

**COMPREHENSIVE GREEN AUDIT REPORT**  
**FOR**  
**MAHATMA GANDHI VIDYAMANDIR'S KBH**  
**ARTS, SCIENCE & COMMERCE COLLEGE, NIMGAON, DIST. NASHIK.**



**DATE OF AUDIT—APRIL 12, 2023.**  
**AUDIT CARRIED OUT BY—**  
**MM Consultancy Services, Nashik**



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## ACKNOWLEDGEMENT.

MM Consultancy Services Nashik is grateful to the Principal Dr.Ujjan Kadam & Management of Mahatma Gandhi Vidya Mandir's KBH Arts, Science & Commerce College Nimgaon Dist. Nashik for giving us an opportunity to carry out a detailed GREEN audit of their complex to identify potential for Green Initiatives taken in their complex to optimize environmental upgradation.

Environmental improvements by following green initiatives have gained utmost importance today for education institutions as environmental conditions are deteriorating day by day & therefore efficient GREEN management is the need of the hour. Apart from energy savings, Green Initiative effort leads to reduction in Greenhouse gas emissions which improves our environment to protect our planet earth from drastic climate changes & overall natural disturbance. We really appreciate the mission & vision of Shri Apurva Hiray & his team to acknowledge the importance of energy & environment upgrades for sustainable development for present & future generation.

National Assessment & Accreditation Council (NAAC) has also emphasized energy conservation & environment protection for educational institutions by providing an adequate platform for accreditation & Rating to encourage them for special efforts for these noble causes. Needless to say, our present & future generation can survive only if sufficient weightage & importance is given from our end to upgrade our present systems more in line with Nature & natural processes.

We are also grateful to Dr. Rajaram Shewale Sir & Dr. Bharat Shewale Sir for their necessary tech. inputs & proper co-operation provided for audit.

We are also grateful to Principal Kadam Sir for his valuable inputs, support & hospitality to make this audit transparent.

It may be noted that our audit is not faultfinding exercise but is intended to bring about continual improvements in your college campus for the benefits of all of us incl. our future generation.

Our Sincere thanks to MGVS BKH College Team who provided us with adequate data & tech. information to make this audit successful.



## EXECUTIVE SUMMARY.

The future of humankind depends very much on our ability to change our lifestyles and agree to follow a low consumption pattern of living in terms of resources taken from the globe and return to a sustainable development path at the earliest. The opportunity window for restoring nature to its prolonged state of hosting life forms to flourish under its caring environs is according to scientists, very short and lasting only up to 2030. Within this time, with the willing actions of every citizen wherever they are, coordinated and directed actions should start and continue thereafter till a balancing stage is reached where moderate use of resources and mitigation actions for healing the hurts already inflicted, balance positively to a sustainable nature.

Eco campus is a concept implemented in many educational institutions, all over the world to make them sustainable because of their mass resource utilization and waste discharge in to the environment. MGVS College believes that there is an urgent need to address these fundamental environmental problems and reverse the trends. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution.

Green Auditing of a Higher Education Institution is required as a part of Criterion VII (of the 7 criteria prescribed) under the Guidelines for Submission of the mandatory annual Internal Quality Assurance Report (IQAR) by Accredited Institutions. It works on the several facets of Green Campus including Water Conservation, Tree Plantation, Waste Management, Paperless Work, and Alternative Energy. With this in mind, the specific objectives of the audit was to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards.

Initially a questionnaire survey was conducted to know about the existing resources of the campus and resource consumption pattern of the students and staff in the college. In order to assess the quality of water and soil, water and soil samples were collected from different locations of the college campus and analysed for its parameters. Collected data was grouped, tabulated and analysed. Finally a report pertaining environmental management with its strength, weakness and suggestion on the environmental issues of the campus is documented.





## INTRODUCTION.

Environmental audit or Green audit reflects evaluations that help us to identify environmental compliance and management system, implementation gaps, along with related corrective actions. Green audit is a useful tool to determine how and where the most energy or water resources are being used, the type and volume of waste generated and can then considerations be given on how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. Overall, it plays a vital role in imparting a better understanding of Green impact on campus to staff and students.

### Need for green audit

As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. In this context, it becomes imperative to adopt the system of the Green Campus for the Institutes which will lead to sustainable development. Besides, it also reduces a sizable amount of atmospheric carbon dioxide from the environment.

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that accredits the institution according to the scores assigned at the time of accreditation. NAAC has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

### Objectives of the audit.

- \* Understanding the current practices of sustainability with regard to the use of water and energy, generation of wastes, transportation, purchase of goods, etc;
- \* Establishing a baseline of existing environmental conditions with focus on natural and physical environment;
- \* Creating awareness among students and staff concerning real issues of environment and its sustainability;
- \* To create a report that document baseline data of good practices and provide strategies and action plans towards improving environmental quality for the future.



## PROFILE OF MGV's KBH COLLEGE NIMGAON.

Arts College Nimgaon is situated on rural area at Nimgaon of the Malegaon Tahsil, Nashik District of the Maharashtra State. The College has opened the pathway of higher education to the youth. The college is established in 2000. Formerly it was known as Arts College Saundane. The college is located at the beauty of nature. A huge playground of the college provides an opportunity to the students to discover their talent in sports and games. The college will be a decent learning centre in the near future.

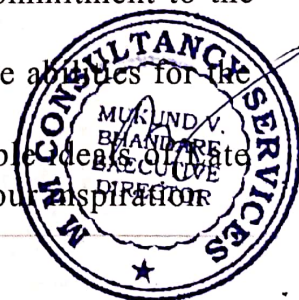
Hon'ble Samajshree Dr. Prashantdada Hiray, Ex- Minister of Transport and Protocol, Maharashtra State, has started the college at Saundane to provide the facility of higher education to the rural masses by keeping The Motto of the institution is 'Bahujan hitay Bahujan Sukhay' and the path shown by Karmveer Bhausaheb Hiray, the then maker of Historical Tenancy Act and the then Revenue Minister of Bombay Province, the founder of the two leading Institutions viz. Mahatma Gandhi Vidyamandir and Adivasi Seva Mandir on 2 October, 1952 at Nimgaon.

Hon'ble Dr. Apoorva Hiray, the Member of Legislative Council, Maharashtra State has shifted the college at Nimgaon, Tal. Malegaon by keeping the vision to convert the tiny college into the modern Educational Hub along with optimum educational facilities in the near future.

The college continues to impart higher education to the rural students who live in remote rural places. Majority of the students are economically and socially deprived. Along with facilitating the participation of rural students in higher education, its efforts are directed at providing holistic education that encourages critical and independent thinking.

### Objectives

- To provide opportunities of higher education to the poor, needy and especially to the down-trodden, and the backward communities of the society
- To impart quality educational facilities to the rural students
- To empower the rural students through curricular and extracurricular activities
- To promote the students to participate in the extracurricular activities
- To strengthen their mental ability, work ethics, commitment to the society and other morale
- To strengthen the communication skills, competitive abilities for the all-round development of the personality
- To explore the best possible ways to realize the noble ideas of Late Karmveer Bhausaheb Hiray, an unfailing source of our inspiration





- To develop the social relevance of knowledge
- To provide opportunities to inculcate integrity, innovation and excellence
- To work with a missionary zeal and be responsive to the social environment for attaining high-ethical standard
- To provide optimum educational facilities to develop skills
- To inculcate sense of commitment among students towards society
- To develop professional skills
- To develop virtues such as, secularism, national integration, commitment to social reformation, humanism, social justice and equality among the students



## METHODOLOGY.

In order to perform green audit, the methodology that included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations was adapted.

### **Onsite Visit.**

Field visit was conducted by the Green Audit Team. The key focus of the visit was on assessing the status of the green cover of the Institution, their waste management practices and energy conservation strategies etc.

### **Focus Group Discussion.**

The Focus Group discussions were held with staff members and the management focusing various aspects of Green Audit. The discussion was focused on identifying the attitudes and awareness towards environmental issues at the institutional and local level.

### **Energy and waste management.**

With the help of Teaching, Non- teaching staff, students, Administrative officer, Building Management Engineer and electrical Supervisor, the audit team has assessed the energy consumption pattern and waste generation, disposal and treatment facilities of the college. The monitoring was conducted with a detailed questionnaire survey method.

The study covered the following areas to summarize the present status of environment management in the campus:

- \* Water management
- Energy Conservation
- Waste management
- E-waste management
- Green area management
- Environmental Monitoring.





## OBSERVATIONS & RECOMMENDATIONS.

### 1. WATER MANAGEMENT.

The study observed that the main source of water for the institute is received from recharge wells (One Bore well & One Well) & lifted to 3 nos. above ground tanks on terrace of 750 Lit. capacity each. Water for potable purpose is received from one of the above tanks to RO Plant & then used by staff & students as required. There is also Gram Panchayat water supply available which alone however is not adequate to meet total campus requirements. Water is used for drinking purpose, toilets and gardening. The waste water from the RO water purifier is used for gardening purpose. During the survey, no loss of water is observed, neither by any leakages, or by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 30000 L/month, which include 5,000 L/month for domestic, 15000 L/Month for gardening purposes and 10,000 L/month for drinking purpose.

There is a Good Rain water harvesting initiatives observed in the college premises.

Harvesting of rain water is presently carried out by collecting rainwater from slanting roof sheets through various down comers around the college main building to underground tank specially constructed for this purpose. Drip irrigation of plants all over the area of the premises is highly appreciated.

#### Recommendations—

- It is however recommended to further make use of terrace space of Main buildings available to optimize rain water harvesting. As rain water is purest form of water, it could be conserved in large storage tanks for efficient use in summer season.
- Quality analysis of RO outlet water used for drinking purpose is desirable & should be carried out every three months in college Lab it self to know parameters like pH, TDS & Hardness for the safety of students & Staff.
- There should be a suitable frequency to clean the Terrace water storage tanks preferably every six months.
- RO Units should be maintained properly to keep them in working condition.
- Building terrace is not available eliminating the possibility of systematic rain water harvesting.



## 2. ENERGY MANAGEMENT.

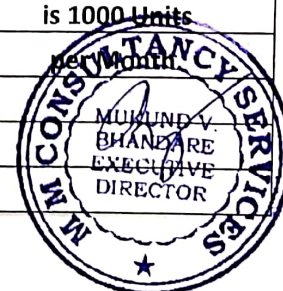
This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. The study carried out also analysed the use of alternate energy resources that are eco-friendly.

The energy is utilized in the Campus for lighting, space heating and cooling, running of laboratory instruments, appliances, water heating, ground water pumping, cooking and transportation. The source of energy for all the buildings within the campus is through electricity only.

The institution consumes about 700 KWH per Month average as indicated in the following Table. Besides, Concentrated Solar Power Plant of 10 KW Capacity having 32 solar panels is Installed in the Campus provides of the daily additional generation of 40 Units/Day from solar Source. The campus contains Lights and fans in use. Average cost of power purchased from MSEDCL is estimated @ Rs.8.44 per KWH.

The entire campus including common facility centres are equipped with LED lamps and LED tube lights, except at few locations as observed. Computers are set to automatic power saving mode when not in use. Also, campus administration runs on switch-off drill on regular basis. Noteworthy observation in the campus during our audit is to make provision of Solar Street Lights with a battery & the whole campus looks very attractive with these solar lamps in evening.

Month	Units-Kwh	Bill-Rs	Unit Rate-Rs.Kwh	Remarks
Jan-23	598	5284	8.84	
Dec-22	675	5907	8.75	Solar Power Plant
Nov-22	681	5956	8.75	of 10 Kw capacity
Oct-22	348	3261	9.37	is available for
Sep-22	1045	8901	8.52	Additional Power
Aug-22	685	5988	8.74	Generation.
Jul-22	709	6182	8.72	
Jun-22	657	5761	8.77	Expected generation
May-22	730	5717	7.83	from above solar plant
Apr-22	634	5024	7.92	is 1000 Units
Mar-22	795	6303	7.93	per month
Feb-22	764	5941	7.78	
TOTAL	8321	70225	8.44	



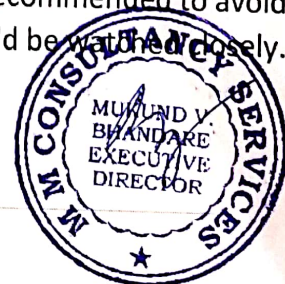


### ***Energy Rating***

After the complete survey and analysis of the campus as per ISO 50001:2018 Energy Management System Standards, we rate the campus Score 4/5.

### **RECOMMENDATIONS.**

- As % age of present solar power generation to Total power consumption is greater than 1 as solar power generation from 10 Kw solar plant is estimated @ 1000 Units per Month. Considering the power consumption of college campus, excess power generation can be exported to GRID & suitable credit can be obtained from MSEDCL. Present Import from the GRID should be Zero as evident from the Bills in future.
- A suitable preventive maintenance program is recommended for execution every month to clean the solar panels for optimizing solar generation capacity as the collection of dust & sticky material on the panel surfaces affects drastically the efficiency of solar power generation.
- Existing Ceiling fans may be replaced stepwise with energy efficient BLDC Motor Fans to cut down electricity consumption of existing fans by more than 50 % and therefore capital investment made for this initiative could be recovered within one year.
- All present energy inefficient lighting is replaced with energy efficient LED Lighting which is commendable on the part of management.
- There is no reflection of Imported Units, Exported Units & Solar power generated in the electricity Bill issued by MSEDCL which should be addressed with MSEDCL Officials & suitable credit for excess export should be availed. Also it is highly recommended to record daily solar power generation in a register for a reference so that import, export & solar captive generation can be monitored on regular basis for verification.
- Efficient use of existing renewable energy source is recommended.
- Adequate lighting is recommended in Class Rooms.
- Existing Solar power plant has no access for maintenance as it is installed on the roof sheets with supporting columns. Corrosion of roof sheets as well as supporting structure to be closely monitored & actions recommended to avoid collapse of power plant. This being a safety hazard, should be watched closely.



## **WASTE MANAGEMENT.**

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. Furthermore, solid waste often includes wasted material resources that could otherwise be channelled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus.

### **Liquid Waste Management-**

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out.

The waste water generated is disposed off into the underground sewage tanks/Pits through waste water drainage to municipal server. The source of wastewater is Domestic Waste Water i.e., Sewage water, Lab water & chemical wastes. The Sewage water mainly comes from Toilets of college, hostel, kitchen and canteen.

### **RECOMMENDATIONS-**

- A Suitable Sewage Treatment Plant (SWP) is recommended to be installed to treat sewage water for recycling & reuse purpose. Treated water can be used for Gardening. As water scarcity is becoming serious issue day by day, recycle & reuse of waste water is highly recommended.
- Sludge generated from SWP can be effectively used to produce manure which can be utilized for various plants in the Campus.

### **Solid Waste Management-**

Waste generated from tree droppings and lawn management are major solid wastes generated in the campus. Separate dustbins are provided for Bio-degradable and Plastic waste in order to segregate them at the source itself.

Single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Important and confidential reports/ papers are sent for pulping and recycling after completion of their preservation period. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc. and campus is declared as Plastic Free zone. Metal waste and wooden waste is stored and sent to authorize scrap agents for further processing. Glass bottles are sent to laboratories.





The college has to arrange separate bins to collect biodegradable and non-biodegradable waste generated in the campus. Regular meetings are conducted with ground staff regarding the cleanliness of the campus and proper disposal of waste.

Vermicompost is **the product of earthworm digestion and aerobic decomposition using the activities of micro- and macroorganisms at room temperature**. Vermicomposting, or worm composting, produces a rich organic soil amendment containing a diversity of plant nutrients and beneficial microorganisms.

Campus have already plans for Vermicomposting project in the cool zone to dispose off collected solid wastes on regular basis & thereby generating a compost which is used exclusively in Campus Garden.

### RECOMMENDATIONS.

- It is therefore recommended to install high capacity Vermi Composting disposal systems in a cool location. Apart from efficient disposal of solid wastes, the process can generate a good quality manure which can be sold in market if exceeded the campus demands.
- Regular cleaning & collection of solid wastes is recommended to avoid huge spread all over spoiling the beauty of Campus. Housekeeping efforts need to be increased to maintain the site clean & waste free.

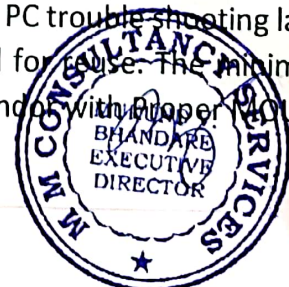
### E-Waste Management-

E-waste is a consumer and business electronic equipment that is near or at the end of its useful life. This waste makes up about 5% of all municipal solid waste worldwide. It is hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

E-waste generated in the campus is of minimal quantity. It is being effectively managed, keeping in mind the environmental hazards that may arise if not disposed properly.

The cartridges of laser printers are refilled outside the college campus. Awareness programme was conducted by college regarding E-waste Management. The E- wastes and defective items from computer laboratories are being stored properly and recycled in effective Manner.

The dismantled hardware of personal computers are used in PC trouble shooting lab. The dismantled electronic spare parts are immediately sold for reuse. The minimal amount of e- waste that is generated is taken by external vendor with proper MOU.



The Campus at present works on 70 % paperless functioning. Only critical circulars & Displays are printed out where necessary. 30 % Paper wastes are disposed off through Municipal take away system.

#### RECOMMENDATIONS.

- A wastewater treatment plant should be installed to recycle and reuse the waste water generated from domestic/Lab use.
- Use reusable resources and containers and avoid unnecessary packaging wherever possible.
- The management should take an initiative to purchase recycled resources when they are available.

#### GREEN AREA MANAGEMENT.

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy enacted, enforced and reviewed using various environmental awareness programmes.

Many trees are maintained in the campus (around 90 species) to maintain the bio diversity. Various tree plantation programmes are being organized at college campus through NSS (National Service Scheme) unit and Management. This program helps in encouraging eco- friendly environment which provides pure oxygen within the institute and creates awareness among campus students. The plantation program includes various types of indigenous species of ornamental and medicinal wild plant species.

Well developed Botanical Garden should be planned in the premises with Barcode system provided for Minimum of 100 Trees planted. Management should celebrates Birth day of each member who gifts one plant to management which is instantly planted on the same day. This is a noteworthy feature which highlights Green Area awareness of the Staff.

#### Roads-

Roads in college are laid with provision for rainwater to seep through easily. This enables the easy recharge of ground water.

Electric Vehicles are being used by students & Staff as a green initiative. This is appreciated & notable. Use of electrical vehicles to be increased.





### **Plastic free campus**

The usage of plastic in college is minimal. The staff and the students are not encouraged to use one time use plastic, plastic bags and disposable plastic things throughout the campus.

### **E – communication.**

The principal's office, all the Departments of the college, Examination cell, and laboratories are very well connected with a good and efficient LAN network. Hence all the inter office correspondence is done through email. This reduces the usage of papers.

### **RECOMMENDATIONS.**

- Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records.
- ➤ Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy.
- ➤ Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.
- ➤ Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
- ➤ Indoor plantation to inculcate interest in students, Bonsai can be planted in corridor to bond a relation with nature. Environmental monitor.
- Use of Bicycles & Battery operated vehicles is recommended in the Campus to eliminate Green gas emissions to improve the environment.

### **ENVIRONMENTAL MONITORING.**

As part of green audit of campus, the Green Audit Assessment Team has carried out the environmental monitoring of campus. This includes Illumination, Noise level, ventilation and indoor air quality of the class rooms. It was observed that illumination and ventilation is adequate considering natural light and air velocity present. Noise level in the campus is well below the limit.

Campus is making a good use of available Coconut Trees saplings to make Brooms of various sizes & have set best example of Recycle & Re-use.

Campus has maintained pollution free environment with good use of available resources.



## CONCLUSION.

Though the institution is predominantly an Arts, Science & Commerce college, there is significant environmental research both by faculty and students. The environmental awareness initiatives taken by the management are substantial. The installation of solar Power Plant, Usage of Tree plantation through a gift on Birth Day celebration & Bar Coding for each tree in Botanical Garden practices are recommended. Besides, environmental awareness programmes initiated by the administration proves that the campus is going green. The Herbal garden maintained by the College is highly appreciable. Few recommendations are added for waste management and waste reduction using alternate eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus and thus aid in a sustainable environment and community development

Vermicomposting sites for solid waste treatment are to be initiated & should be expanded in capacity to take care of total solid waste generated in the Campus.

There is a vast scope to utilize the present capacity of solar power by availing the credit for excess power generation. Optimizing use of renewable energy is the first step taken to reduce green house emission contributing a lot in Green Development.

Temperature/Humidity Display at the helm of the main building is recommended & to be initiated thereby indicating a totally dedicated Team spirit for taking green house project on management priority.

Students have been assigned responsibility for keeping the campus clean & it was a pleasure to note that students are equally cautious & interested in a noble cause of waste management.

Solar Street Lights Should be effectively installed to beautify the campus in the evening & all credit goes to staff & Management for this wonderful scheme. **Also the roof sheets may be corroded in future & Solar Unit is installed on the same. This is a major safety hazard & corroded sheets to be replaced on priority.**

Last but not the least, Green awareness in the campus is of very high order & Team work is really appreciated. Lot of work has been done with initiative & awareness to keep College Campus Clean & Green & adequate maintenance is provided to sustain the efforts already taken.

Good Luck.





## ANNEXURE-1

### LIST OF PLANTS

Plantation at MGV's KBH Arts, Science & Commerce College,  
Nimgaon.

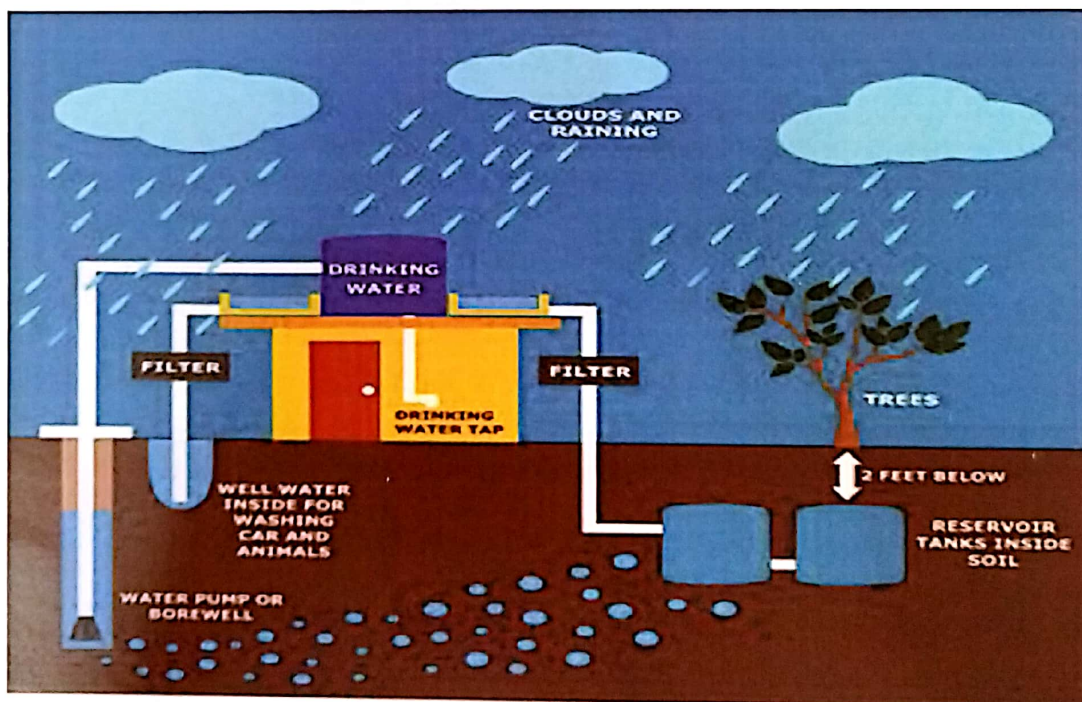
नारळ 20  
बदाम 8  
निंब 70  
कांचन 5  
आंबा 27  
चिंच 3  
पेरू 3  
पापडी 6  
सप्तपदी 2  
पिंपळ 10  
वड 2  
जांभूळ 4  
गुलमोहर 3  
रामफळ 1  
शेवगा 1  
उंबर 4  
सिसव 1

PHOTO GALLERY.





RAIN WATER STORAGE TANK



RAIN WATER HARVESTING







NATURAL WELL



RO PLANT FOR DRINKING WATER.







**SOLAR POWER PLANT ON THE ROOF.**

