

THE UNIVERSITY OF BURDWAN
BALAGARH BIJOY KRISHNA MAHAVIDYALAYA
PROJECT WORK
ON
STUDY OF BIRDS & INSECTS IN A TREE



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I Would like to express my special thanks of gratitude to my Environmental Science teachers Prof. Rimpa Mondal and Prof. Somshuddha Marick for their valuable guidance and support in completion of my project work on STUDY OF BIRDS & INSECTS IN A TREE.

DATE: 14.01.2023

PLACE: JIRAT, HOOGHLY

Amik Mondal

STUDENT SIGNATURE

DECLARATION

I hereby declare that the project work entitled as the STUDY OF BIRDS & INSECTS IN A TREE was done by me in my own observation. The work is original and it has not been copied from anyone else.

DATE: 14.01.2023

PLACE: JIRAT, HOOGHLY

Anik Mondal
SIGNATURE

PROJECT COMPLETION CERTIFICATE

This is to certify that Anik Mondal has successfully completed the ENVS, AECC-1 project titled as the STUDY OF BIRDS & INSECTS IN A TREE under our guidance and supervision.

We are satisfied with his initiative and efforts for the completion of the project as a part of course code AECC-1 (ABALITY Enhancement Compulsory Course) under CBCS pattern of semester-I.

DATE: 30.01.2023

PLACE: JIRAT, HOOGHLY

Rimpa Mondal 30.01.23
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CONTENTS

| TOPICS | PAGE NO. |
|--------------------|-----------------|
| 1. INREODUCTION | 1 |
| 2. AREA OF STUDY | 1 |
| 3. METHOD OF STUDY | 1 |
| 4. OBSERVATION | 2-11 |
| 5. CONCLUSION | 12 |

INTRODUCTION

- **BIRDS**

Birds are ready visitors that visit frequently from place to place even from continent to continent. A good number of birds visit different sites due to change of environment particularly for their feed and reproduction. As the sites is not homogeneous for their easy life period so they need movement from one place to other. A good example is Birds of migratory kind.

- **INSECTS**

Insects are a class in the Phylum Arthropoda. They are small terrestrial invertebrates which have a hard exoskeleton. Insects are the largest group of animals on earth by far; about 92700 different species have been described. They are more than half of all known living species. They may be over 90% of animal species on Earth. Insects have six legs and most have wings. Insects were the first animal capable of flight. As they develop from eggs insects undergo metamorphosis.

- **AREA OF STUDY**

The area was Jirat, Balagarh, Hooghly.

- **METHOD OF STUDY**

Date: 26th December, 2022

Time: 10 a.m – 2 p.m

Take use of : Internet, Wikipedia.

OBSERVATION

• BIRDS



1) BAYA WEAVER

Common English Name: Baya weaver

Bengali Name: Babui

Scientific Name: *Ploceus philippinus*

➤ **Distribution:**

In plain with low altitude; found India to Indo-China via Malaya.

➤ **Characters:**

Chirping and roosting more time, movement very swift

➤ **Vegetation Spectrum:**

Strychnosnux-vomica, Meliaazadirachta, Stephaniahernandifolia,
Mikania scandens, Tremaorientalis, Bamusa sp., Mangiferaindica,
Tinosporacordifolia, Ficus sp., Pothos sp., Phyllanthusreticulatus, etc.



2) COMMON BULBUL

Common English Name: Common Bulbul

Bengali Name: Bulbuli

Scientific Name: *Pycnonotus cafer*

➤ **Distribution**

In all parts of plain and even in low altitude of hilly area

➤ **Characters**

Clever and very intelligent.

➤ **Vegetation Spectrum:**

Melia azadirachta, Morinda angustifolia, Holoptelia integrifolia,
Stephania hernandifolia, Mikania scandens, Trema orientalis, Bamusa sp.,
Mangifera indica, Tinospora cordifolia, Ficus sp., Pothos sp.,
Phyllanthus reticulatus, Menilcarasapoda, Inga dulcis etc.



3) **BLUE MAGPIE-ROBIN**

Common English Name: Blue Magpie-robin

Bengali Name: Doyel

Scientific Name: *Copsychus saularis*

➤ **Distribution**

In all parts of plain

➤ **Characters**

Quiet and calm a bird chirps during dawn or dusk.

➤ **Vegetation Spectrum**

Tremaorientalis, Bamusa sp., Mangiferaindica, Tinosporacordifolia, Ficus sp.,
Pothossp., Phyllanthusreticulatus, Adinacordifolia, Mangiferaindica,
Casuarinaequisetifolia, Ravanalamadagascariensis, Plumeriarubra,
Tabernemontadivericata, etc.



4) **INDIAN RING-NECKED PARROT**

Common English Name: Indian ring-necked parrot

Bengali Name: Tiya,

Scientific Name: *Psittacula krameri manillensis*

➤ **Distribution**

Indian Sub-continent. All parts of plain.

➤ **Characters**

Very punctual about them.

➤ **Vegetation Spectrum**

Micheliachampaca, Seracaasoka, Terminaliaarjuna, Ficusbengalensis, F. Religiosa, Disoxylum sp., Borassusflabelliferetc.



5) ROCK DOVE

English Name: Rock dove (Female and Male)

Bengali Name: payra

Scientific Name: *Columba livia*

➤ **Distribution**

Indian Sub-continent. All parts of plain.

➤ **Characters**

Can be used as pets

➤ **Vegetation Spectrum**

In rice field and in fallow land. Plants with seeds of *Chrozopharaplicata*, *Crotonbonplandianum*, *Brassica nigra*, *Lathyrus sativa*, *Triticumaestivum*, *secale* etc. are common for the birds like rock dove and common dove.

INSECTS



1) INDIAN MEAL MOTH

The Indian meal moth was given its name after an insect scientist found it feeding on corn meal, also known as Indian meal. They typically live from two to six months.

- **Size:** 5/8"
- **Shape:** Elongated, oval
- **Color:** Copper reddish
- **Legs:** 6
- **Wings:** Yes
- **Antenna:** Yes
- **Common Name:** Indian meal moth
- **Kingdom:** Animalia
- **Phylum:** Arthropoda
- **Class:** Insecta
- **Order:** Lepidoptera
- **Family:** Pyralidae
- **Species:** Plodia interpunctella

➤ Diet:

Indian meal moths feed on dried fruits, grains, seeds, nuts, chocolate, candies, bird seed, dog food, powdered milk, dried red peppers and candy.

➤ Habitat:

Attracted to the light, these bugs are found in bright places where food is stored like restaurants and grocery stores.

➤ Impact:

Moths infest foods and can contaminate food products by leaving skin and waste behind.

➤ Prevention:

- ✓ Store food in sealed containers.
- ✓ Discard infested foods in outdoor trash bins.
- ✓ Clean infested cupboards thoroughly with a vacuum and soap and water.



2) MOSQUITO

There are about 170 different kinds of mosquitoes in North America alone. These pests are part of the same family as houseflies and fruit flies, because they all have two clear, veined wings. Best known as a summer pest, Mosquitoes can develop from egg to adult in 10 to 14 days.

- **Size:** 1/4" to 3/8"
- **Shape:** Narrow, oval
- **Color:** Pale brown with whitish stripes across abdomen.
- **Legs:** 6
- **Wings:** Yes
- **Antenna:** Yes
- **Common Name:** Mosquito
- **Kingdom:** Animalia
- **Phylum:** Arthropoda
- **Class:** Insecta
- **Order:** Diptera
- **Family:** Culicidae
- **Species:** Varies

➤ Diet:

We usually say, "I have been bitten by a mosquito", but this is not completely true. Mosquitoes do not bite. Female mosquitoes feed on plant nectar and blood. They need the protein to reproduce. To get to the blood, they pierce our skin with their "proboscis" and suck our blood. Male mosquitoes feed exclusively on plant nectars. Mosquitoes are busiest at night and will fly up to 14 miles for a blood meal. They hunt for food by detecting body heat and Carbon Dioxide, the gas we breathe out.

➤ Habitat:

Mosquitoes breed in soft, moist soil or stagnant water sources such as storm drains, old tires, children's wading pools and birdbaths.

➤ Impact:

Mosquitoes spread diseases such as West Nile Virus, malaria and dengue fever.

➤ Prevention:

- ✓ Replace all stagnant water at least once a week.
- ✓ Remove trash from around any standing water.
- ✓ When sleeping outdoors or in areas where mosquito populations are heavy, surround your bed with "mosquito" netting.



3) DUST MITE

The dust mite is nearly impossible to see without magnification. A typical mattress can contain tens of thousands of dust mites. Nearly 100,000 mites can live in a single square yard of carpet!

- **Size:** 1/75"
- **Shape:** Flat, broad, oval
- **Color:** Off white to tan
- **Legs:** 8
- **Wings:** No
- **Antenna:** No
- **Common Name:** Dust mite
- **Kingdom:** Animalia
- **Phylum:** Arthropoda
- **Class:** Arachnida
- **Order:** Acariformes
- **Family:** Pyroglyphidae
- **Species:** Dermatophagoides farina

➤ Diet:

Dust mites primarily feed on dead skin shed by humans and other animals. They can also absorb moisture from the air.

➤ Habitat:

Dust mites are most often found in beds. They may also be found living in carpet, furniture, and clothing.

➤ Impact:

Dust mites are harmless to most people. They carry small foreign proteins, often referred to as "allergens". They don't carry diseases, but these proteins can cause allergic reactions in people by triggering the immune system to over react.

➤ Prevention:

- ✓ Change your sheets often.
- ✓ Vacuum frequently.
- ✓ Use a vacuum cleaner with a HEPA filter.
- ✓ If dust mites are a real problem in your home, call a pest management professional.



4) PILL BUG

The pill bug is the only crustacean that can spend its entire life on land. Their shells look like armor and they are known for their ability to roll into a ball. Sometimes children call them rollie-pollies. Most pill bugs live for up to two years. They are most active at night.

- **Size:** 3/4"
- **Shape:** Oval
- **Color:** Dark brown to black
- **Wings:** No
- **Antenna:** Yes
- **Common Name:** Pill bug
- **Kingdom:** Animalia
- **Phylum:** Arthropoda
- **Class:** Malacostraca
- **Order:** Isopoda
- **Family:** Armadillidiidae
- **Species:** Armadilliumvulgare

➤ Diet:

Pill bugs mostly eat rotting vegetation like vegetables.

➤ Habitat:

Pill bugs live in wet locations. They are found under damp objects or in organic garbage. If pill bugs enter a building, they will often dry out and die.

➤ Impact:

Pill bugs do not spread diseases or contaminate food.

➤ Prevention:

- ✓ Keep your homes and the areas around your home clean and dry.
- ✓ Eliminate food sources such as vegetable or plant debris.



5) EARWIGS

Earwigs get their name from the myth that they crawl into sleeping people's ears and tunnel into the brain. They do not really do that! There are 22 types of Earwigs in the United States and there are over a 1,000 different species all over the world.

- Size: 1"
- Shape: Long, narrow
- Color: Dark brown
- Legs: 6
- Wings: No
- Antenna: Yes
- Common Name: Earwig
- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Insecta
- Order: Dermaptera
- Family: Forficulidae
- Species: Forficulaauricularia

➤ Diet:

Earwigs feed on leaves, flowers, fruits, mold and insects.

➤ Habitat:

Earwigs hide during the day and live outdoors in large numbers. They can be found under piles of lawn clippings, compost or in tree holes. They enter buildings through cracks in the walls.

➤ Impact:

They do not spread disease, but they can be scary to look at.

➤ Prevention:

- ✓ Remove leaf piles, compost piles or other vegetation from around your home.
- ✓ Seal cracks and crevices in the walls of your house.

CONCLUSION

• BIRDS

We conclude that species spatial distributions are directly affected by global warming and subsequently climate change. In general terms it has been started by the scientific community that the distribution of species has been moving in a pole ward trend. Within the realm of our study we found no conclusive evidence to prove or disprove this statement. The evidence that we find and cited leads us to the conclusion that the distribution of species is in fact being altered by climate change, but we were unable to determine exactly what that change was. Evidence found especially from birds that there is a correlation between bird's population, characteristics and alterations in climate factors. The change in population characteristics shows that some sort of shift generally trended movement is observed.

• INSECTS

Insects play many important roles in nature. They aid bacteria, fungi and other organism in the decomposition of organic matter and soil formation. They decay of carrion, for example brought about mainly by bacteria and is accelerated by the maggots of flesh flies and blowflies. Insects and flowers are evolved together. Many plants depend on insects for pollination. Some insects are predators of others.

**Environment Pollution in Balagarh Block,
HOOGHLY**

For -AECC-1

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Session -2022-23

PROJECT COMPLETION CERTIFICATE

I feel great pleasure in certifying that the Project entitled **Environment Pollution in Balagarh Block, Hooghly** by under my guidance. This is to certify that **Diptika Mandi** has successfully completed the ENVS, AECC-1 project titled on under our guidance and supervision.

I am satisfied with her initiative and efforts for the completion of the project as a part of course code AECC-1 (Ability Enhancement Compulsory Course) under CBCS Pattern of semester-I.

Somshuddha Marik
Somshuddha Marik 30.01.23

Project Coordinator

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Chapters:

1. Environment meaning:
2. Environment function
3. Environment Pollution and its Types
4. Present Environment Pollution in India
5. Present Environment Pollution in West Bengal
6. Types of Environment Pollution in Details
7. Current Issues regarding Environment Pollution in Balagarh Block
- Hooghly
8. Environmental Development and BBKM:

Page no. required ??

Ss
30.01.23

Environment meaning:

1. According to some people, the term “environment” simply refers to nature: in other words, the natural landscape and all the traits, qualities, and processes that are not influenced by human activity. It’s common for such people to associate the environment with concepts of wildness and pristine landscapes that haven’t been affected by human activity – or at the very least, haven’t been significantly affected. In the minds of some, the term “environment” encompasses human activity as well. It’s not uncommon for people to think that agricultural and pastoral landscapes are part of the environment. Others, however, think that everything on Earth’s surface is part of the environment. There is a basic assumption in all of these usages: that the “environment” exists in some sort of relationship to humans. There are a number of ways to think about the environment: as a “backdrop” to human history; as habitat and resources that humans use; as a “hinterland” around human settlements; and as the “wilderness” those humans have not yet domesticated or dominated.

‘Environment,’ in the most literal meaning, means surroundings, so everything in a person’s immediate vicinity would be considered part of that person’s environment. Individuals, things, elements, and systems rarely exist in isolation in reality; instead, they interact with their surrounding entities to varied degrees to form complex systems. As a result, conceptualizing the “environment” without incorporating a sense of connection is a waste of time. A person’s surroundings are influenced by him or her, as well as vice versa. These complicated and extended relationships between distinct entities can be found in some circumstances. As a result, the “environment” might be seen as a “space” or a “field” in which linkages, interconnections, and interactions between entities take place. Since ecologists are concerned with both the living as well as the nonliving components of environmental systems, this conceptualization will be recognisable to those who have studied the science of ecology. According to an ecological definition of an ecosystem, the term “environment” is commonly used interchangeably with the ecological term “ecosystem.”

ENVIRONMENT FUNCTIONS:

1. Resources are supplied by the environment.

- Resources can be found in the environment.
- Renewable and non-renewable resources are included.
- There are many examples of this: wood for furniture; dirt; land; etc.

2. Sustenance of life

- Among the elements that make life possible is the sun, earth, water, and air.
- It provides genetic and biological variety that sustains life.
- Incorporates garbage into the process.

3. Consumption and production lead to the creation of garbage.

- Most of the time, this manifests as garbage.
- Garbage removal is made easier by the natural environment.
- Life is improved in many ways, including:

4. It improves the overall quality of life.

- The quality of life is improved as a result of the environment.
- Human beings appreciate the beauty of nature, which includes rivers, mountains, deserts, and other natural features.
- These improve the overall quality of life.

Environment Pollution and its Types:

Pollution is the introduction of contaminants into the natural environment that causes adverse change. Pollution can take the form of any substance (solid, liquid, or gas) or energy (such as radioactivity, heat, sound, or light). Pollutants, the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Litter on the coast of Guyana .Although environmental pollution can be caused by natural events, the word pollution generally implies that the contaminants have an anthropogenic source – that is, a source created by human activities, such as manufacturing, extractive industries, poor waste management, transportation or agriculture. Pollution is often classed as point source (coming from a highly concentrated specific site, such as a factory, mine, construction site), or nonpoint source pollution (coming from a widespread distributed sources, such as micro plastics or agricultural runoff).

Many sources of pollution were unregulated parts of industrialization during the 19th and 20th centuries until the emergence of environmental regulation and pollution policy in the latter half of the 20th century. Sites where historically polluting industries released persistent pollutants may have legacy pollution long after the source of the pollution is stopped. Major forms of pollution include air pollution, water pollution, litter, noise pollution, plastic pollution, soil contamination, radioactive contamination, thermal pollution, light pollution, and visual pollution.

Pollution has widespread consequences on human and environmental health, having systematic impact on social and economic systems. In 2019, pollution killed approximately nine million people worldwide (about one in six deaths that year); about three-quarters of these deaths were caused by air pollution. A 2022 literature review found that levels of anthropogenic chemical pollution have exceeded planetary boundaries and now threaten entire ecosystems around the world. Pollutants frequently have outsized impacts on vulnerable populations, such as children and the elderly and marginalized communities, because polluting industries and toxic waste sites tend to be collocated with populations with less economic and political power. This outsized impact is a core reason for the formation of the environmental justice movement, and continues to be a core

element of environmental conflicts, particularly in the Global South. Because of the impacts of these chemicals, local and international countries' policy have increasingly sought to regulate pollutants, resulting in increasing air and water quality standards, alongside regulation of specific waste streams. Regional and national policy is typically supervised by environmental agencies or ministries, while international efforts are coordinated by the UN Environmental Program and other treaty bodies. Pollution mitigation is an important part of all of the Sustainable Development Goals.

Present Environment Pollution in India:

There are multiple environmental issues in India. Air pollution, water pollution, garbage, domestically prohibited goods and pollution of the natural environment are all challenges for India. Nature is also causing some drastic effects on India. The situation was worse between 1947 through 1995. According to data collected and environmental assessments studied by World Bank experts, between 1995 through 2010, India has made some of the fastest progress in addressing its environmental issues and improving its environmental quality in the world. However, pollution still remains a major challenge and opportunity for the country. A satellite picture, taken in 2004, shows thick haze and smog along the Ganges Basin in northern India. More sources of aerosols in this area are believed to be smoke from biomass burning in the northwest part of India, and air pollution from large cities in northern India since the 1980s. Dust from deserts in Pakistan and the Middle East may also contribute to the mix of aerosols. Solid waste adds to water pollution in India, 2005 Environmental issues are one of the primary causes of disease, health issues and long term livelihood impact for India.

Present Environment Pollution in West Bengal:

Environmental issues in Kolkata refers to the air pollution, water pollution, garbage problems, and other problems of the natural environment prevalent in the city of Kolkata, the capital of the Indian state of West Bengal. It severely affects Kolkata's biophysical environment as well as human health.

Types of Environment Pollution

Air pollution:

According to data released in 2009 by the Scientific and Environmental Research Institute, atmospheric suspended particulate matter (SPM) in Kolkata was 511. This made Kolkata the most polluted metropolitan city in India, followed respectively by Mumbai, Delhi and Chennai. In a 6-years long study completed in 2007, the Chittaranjan National Cancer Institute (CNCI) found that 70% of residents of Kolkata suffer from respiratory diseases, like lung cancer, dyspnea and asthma, caused by air pollution. According to the CNCI study, 18.4 cases of lung cancer per 100,000 people were reported from Kolkata.

According to data collected in 2010 by the Central Pollution Control Board (CPCB), Kolkata, along with Delhi, is among the worst affected Indian cities when it comes to air pollution. Between 2009 and 2011, the highest number of lung cancer cases in India was reported from Kolkata, Delhi and Mumbai. According to a report prepared by the Centre for Science and Environment (CSE), among the number of cancer cases reported between 2009 and 2011, the most frequent cases were of lung cancer with a share of 12%. According to an article published in The Telegraph, Kolkata has been nicknamed the "lung cancer capital of India". In the World Health Organization's (WHO) ranking of cities by air pollution, Kolkata ranked 25th among a total of 1100 cities.

Air pollution is high in Kolkata despite the city's relatively low rates of car ownership, compared to other large Indian cities, and its strong public transport. It may be possible to reduce Kolkata's energy emissions through measures that also save money, such as parking demand management and improved vehicle efficiency standards.

Water Pollution:

A 2003 report released by the Federation of Consumer Associations (FCA) found that much of the drinking water in Kolkata was polluted with human waste. According to this report, 87% of reservoirs supplying water to residential buildings were contaminated with human excrement. There were significant traces of faecal matter in 63% of faucets, and 20% of the water samples collected from various city hospitals were also found to be contaminated. The study reported that approximately one-fifth of the deep water wells and hand pumps operated by the Kolkata Municipal Corporation were polluted with human waste. The former director of the All India Institute of Hygiene and Public Health blamed the ongoing water pollution on a leaky sewer system and water pressure abnormalities.

Balagarh Block - Hooghly: The Balagarh CD Block is mostly part of the Hooghly Flats, one of the three natural regions in the district of the flat alluvial plains that forms part of the Gangetic Delta. The region is a narrow strip of land along the 80 km long stretch of the Hooghly River, that forms the eastern boundary of the district. The region has been physiographically influenced by the course of the river. The western part of the block gradually merges into the Hooghly Damodar Plain. The region has been physiographical influenced by the course of the river. The western part of the block gradually merges into the Hooghly Damodar Plain. Gram panchayats of Balagarh block/ panchayat samiti are: Jirat (Sadar), Charkrishnabati, Dumurdaha-Nityanandapur I, Dumurdaha-Nityanandapur II, Ektarpur, Guptipara I, Guptipara II, Bakulia-Dhobapara, Mohipalpur, Siza-Kamalpur, Somra I, Somra II and Sripur-Balagarh.

Current Issues regarding Environment Pollution in Balagarh Block - Hooghly:

In the current scenario of environment, Balagarh Block is also contributing much more ingredients that lead to polluted environment.

1. GANGA erosion is one of the major problems in West Bengal and needs its recovery at earliest but socio - Economic and Political engagements are the causes of delay in recovery of the said problem. The forest blocks in Hooghly parliamentary Constituency, Hooghly, of West Bengal have been eroded by the river Ganges. The names of the villages affected are Sukuna, Chambra, Khoirmari Char, Bhowripur, Khatrianagar, Gosaipur, Hatikanda, Ramnagar, Gopalpur, Chandrabati I and Chandrabati II of Mogra Block. Around 30 kilometers of land at the bank of river Ganga, stretching from Guptipara of Balagarh (SC constituency) to Chandrabati II Mogra are affected. Two thousand acres of cultivated land has been lost. Thousands of residential homes, school buildings and burning Ghats have been swallowed by the river...

2. Waste can be defined as discarded and useless materials which do not possess any value. Biodegradable waste- Biodegradable waste is a type of waste, typically originating from plant or animal sources, which may be degraded by other living organisms.

Biodegradable waste can be commonly found of our institution are-

- Green waste
- Food waste
- Paper waste
- Biodegradable plastics
- Fruit and vegetable peels
- Food scraps
- Paper products (newspaper, cardboard)
- Pet waste
- Tea bags.
- Yard trimmings (grass, leaves, etc.) &
- Plant- based fabrics (cotton, linen) etc.

Non- Biodegradable waste- Non-Biodegradable waste, on the other hand, refers to materials that do not break down naturally and persists in the environment for an extended period.

These materials take hundreds of years or even more to decompose naturally.

Here is some example of Non-Biodegradable waste of our institution are-

- Plastic bags and wrappers
- Glass bottle, water bottle and jars
- Metal can and containers
- Aluminum foil
- Disposable diapers and sanitary pads
- Synthetic fabrics (Polyester, nylon)
- Styrofoam containers
- Medical waste
- Poisonous chemicals
- Batteries etc.

Management of these types of degradable and Non-biodegradable waste is only found in SRIPUR -BALAGARH GRAM PANCHAYET (Balagarh Bijoy Krishna Mahavidyalaya). Other panchayets collect wastage without classifying into Biodegradable and Non- Biodegradable. They disposed the entire garbage in very near places in the basin of Ganga. This College signed a MOU the SRIPUR - BALAGARH GRAM PANCHAYET by MOU signed in 2019. Later it was renewed in 23.08.23.They collect these wastes twice a week from our college but we do not know where they throw those wastes. **Besides this we conclude there is no organized system of waste management and that gives birth to unhygienic environment for every state of age of livelihoods.**

3. It has been found that Arsenic in water at Balagarh Block is not an issue to ignore. Persistent Water pollution of the said location not only impacts the health of society as a whole but also contributes serious effect on agriculture as well. Arsenic contamination of groundwater is often due to naturally occurring high concentrations of arsenic in deeper levels of groundwater. It is a high-profile problem due to the use of deep tube wells for water supply in the Ganges Delta, causing serious arsenic poisoning to large numbers of people. A study found that over 137 million people in more than 70 countries are probably affected by arsenic poisoning of drinking water. Arsenic pollution was first detected in 1983 in district Bardhaman of West Bengal. At present arsenic concentration is also found in the adjacent blocks of Balagarh Block in Hooghly. There are as many as 45 mouzas in Balagarh which experience arsenic concentration in groundwater. In West Bengal. Almost the entire area of the Bhagirathi Hooghly floodplain is affected by arsenic

in groundwater. **Many studies have shown the presence of arsenic in the groundwater on the east bank of the Bhagirathi River and its ill effects**

4. In the growing digital world, Balagarh Block is not free from the cons of Electronic and electrical wastages that contribute serious negative effect on environment. Lack of awareness is the root cause of the said issue. **It is not yet developed in Balagarh.**

5. The Jirat-Balagarh is semi urban/semi rural area in Hooghly District. Lack of overall environment awareness in Balagarh has been found as a key factor to impact upon. Rural people should know that the environment is the surest grandmother of all poverty; all animals that rely on the environment are always naked, always homeless, always illiterate, always without services of any kind of education or health or transport or justice or entertainment.

The environment gives free food to the murderer: a tiger is allowed to kill and eat a goat or deer for free. The cow is free to put an end to the life of the grass: the cow just tears the grass off and eats it.

Globally, natural resource provided about 4% of GDP, leaving 96% of GDP from something else. In developed nations like the USA, natural resources contribute less than 1% of GDP. It is easy to see how. Natural resources earn zero by offering services in education or healthcare or transport or communication, law and order, peace and justice, art and entertainment and so on. Natural resource does not teach and guide, does not heal and nurse, does not inform and advise, does not analyze and judge or help make decisions. Ask the tree or the land: should I believe in religion or not, and get no answer, never. Yes, the environment is doing a very great lot, like less than 1% of what people need in civilized places.

The five elements like earth, water, fire, air and the sky cover the environment of the world. Thus, whether in urban or rural areas the humans have to protect their environment for sustenance.

In deep rural areas the problem is more acute than the semi rural areas because of pressure of population as people migrate from rural areas in search of employment and work. There is pressure on land.

The second most important area is water. From time immemorial people make their lives near water habitats. River banks and water bodies become the hub of civilizations. In urban areas the scarcity of water is a major issue as a larger populace depends on limited water supply.

Thirdly people depend on the Nature for their fuel requirements. In fact fire is the original invention after which civilization started. Forests used to supply fuel to people till recent times when alternative sources of power like oil, coal, gas and electricity were popularized. The absence of forest cover has accentuated the fuel problem in urban areas.

Fourthly air is basic to human existence as they have to breathe for their lives. Thus pure air is a cause of concern of most environmentalists as it is the most vulnerable area where pollution occurs the most after water. The rapid industrialization and loss of forest cover are important reasons for polluted air.

The last element the sky or atmosphere is the protective cover which protects the earth from the dangerous rays coming from the cosmic universe. Through industrialization and nuclear proliferations danger to atmosphere has increased.

The ozone layers have seen ruptures which increase the global temperature. The increased temperature causes ice to melt in the North and South Poles and Antarctica. It raises water level in the seas causing inundation of low lying areas by sea water.

Thus we find because of rapid urbanization and economic development the environment has been threatened raising doubt about human existence. The conflict among different countries and warfare has added instability to human races.

Thus time has to make proper planning of land use so that maximum people are able to stay in limited places. Unplanned urban expansion should be checked particularly in developing economies where growth is rapid because of availability of unemployed resources.

Cleanliness of water bodies, availability of safe drinking water, and proper disposal of garbage are major requirements in urban areas. People have a role play in as much as they should conserve water and reduce waste to the minimum to protect the environment.

Use of fire or fuel should properly be regulated so that eco-friendly uses are more used. Solar power is an unexplored area where attention should be given and economic use of this untapped source of energy be explored.

Air pollution is a major headache in semi rural areas. The dust and smoke in urban areas is time and soul killing in nature. The growth of automobiles is its major

reason. Mass transit system is to be used in rural centers instead of indiscriminate use of automobiles.

These are the important areas on which semi urban/semi rural planning should be centred around. Management of sky is a larger issue which is left to the domain of the government and a town planner has little to add in this area.

Rain water harvesting is one of the most effective methods of water management and water conservation. It is a term used to indicate the collection and storage of rainwater used for human, animal and plant needs. It involves collection and storage of rain water at surface or in sub-surface aquifer, before it is lost as surface run-off. The augmented resource can be harvested in the time of need. Artificial recharge to ground water is a process by which the ground water reservoir is augmented at a rate exceeding that of natural conditions of replenishment. The collected water is stored and pumped in a separate pipe distribution. This is a very useful method for a developing country like India in reducing the cost and the demand of treated water and also economizing the treatment plants operation, maintenance and distribution costs.

NECESSITY OF THE PROJECT

- To overcome the inadequacy of surface water to meet our demands within the campus and decrease dependence on ground water.
- To enhance availability of ground water and utilize rain water for sustainable development.
- To increase infiltration of rain water into the subsoil.
- To improve ground water quality by dilution.
- To improve ecology of the area by increase in vegetation cover
- Overall, to make the campus an Eco-friendly one. .

It is true that there is no Rain Water Harvesting Plant in Balagarh Block. Only, this college takes initiative for rain water harvesting





GENESIS OF NATURE CLUB IN BALAGARH BIJOY KRISHNA MAHAVIDYALAYA, HOOGHLY

BALAGARH BIJOY KRISHNA MAHAVIDYALAYA is an undergraduate college affiliated by the University of Burdwan, is situated in the district of Hooghly, WB, surrounded by green trees. The college has an abundant green garden containing some very rare plants sprawling over a vast expanse of land maintained by the Nature Club in assistance of WWF, Kolkata. **The NSS Unit of this college celebrates 'BANAMAHSAB' during the month of June each year, after the onset of monsoon. At present, the nature club's volunteers watering the plants from time to time. The green tree hosts a wide variety of birds, small mammals like bats and squirrels and different types of butterflies and insects. The students of different subjects, English, Bengali, History, Philosophy, Mathematics, Chemistry, Physics, and Economics join in Nature Club.**

This College has initiated 'The Green Campus' program in the opening of 2018, specially, after 2nd cycle of NAAC visit on October, 2016 in this college. The purpose of maintaining of trees and pollution free campus to ensure that the practices followed in the Campus are in accordance with the Environmental Policy adopted by the College. With this in mind, the specific objectives of the audit is to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the different departments are in compliance with the applicable regulations, policies and standards. Participation in Green Movement i.e. make the campus green , mainly NSS UNIT-2 of this college started since very beginning of calender year ,2018 They adopted two main objectives I. Trees Plantation and Preservationm and 2. environmental protection movements against hazards. As the Whole -time teaching posts was few in this college , we did not appoint a teacher to look after the Go Green Movement in full fledge. A few new guest faculties joined this in the year 2018-19. So, we organised the environment obligation in an organised way.

As a large number of different State-Aided College Teachers were regularized in this college from 01.01.2020, the satisfactory man-power was invested to govern the nature related activities. Formally, the Nature club is introduced in this college to spread the awareness among students and teachers about the importance of conserving nature. The club believes that nature itself teaches life's lessons in its own ways and enables our young students to take up their responsibility in maintaining a healthy environment. In the very beginning of the calendar year 2022, when corona protocol was lifted stepwise by the Government, the students preferred green and free space. Actually, the lockdown encouraged students to explore the green spaces despite their inability to enter the campus. Arguably, COVID-19 significantly influenced usage pattern of campus' green spaces. In the post-pandemic era, students generally prefer integrated campus green spaces with wider areas.

All the avenues within the College Gate to college building are therefore adorned with tall trees bearing emerald green leaves and beautiful flowers to create a homogenous feeling amongst everyone within the campus. We have already introduced planting of saplings as on 6th August, 2022 by the students for adducible greenery within the campus and also inculcate awareness towards nature in their minds. The total program was conducted with active participation of WWF, India, Kolkata Branch.

SOLAR ENERGY INSTALLATION INITIATIVE IN BBKM

In setting up the initiative to install solar power in this college, This College applied to WBREDA in the year 2018 (West Bengal Renewable Energy Development) which is a state agency launched ambitious programme to harness the enormous potential of the renewable sources of energy through development and promotion of efficient and reliable Renewable energy.

Balagarh Bijoy Krishna Mahavidyalaya is the first college in Hooghly District, WB who took initiative in install solar power in February 2008. Subsequently, It was approved in 2019. A couple of 20 Watt panel permission were received to set up at the roof of the college with the help of West Bengal Renewable Energy Resource Development Agency (WBREDA), is powering instruments through Bikram Solar. When the project was to be installed the total work of setting up solar panel in the roof of BBKM remained stopped due to Pandemic in March 2020. In the year, 2022 when the new normal was introduced, then this college again initiated to make contact with BIKRAM SOLAR But the Company already liquidated.



Partha Chattopadhyay

২ অক্টো., ২০১৮ · ৯

এন এস এস ইউনিট ২ (বলাগড় বিজয়কৃষ্ণ
মহাবিদ্যালয়)এর পক্ষ থেকে দত্তক নেওয়া হল
আদিবাসী অধ্যুষিত গ্রাম লঙ্কাতোলা |গ্রামের মানুষ
সম... আরও দেখুন



Plantation by NSS in LANKATOLA, an adopted Village by NSS (Unit-2) as on 05.06.2019



**Plantation by NSS in College Campus as on
05.06.2019**

Plantation by NSS in College Campus as on 05.06.2019





Plantation by NSS in Gandhi Jayanti (02.10.2019) in College





Flower Show as on 25.12.2019 & Prize Distribution from BBKM



Trees Plantation as on 23.01.2020 on Netaji Birthday Anniversary in LANKATOLA VILLAGE, JIRAT,



Trees Plantation as on 23.01.2020 on Netaji Birthday Anniversary in LANKATOLA VILLAGE, JIRAT,



**Trees Plantation as on 23.01.2020 on Netaji
Birthday Anniversary (PRAKRAM DIBAS) in
LANKATOLA VILLAGE, JIRAT, HOOGHLY**



Save Environment from Arsenic trees contamination in BBKM as on 26.01.2020 i.e. on the Republic Day



Save Environment from Arsenic trees contamination in BBKM as on 26.01.2020 i.e. on the Republic Day and preservation of trees



Save Environment from Arsenic trees contamination in BBKM as on 26.01.2020 i.e. on the Republic Day and preservation of trees



Save Environment from Arsenic trees contamination in BBKM as on 26.01.2020 i.e. on the Republic Day and preservation of trees





**Trees Plantation & Preservation In adopted Village by NSS on 11.02.2020
LANKATOLA**



Trees Plantation as on 05.06.2020



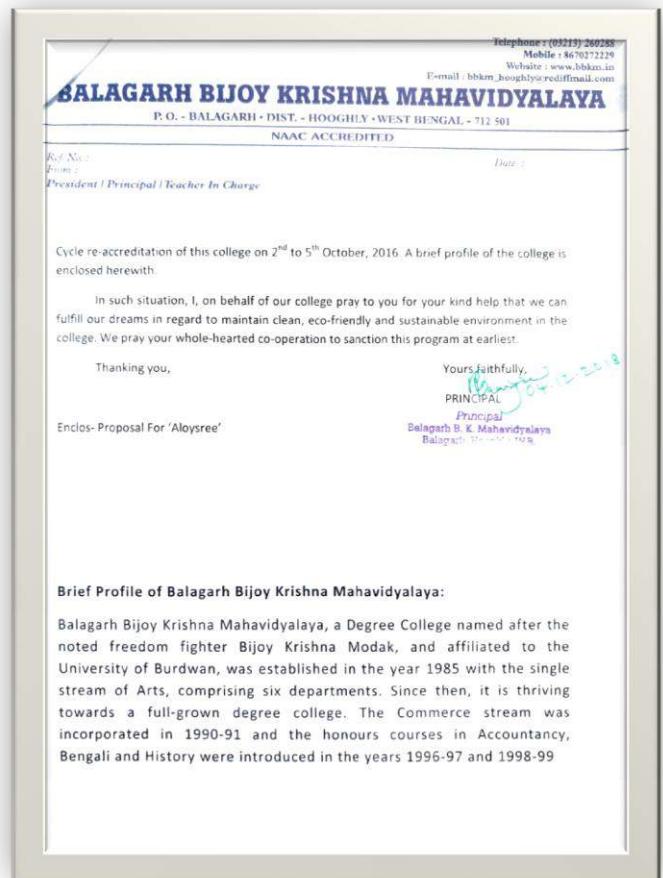
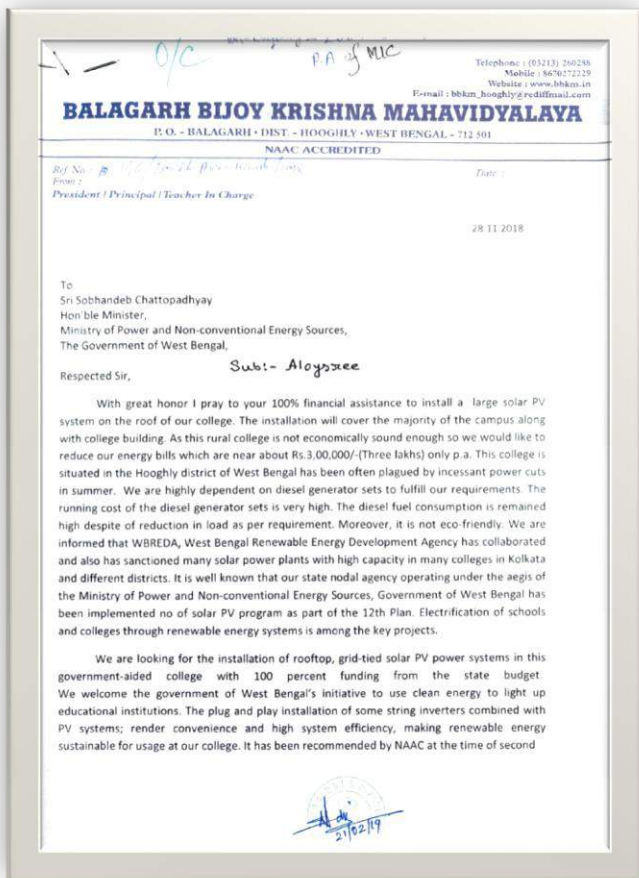


Trees Plantation as on 05.06.2020

SOLAR ENERGY INITIATIVE BY BBKM SINCE 2018

Balagarh Bijoy Krishna Mahavidyalaya is the first college in Hooghly District, WB who took initiative to install solar power as on 28.11.2018. Subsequently, It was approved on 27.11. 2019. Grid connected Roof top Solar PV power plant of PV Array Capacity 20 kwp were sanction to this college and received permission to set up at the roof of the college with the help of West Bengal Renewable Energy Resource Development Agency (WBREDA), is powering instruments through Bikram Solar Ltd. Of The Chambers, 8th Floor, 1865, Rajdanga main road, Kolkata-700107. When the project was to be installed the total work of setting up solar panel in the roof of BBKM remained stopped due to Pandemic in March 2020. In the year, 2022 when the new normal was introduced, then this college again initiated to make contact with BIKRAM SOLAR But the Company already liquidated.

The below-mentioned scan copies of the correspondence from BBKM to the West Bengal Renewable Energy Development (WBREDA) & WBSEDCL, Somra Bazar, Hooghly



The above mentioned scan copy of letter (Page 1& 2) from BBKM to the West Bengal Renewable Energy Development (WBREDA) as on 28.11.2018

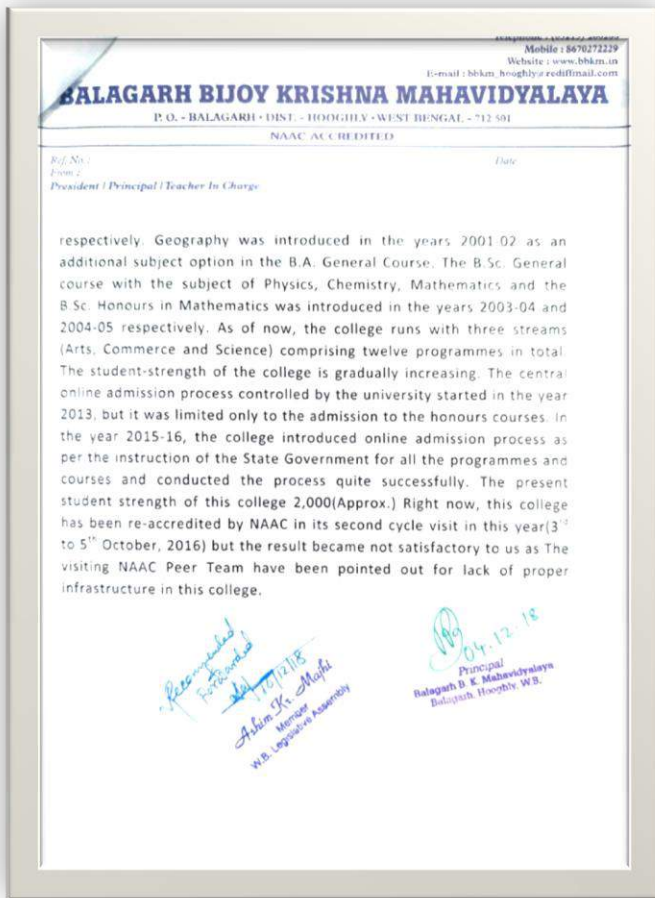


Fig-1

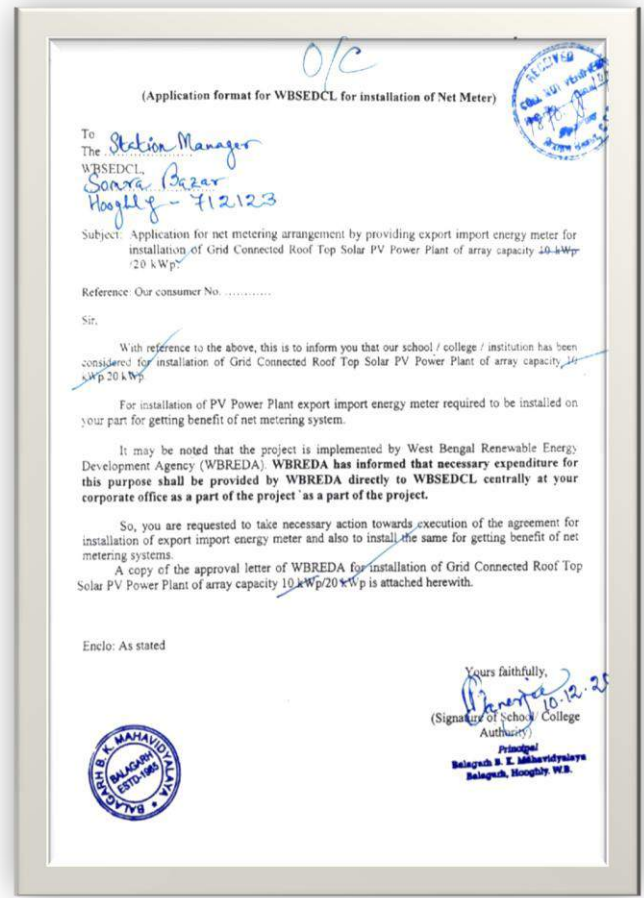


Fig-2

Fig-1: The above mentioned scan copy of letter (Page-3) from BBKM to the West Bengal Renewable Energy Development (WBREDA) as on 28.11.2018

Fig-2: The above mentioned scan copy of letter from BBKM to the Station Manager, WBSEDCL, Somra Bazar, Hooghly

WEST BENGAL RENEWABLE ENERGY DEVELOPMENT AGENCY
(An Organisation of Deptt. of Power & NES, Govt. of West Bengal) Bikalpa Shakti Bhawan, Plot no.:
J1/10, EP & GP Block, Sector-V,
Electronics Complex Salt Lake, Kolkata - 700091
Phone: 033-23575038 / 23575348 / 23576568, Telefax: 033-23575037/6569

Memo No.: WBREDA/91(2018)/926 (4)

Dtd.27-11-2019

To
THE PRINCIPAL
Balagarh Bijoy Krishna Mahavidyalaya
P.O. Balagarh
District: Hooghly, Pin: 712501,
Mob: 9830343752

Sub: Approval for setting up of Grid connected Roof top Solar PV power plant of PV Array Capacity 20 kWp at **Balagarh Bijoy Krishna Mahavidyalaya**
Sir Madam,

The Government of West Bengal has approved a project for installation of 900 nos. grid connected Solar PV Power Plant each of array capacity 10 kWp at various schools and 100 nos 20 kWp systems at various colleges in West Bengal. The West Bengal Renewable Energy Development Agency (WBREDA) being a State Nodal Agency has been assigned to implement the project.

Under this project, a preliminary survey has been carried out at the prospective colleges to assess the technical feasibility/ suitability for installation of Grid Connected Roof Top Solar PV Power Plant of array capacity 20 kWp

In this connection, I would also like to inform you that the PV Power Plant will be of grid connected type without battery backup. The power plant will supplement energy consumption from grid supply and thus reduce the expenditure for electricity through net metering arrangement.

As per preliminary survey after the site inspection, your college is otherwise technically feasible for installation of grid connected Solar PV Power Plant of array capacity 20kWp. WBREDA has deployed M/S Vikram Solar Ltd of Address: The Chambers, 8th Floor, 1865, Rajdaaga main Road, Kolkata-700107, Sri Joydeep Roy Chowdhury, Mobile No: 9073954561 to execute the project at your college.

In this context, you are requested to apply to your local electricity supply office of WBSEDCL and submit the Prescribed Application Form(s) of WBSEDCL (available at supply office and also at the website www.wbsecl.in) after duly filled up and execute the Agreement with WBSEDCL for net metering arrangement with export import energy meter. A format of prayer letter to WBSEDCL is enclosed herewith.

It may be noted that the necessary expenditures as required for your institution shall be borne by the Government of West Bengal through WBREDA as a part of this project. The requisite fund will be placed to WBSEDCL centrally at their Corporate Office.



Page 1 of 2

The project shall be implemented at your college maintaining the following terms and conditions:

Scope and Responsibility of WBREDA:

- 1) Setting up of PV power plant
- 2) Hand over the project to the college after installation and commissioning of the power plants.
- 3) Preventive and breakdown maintenance service as and when required for a period of five (05) years from the date of commissioning of the power plant
- 4) WBREDA shall be the "Principal of the Project" during initial five (05) years maintenance period.
- 5) WBREDA will provide training to the beneficiary for day to day operation and maintenance of the system

Scope Beneficiary Organization (College):

- 1) The College shall be the beneficiary and end user of this project.
- 2) Providing of necessary clear roof space for installation of PV Array as identified during technical feasibility survey at the **College on 9/23/2019**
- 3) Providing of necessary separate space for installation of PCUs and other equipment Array as identified during technical feasibility survey at the **College on 9/23/2019**
- 4) Ownership of project will rest with the college. The asset of this project shall not be transferable. At the end of the life of the project the materials shall be disposed of properly.
- 5) No vertical extension / augmentation/ demolition of the proposed roof and no vertical extension of annexed buildings at South , East and West side of the proposed roof shall be done by the college authority to avoid the shadow effect on PV Array.
- 6) The college shall take up the necessary formalities with the utility (DISCOM) for arrangement of Net metering.
- 7) Regular cleaning of Solar PV Array at least once in a week in order to obtain optimum generation
- 8) Safety & security for protection of the system.
- 9) Providing all sorts of support during installation of the system and also to maintain the system.
- 10) The college shall designate one of their officials as the as the Nodal officer to look after the project.
- 11) Arranging of store room or make arrangement to store the material at the project site with security during installation of power plant.
- 12) Providing water source inlet point from which module cleaning arrangement may be set in the array field.
- 13) After five years from the date of handing over of the system, the college will make necessary arrangement for trouble free operation of the Power plant at their own cost.

You are requested co-operate during the installation process of the PV Power Plant at your institution For any further assistance, you may contact **Sri Soumya Prokash Sil , Mobile No: 7003803752, Sri Sourav Das, Mobile No: 9062292033.**

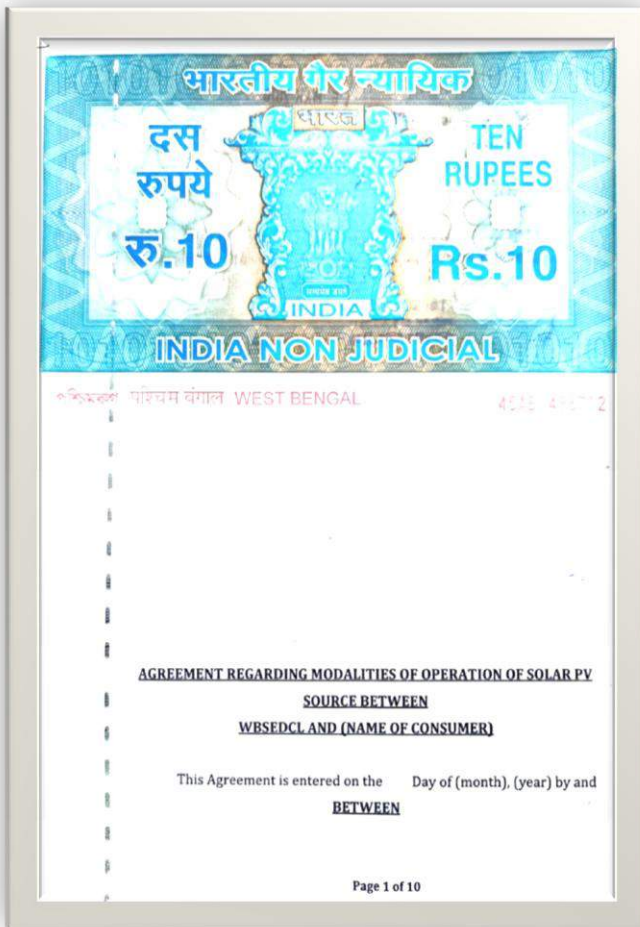
Encl: Format of prayer letter to WBSEDCL

Yours faithfully

(P.K. Basu)
Chief Engineer

Page 2 of 2

The Approval Letter of West Bengal Renewable Energy Development (WBREDA) to BBKM as on 17.11.19



West Bengal State Electricity Distribution Company Limited, a Company incorporated under the Companies Act, 1956 having its Registered Office at Vidyut Bhawan, Bidhan Nagar, Kolkata - 700091 (hereinafter referred to as the WBSEDCL which expression shall, unless repugnant to the context or meaning thereof, include its successors and assigns) of the **ONE PART**.

And

The (Name of the consumer with address), a medium voltage / high voltage consumer WBSEDCL (hereinafter referred to as the "CONSUMER", which expression, unless excluded by or repugnant to the context or meaning thereof, shall be deemed to include its successors and assigns) of the **SECOND PART**.

WHEREAS:

A. Installation of one ^{20KW} low capacity Solar PV source at (Name of the consumer with address) is complete and ready for operation and installation check-up and clearance by testing department of WBSEDCL.

B. CONSUMER is a medium voltage / High voltage consumer of ^{CC Hoojly} Somra Bazar Regional office / Customer Care Centre (Previously Known as Group Electric Supply), WBSEDCL having consumer No. 163220268.

C. The newly installed Solar PV source at CONSUMER is intended to be interconnected and operated in parallel with WBSEDCL distribution system at medium voltage/high voltage and accordingly application has been submitted to WBSEDCL for such interconnection in terms of the West Bengal Electricity Regulatory Commission (Cogeneration and Generation of Electricity from Renewable Sources of Energy) Regulations, 2013 or any subsequent amendment/replacement of it from time to time to which WBSEDCL agrees on the terms and conditions as mentioned in this agreement.

AGREEMENT REGARDING MODALITIES OF SOLAR PV SOURCE BETWEEN WBSEDCL, SOMRA BAZAR, HOOGHLY and BBKM

NOW, THIS AGREEMENT WITNESSTH AS FOLLOWS:

1. That CONSUMER shall be responsible for the design, installation, operation and maintenance of the Solar PV Source.
2. That in case of any defect being discovered in any part of the installation either by CONSUMER or by WBSEDCL, it shall of its own or at the request of WBSEDCL, forthwith isolate/ disconnect the faulty part of the installation from the circuit of WBSEDCL. WBSEDCL shall not have any responsibility whatsoever regarding the installation or any equipment.
3. That to avoid accident, CONSUMER shall make necessary arrangement for instantaneous disconnection of the Solar PV source as well as WBSEDCL source in case of any abnormal situation occurred from either end. Both the sources should also have independent arrangement to isolate itself immediately upon occurrence of abnormal condition, internal or external, in order to avoid any damage through suitable protection devices. In case of any untoward happening in spite of the best effort by the respective agency, the loss of damage will be shared by each agency on their part and every attempt would be taken to restore the system to its normalcy at the earliest.
4. That CONSUMER shall provide suitable place for installation of two separate meters or one export-import meter for the purpose of billing on net energy, from the date of installation of such meter, as per Renewable Regulations or any other regulations under Electricity Act 2003.
5. That CONSUMER shall continue to be a consumer of WBSEDCL and all obligations under the terms of condition of the Agreement entered with WBSEDCL shall continue to be complied.

6. That WBSEDCL will issue energy bill on net energy in line with the regulations of West Bengal Electricity Regulatory Commission in each billing cycle.
7. That in each billing period, WBSEDCL shall record the quantum of injected energy to the WBSEDCL grid from Roof top Solar PV Source and the energy supplied by WBSEDCL. In each billing period, WBSEDCL shall raise bill on net energy after offsetting the injected power from Roof top Solar PV Source following the billing procedure given in Annexure-1 as per Renewable Regulations where applicable tariff will be as per tariff order issued under West Bengal Electricity Regulatory Commission (Terms and Conditions of Tariff,) Regulations, 2011 or, any subsequent amendment / replacement of it from time to time under section 61 of Electricity Act 2003 and the consumer shall make payment in time. Excess energy injected to the WBSEDCL grid from Roof top Solar PV Source, if any, will be carried over to the next billing cycle. However, at the beginning of each financial year, cumulative carried over energy from Solar PV Sources will be reset to zero. No payment will be made for any spill over of energy.
8. That any delay in payment shall attract surcharge as per prevailing West Bengal Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2011 or its amendment or subsequent replacement of it under section 61 of Electricity Act 2003 by West Bengal Electricity Regulatory Commission (WBERC).
9. That in the event of any default in payment or non-compliance of obligation/ any of the terms of this agreement, the matter will be dealt in accordance with the regulation 4.1 of West Bengal Electricity Regulatory Commission (Electricity Supply Code) Regulations, 2013 or its amendment or subsequent replacement of it under section 50 of Electricity Act, 2003.

AGREEMENT REGARDING MODALITIES OF SOLAR PV SOURCE BETWEEN WBSEDCL, SOMRA BAZAR, HOOGHLY and BBKM

10. That CONSUMER shall abide by the provisions of the Indian Electricity Rules, 1956 where applicable and the Regulations made with relation to safety u/s 53 of the Electricity Act, 2003 by the Central Electricity Authority in regard to testing and installing of the source as applicable.

11. That CONSUMER shall not indulge in any unauthorized transaction of electricity with third party or carry out any unauthorized alteration/extension/reconnection. In case any such unauthorized unlawful practice is detected, the service will be discontinued and this agreement will be terminated following a 7 days' notice for termination.

12. That WBSEDCL will disconnect the service in the event of any distress, damage to electrical plants, electric lines or meter and for prevention of loss of human life as provided in the West Bengal Electricity Regulatory Commission (Electricity Supply Code) Regulations, 2013 or its amendment or subsequent replacement of it under section 50 of Electricity Act 2003.

13. That the Agreement shall be effective from the date of its signing. The validity period of the Agreement shall be for a period of 1 (one) year from the date of installation of export-import meter for the purpose and may continue till it's determination unless earlier terminated for any reason contained herein. Either Party, however, with the consent of the other Party, shall be at liberty to determine this agreement before the expiry of the aforesaid period.

14. That this agreement is entered into between WBSEDCL (1st party) and CONSUMER (2nd party) for energy adjustment in terms of clause 6.1(v)(c) of the Renewable Regulations (or any amendment thereof).

15. That this Agreement shall not be considered as Power Purchase Agreement.

16. That save and except here-in-before specified or otherwise provided in the event of any dispute or difference arising at any time between the parties to the agreement in regards to any matter arising out of or in connection with this Agreement, such dispute or difference shall be settled through mutual discussion.

AGREEMENT REGARDING MODALITIES OF SOLAR PV SOURCE BETWEEN WBSEDCL, SOMRA BAZAR, HOOGHLY and BBKM

IN WITNESS WHEREOF the parties have executed these presents through authorized representatives on Day of (month), (year).

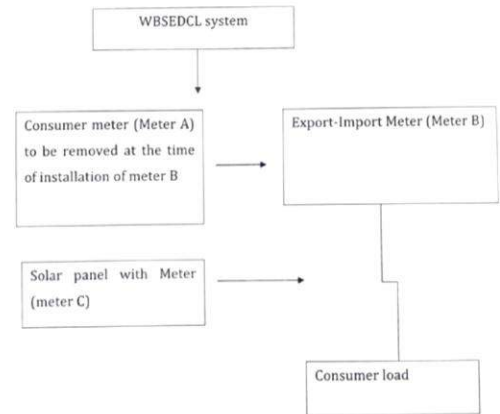
| | |
|---|---|
| Signed and delivered for and on behalf of WBSEDCL | Signed and delivered for, and on behalf of CONSUMER |
| In the presence of: | In the presence of |
| i) Signature : | i) Signature : |
| Designation : | Designation: <i>Account. Eng. in Charge</i> |
| ii) Signature : | ii) Signature: <i>S. B. BAZAR</i> |
| Designation | Designation: <i>BBKM</i> |

Page 7 of 10

Ancexure-I

Billing procedure as per Regulation 6.1 (V) (c) of West Bengal Electricity Regulatory Commission (Cogeneration and Generation of Electricity from Renewable Sources of Energy).

Regulations, 2013 (Renewable Regulations): Connection diagram: Connection diagram of Export-Import meter in respect of the consumers of WBSEDCL in whose premises rooftop solar PV panel will be installed as per Renewable Regulations:



Billing Procedure : The bill will be claimed based on meter reading of export meter (B) as per following methodology when the performance of such meter is satisfactory.

Page 8 of 10

AGREEMENT REGARDING MODALITIES OF SOLAR PV SOURCE BETWEEN WBSEDCL, SOMRA BAZAR, HOOGHLY and BBKM

| Item | Unit | Quantum |
|---|------|-----------------|
| Energy drawal in a billing cycle as recorded in the meter B | Kwh | E _{IB} |
| Energy exported in a billing cycle as recorded in the meter B | Kwh | E _{EB} |
| Max. Demand (drawal mode) in a billing cycle as recorded in the meter B | KVA | D _{IB} |

a) When $E_{EB} \leq 90\%$ of E_{IB} ,

i) For 1st billing cycle, if energy consumption (E_{prior}) with max. demand (D_p^*) is recorded in meter A before removal of meter A at the time of installation of export meter B, such consumption (E_p^*) is to be added with the net energy ($E_{IB} - E_{EB}$). Hence, Energy Charge will be claimed as per Tariff order on the energy ($E_{prior} + E_{IB} - E_{EB}$) during first billing cycle and from 2nd billing cycle onwards on the net energy ($E_{IB} - E_{EB}$), if $E_{EB} \leq 90\%$ of E_{IB} where E_{EB} will account excess energy brought forwarded from the earlier billing period.

ii) E_p, I_{01} and D

I_{01} will be considered zero (0) for 1st billing cycle, if no energy consumption and max demand recorded in meter A before removal of meter A at the time of installation of export meter B.

b) When $E_{EB} > 90\%$ of E_{IB} , the excess energy above 90% of E_{IB} is to be carried forwarded to next billing cycle and E_{prior} , if any recorded in meter A before removal of meter A at the time of installation of export meter B, will be added with $(E_{IB} - E_{IB} \times 0.9)$ for 1st billing

cycle and then from 2nd billing cycle onwards on the net energy ($E_{IB} - E_{EB} \times 0.9$), if $E_{EB} > 90\%$ of E_{IB} , where E_{EB} will account excess energy brought forwarded from the earlier billing period

c) At the end of each financial year, any excess energy injected into WBSEDCL grid will be reset to zero.

Demand Charge will be claimed as per Tariff order on the D_{prior} or D_{IB} or 85% of the Connected load of the consumer whichever is higher.

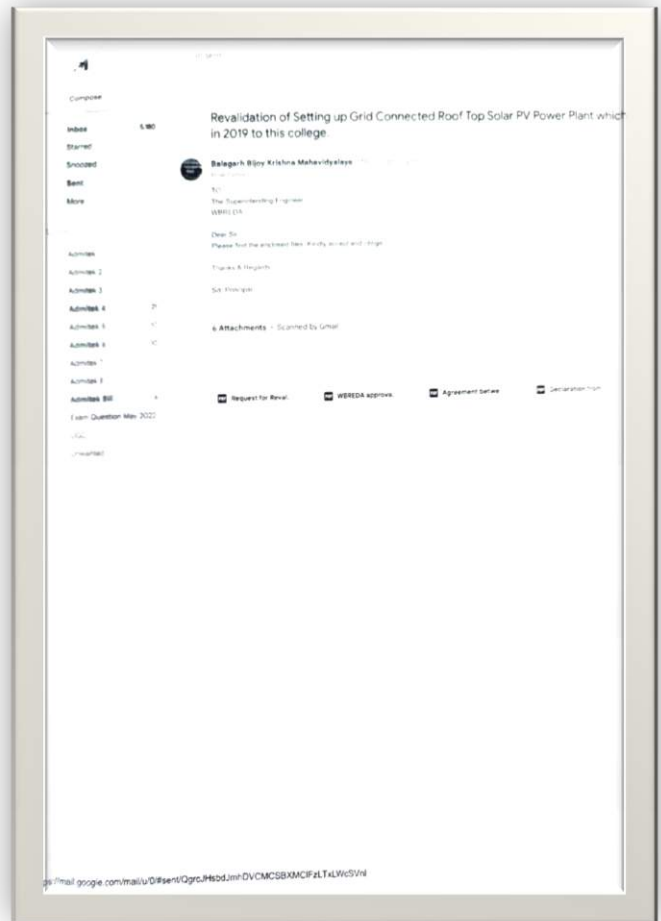
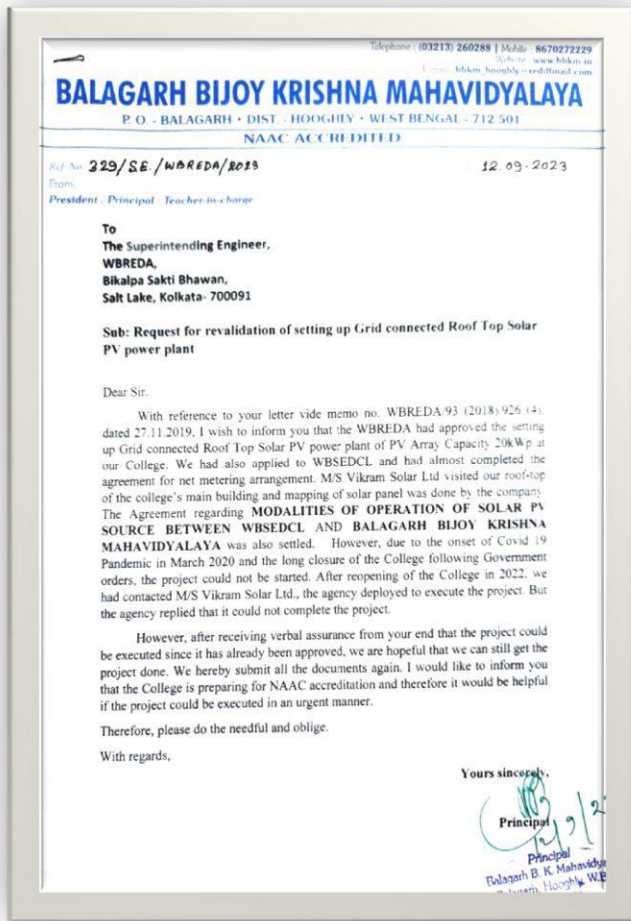
MVCA will be claimed in first billing cycle on the energy ($E_{prior} + E_m - E_{EB}$), if $E_{EB} \leq 90\%$ of E_{IB} or ($E_p^* + E_{IB} - E_{IB} \times 0.9$), if $E_{EB} > 90\%$ of E_{IB} . From 2nd billing cycle onwards, MVCA will be claimed on net energy ($E_m - E_{EB}$), if $E_{EB} < 90\%$ of E_{IB} or ($E_{IB} - E_{IB} \times 0.9$), if $E_{EB} > 90\%$ of E_{IB} .

Meter rent for export import meter B (3-phase /1- phase), as the case may be, will be claimed as per Tariff order.

ED will be applicable as per Bengal Electricity Duty Act.

5

AGREEMENT REGARDING MODALITIES OF SOLAR PV SOURCE BETWEEN WBSEDCL, SOMRA BAZAR, HOOGHLY and BBKM



APPLICATION TO WBREDA FOR REVALIDATION OF SALAR ENERGY WHICH WAS SANCTIONED EARLIER AS ON 12.0902023

Environmental Development and BBKM:

Balagarh Bijoy Krishna Mahavidyalaya is situated in the district of Hooghly, WB, surrounded by green trees. The College has an abundant green garden containing some very rare plants sprawling over a vast expanse of land maintained by the Nature Club in assistance of WWF. This college celebrates Banamahatsab during the month of June each year, after the onset of monsoon. **Initially it has been done by NSS Unit-2 up to the year 2021. Later BBKM Nature Club was formed in the end of 2021.** The nature club's volunteers watering the plants from time to time. The green tree hosts a wide variety of birds, small mammals like bats and squirrels and different types of butterflies and insects. The students of different subjects, English, Bengali, History, Philosophy, Mathematics, Chemistry, Physics, and Economics join in Nature Club.

This College has initiated 'The Green Campus' program just a year back. The purpose of the audit is to ensure that the practices followed in the Campus are in accordance with the Environmental Policy adopted by the College. With this in mind, the specific objectives of the audit is to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the different departments are in compliance with the applicable regulations, policies and standards.

All the avenues within the College gate to college building are therefore adorned with tall trees bearing emerald green leaves and beautiful flowers to create a homogenous feeling amongst everyone within the campus. We have already introduced planting of saplings as on 6th August, 2022 by the students for adducible greenery within the campus and also inculcate awareness towards nature in their minds. The total program was conducted with active participation of WWF, India, and Kolkata Branch.

Balagarh Bijoy Krishna Mahavidya has been taking serious steps to deal with the above issues. Being only Higher education Institution of non technical academic activities, BBKM initiated serious awareness program on the various grounds of the said issue. To overcome this overall issue, BBKM and its Nature club play a significant role that could lead to birth of environment awareness. From "Plastic Free" rally to "Arsenic awareness", BBKM has played the major awareness of the

issue. Since Students are the next reflection of the society, Webinar and Seminar, organized by IQAC and Other Cell of BBKM, touched of awareness in mind of students at large.

THE COLLEGE ALREADY ADOPTED SOME GREEN INITIATIVE AND ALSO ACHIEVED THE FOLLOWING OBJECTIVES:

1. This College followed the Green Environmental policy in last five years and took efforts for sustainable development on the College campus and college adjacent areas.
2. The College has reconstituted the nature club which already included the team of faculty and student as members of Nature Committee which work to maintain biodiversity on the campus and also participate in preventing pollution in and around the campus.
3. Some of the best practices such as campus cleaning, maintaining tree plantation, introducing plastic free zone, No Horn area, etc., are followed in the campus.
4. College has a plan to install the solar panels in collaboration with WBREDA and with major financial assistance under UGC, CPE Phase II etc since 2018.
5. College sets a target for maintaining the disposal of all sorts of **wastes, e-wastes and hazardous chemicals wastes** through Public Utilities Services available in Balagarh.
6. College regularized the Environmental Awareness programmes and workshop for faculty and students, and also involved the students in maintaining the environment awareness in villages .

7. All teaching and non-teaching staff members, students are advised to use recyclable materials for storing their food, water etc., to reduce the wastes.

8. Nature Committee has an objective that Students must acquire some exposure to maintain the People's Biodiversity Register through training, workshop etc., and every year.