the blower and Monoblock pump. Its primary function is to set a timer for the blower and to activate the pump when the tank is full.
		[2] Figure 2 depicts the sand filter and carbon filter that are used at the end of the process. They are linked in series, with the sand filter removing large impurities and the carbon filter removing minor impurities in the water.
		[3] Figure 3 depicts the blower used in the mbbr tank to create a continuous flow of air in the impure water with the bacteria culture, allowing the bacteria to remain alive and decompose impurities.
		[4] Figure 4 depicts the Monoblock pump, which is connected to the Filter feed tank and transfers water to the overhead tanks when the tank is full.
16	Impact of this project in the adopted village(s) in 100 words	The implementation of an Ecofriendly Bio-Toilet project in the adopted village will have a transformative impact. It has significantly improved the quality of life for the residents by enhancing safety and accessibility to toilets for their daily lifestyle. The Ecofriendly Bio-Toilet will not only recycles waste water but also contribute to a cleaner environment by reusing as a fertilizer for irrigation. Additionally, the project has served as a model for sustainable development, inspiring the community to embrace sanitation solutions and fostering a sense of pride and ownership. Overall, the initiative has brought about positive changes in the village, promoting sustainability, safety, and a brighter future.
17	Number of Families benefited	
18	Link of feedback videos of villagers (If any)	

Conducted awareness campaigns to educate villagers and the young generation about the benefits of sanitation for healthy environment and sustainable practices, encouraging responsible usage. Engaging the community in decision-making, installation, and maintenance fosters a sense of ownership and pride in the project. Conducting a comprehensive cost-benefit analysis helps determine the economic viability and potential return on investment for the project. Incorporating Ecofriendly Bio-Toilet into the village's long-term development plan ensures that they remain a priority and receive adequate attention over time.



Mrs.Manisha Joshi UBA co-ordinator VESIT



उन्नत भारत अभियान

ग्रामीण विकास एवं प्रौद्योगिकी केंद्र भारतीय प्रौद्योगिकी संस्थान, दिल्ली

हौजखास, नयी दिल्ली- 110016



UNNAT BHARAT ABHIYAN

INDIAN INSTITUTE OF TECHNOLOGY, DELHI National Coordinating Institution

Address: V-405, IIT Delhi Main Rd, Block 5, Hauz Khas, New Delhi, 110016

Tel: +91-11-2659 1121/1157, Fax: +91-11-2659 1121 Email: unnatbharatabhiyaniitd@gmail.com

Date: May 30, 2023

To

Dr. Manisha

Vivekanand Education Society's Institute of Technology, Chembur, Mumbai

Subject: Financial Sanction of Technical Intervention project (No. RP-03525G) under UBA 2.0

Dear Madam

- 1. This is to intimate you that Technology Intervention proposal under the category of "Technology Development" entitled, "Surya Sakshamta: Pragati Ka Sulabh Marg" submitted by you under the *Unnat Bharat Abhiyan 2.0 Program*, Project-No: RP-03525G has been approved by Rural Energy System SEG and funded by the National Coordinating Institute UBA 2.0 (IIT Delhi) against C032332598186 vide dated 17-03-2023.
- 2. You can use the grant for fulfilling the project objectives under the approved heads as per the proposal, using the established procedure of your institute and as per the UBA guidelines, within 6 months from the date of receiving of funds. Kindly note that the utilization of funds allowed under the head "General Contingency" should not be more than 10% of the total sanctioned fund.
- 3. *Note: TA/Honorarium is strictly not permitted in this project.*
- 4. Any product/service developed under the sanctioned project must have UBA logo on it.
- 5. Detailed information of faculty in-charge and students/volunteers, who will be coordinating/ working under the sanctioned project, shall be shared in the project report submitted by your institution.
- 6. The project implementation location/site shall be selected in consideration with gram panchayat officials/ members.

- 7. Please take care that the position holders/Panchayat officials shall not be benefitted in person. Also, ensure that the project shall not be controversial in terms of beneficiaries. Selection of beneficiaries shall include the Marginalized communities or EWS Category as well.
- 8. Few videos and images shall be shared to the SEG Coordinator (for updating the status of the project), also the report shall contain good quality pictures of the project site/product/service and feedback from the villagers/beneficiaries.
- 9. For the projects related to training camps, awareness, rally etc., the in-charge shall share the material/posters/modules to be used in the villages, for the knowledge of SEG Coordinator and further comments, if any.

You are required to submit the completion report/5-6 photographs/3 min videos of the project within two months after the completion of the project to the competent authority of NCI-IIT Delhi, UBA2.0 cell. Without the submission of the completion report, the opportunity for funding of a new project will not be facilitated.

Prof. Vivek Kumar

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National SEG Coordinator

Unnat Bharat Abhiyan (UBA 2.0)

National Coordinating Institute

Indian Institute of Technology, Delhi

Title: "Surya Sakshamta: Pragati Ka Sulabh Marg"

Date:9/09/2023

Submitted By:

Vivekanand Education Society's Institute of Technology, Chembur, Mumbai

1	Name of the Institute (in Block letters)	VIVEKANANDA EDUCATION
		SOCIETY'S INSTITUTE OF
		TECHNOLOGY,CHEMBUR
2	AISHE Code	C-33895
3	Title of the Project	"Surya Sakshamta: Pragati Ka Sulabh Marg"
4	Name of Subject Expert	NCI-IIT
	Group	Delhi
	(SEG)	
5	Name of the Regional	IIT Bomabay
	Coordinating	
	Institute (RCI)	
6	Name of village(s)	Asanas
	where project	
	development activities	
	were carried	
	out	
7	Project Duration (with	3 Months (May 8 to September 9)
	date)	
8	Project Budget	₹ 1,00,000

9	Brief Introduction of the Project (Minimum 100 words)	There are many villages in our country where ignorance has prevented basic infrastructure like street lights. One of them being Asanas village located in Palghar District in the State of Maharashtra. Due to lack of street lights, the villagers face numerous issues like accidents, unsafe travel, threats to women safety, and most importantly, barriers in education. To resolve this problem the UBA Team of VESIT installed 8 Solar Street Lights along with 8 poles in Asanas village on 9 Sept.,2023 (Saturday). We designed a charge controller that can be used in Solar street lights to ensure proper flow of current generated by the solar panel to ensure maximum intensity without damage. Lights are sensor based. Capacity of LED light is 40 Watts. Solar module is 75 watts. The intensity of the lights were planned to be sufficient enough to light up a large area. Back of battery is 16 hours We also planned a tree plantation drive with the village authorities
10	Project Objective(s) / Need of the Project	Lack of awareness, infrastructure and funds is a major issue which may be solved by training and education programs. The government has been trying to lighten up villages for decades by providing affordable subsidies. But just subsidies are not enough, we need a sustainable solution that can go on for a long time without obstructions. But things should be better – a village solar street light is something most villagers need to be aware of. Electricity is the most basic requirement of modern society. Still, many villages in India struggle with this basic need. In such a situation, the arrival of solar street lights in villages is a boon. With more awareness about the scope of solar energy, more villages can make it out of darkness.

11	(a) Current status	We have successfully installed 8 Solar Street Lights in Asanas Village. The Solar Street lights which we installed have 12-16 hrs battery backup. The intensity and the working hours of lights has made their living easier, safer and comfortable.
	(b) Achievement of the project (Minimum 150 words)	We embarked on this project for the welfare of the village. Villagers are forced to travel in darkness for unavoidable chores. Many women make their way to public wells much before the sun dawns. Absolute darkness invites night predators which results in unnecessary humananimal conflicts. But when a village solar street light provides adequate lighting, the risks of all mishaps are reduced. Pollution is kept under control by avoiding the traditional method of lighting by keeping low carbon footprint which are environmentally sustainable. We have placed these lights in places suggested by villagers to help students of the local school from study after sunset, to ensure a bright future, for the betterment of the village and hence it will affect the country's future. The success of the project will inspire the neighbouring villages and communities to adopt similar sustainable practices, further spreading the benefits of solar technology. Solar street lights have a longer lifespan and require minimal maintenance, ensuring the sustainability of the project over the years.

12	Project Outcomes (Minimum 100 words)	We have received positive Feedback from the rural people about our social work. The installation of solar street lights has improved the quality of life of the villagers and increased scope of small-scale businesses to a large extent. With adequate lighting, village people can work even after sunset without any fear. This is especially beneficial for businesses that need funds to afford generators or other sources of electricity. Additionally, solar street lights increase the value of the properties around
		them. It makes rural areas much safer for villagers, especially for women It's cost-effective and easy to install and maintain.
13	Description of Project (Minimum 150 words) (Technology, Methodology, etc.)	Solar energy is the energy generated by the sun. Solar energy can be harnessed directly or indirectly for human use. Solar panels are composed of several individual solar cells which are themselves composed of layers of silicon, phosphorus and boron. Solar panels absorb the photons and in doing so initiate an electric current. The solar panels charge a rechargeable battery, which powers a fluorescent or LED lamp during the night. It uses PIR(Passive Infrared Sensor) that utilises infrared radiation emitted from us to trigger the light. PIR(Passive Infrared Sensor) can detect nearby movement and increase the brightness of the lights when needed, conserving energy when no one is around. Our Team has designed a Charge controller using PCB. This Charge controller circuit is used in street lights. A solar charge controller is used to keep the battery from overcharging by regulating the voltage and current coming from the solar panel to the battery. It also ensures that the battery is charged optimally and extends its lifespan. Solar street lights can be mounted on poles or attached to buildings or other structures, depending on the specific application and design. Proper installation of lights to ensure the solar panels are positioned to receive maximum sunlight(south direction for India) and that the light fixtures are appropriately positioned for effective illumination.

Photos with captions
of the project activities
(maximum of 6
photographs of high
resolution)



Fig 1: Professor explaining the project details to the students.



Fig 2: Students working on charge controller circuit.



Fig 3: Enlightening the villagers about the project and the initiative by UBA.



Fig 4: Students installing the Solar Street lights.



Fig 5: Solar Street light image after installation.



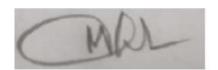
Fig 6: Taking feedback from the villagers regarding the project and UBA.

15	Description	of
	each photo	in
	maximum	of
	25 word	

- Fig 1: Professor explaining the details of the project and about the concepts of charge controller circuit to the students.
- Fig 2: Students designing and implementing the charge controller circuit on the bread board.
- Fig 3: Enlightening the villagers and village students about the UBA program and about the project and how they can benefit from it.
- Fig 4: Students assembling and installing solar lights on the allotted locations by configuring the direction of panel and LED to the area which is to be illuminated.
- Fig 5: Eight solar lights were installed on the locations suggested by the villagers where there was no availability of light during the night
- Fig 6: After installation of lights we took feedback from the villagers regarding the project, Unnat Bharat Abhiyan, their views about this initiative.

16	Impact of this project in the adopted village(s) in 100 words	The implementation of an automatic solar street light project in the adopted village has had a transformative impact. It has significantly improved the quality of life for the residents by enhancing safety and accessibility during nighttime. The solar-powered lights not only reduce electricity costs but also contribute to a cleaner environment, mitigating the carbon footprint. Additionally, the project has served as a model for sustainable development, inspiring the community to embrace renewable energy solutions and fostering a sense of pride and ownership. Overall, the initiative has brought about positive changes in the village, promoting sustainability, safety, and a brighter future.
17	Number of Families benefited	100
18	Link of feedback videos of villagers (If any)	https://drive.google.com/drive/folders/1Afe lM6o1xDhAiDRvxDAH68nbvewaIcRe
19	Other relevant information (optional) (Minimum 100 words	Conducted awareness campaigns to educate villagers and the young generation about the benefits of solar energy, sustainable practices and encouraged responsible usage. Engaging the community in decision-making, installation, and maintenance fosters a sense of ownership and pride in the project. Conducting a comprehensive costbenefit analysis helps determine the economic viability and potential return on investment for the project. Incorporating solar street lights into the village's long-term development plan ensures that they remain a priority and receive adequate attention over time.
20	Comments from the SEG	

21	Comments from National Coordinating Institute (NCI)	
22	Clarification from Participating Institute (PI)	Our students designed solar street lights along with charge controller circuits from sanctioned fund. Solar lights are installed by students and faculties.



Mrs.Manisha Joshi UBA co-ordinator Vivekanand Education Society's Institute of Technology, Chembur, Mumbai

[PI/PIs Name and Signature]