Minutes of Green Committee Meeting of IIT Roorkee held on Dec 20, 2021

The following members were present:

1. Prof AK Chaturvedi, Director - Chairman
2. Prof Arun Kumar, HRED - Convenor
3. Prof Umesh Kumar Sharma, Dean Infrastructure - Member
4. Shri Ajay Sharma, Institute Engineer - Member
5. Shri Bhavneesh Lal, Institute Architect - Member
6. Prof Avlokita Agarwal, Arch & Planning - Member
7. Prof Bhanu Prakash Vellanki, CED - Member
8. Prof Ram Manohar Singh, HSS - Member

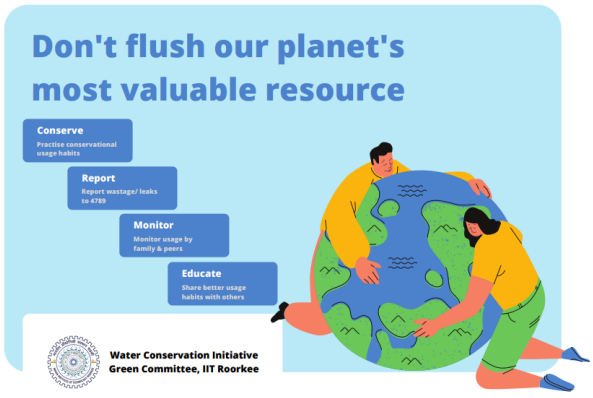
Prof M. Parida, Dy Director; Prof ML Kansal, Prof. M.A. Iqbal Associate Dean (Bhawan & Mess), Ms. Dyutisree Haldar, R/S and Shri Vaibhav Jain Student could not join the meeting as they were out of station or preoccupied.

Prof A.K Chaturvedi, Director while welcoming the members of committee, desired that the initiatives taken by Green committee should become the regular activity of the respective units/offices of the institute for campus sustainability. He asked Prof Arun Kumar, Convenor Green committee to present the agenda scheduled for the meeting.

Agenda 1. Actions Taken Report:

The action taken report on the minutes of meeting held on July 24, 2021 were presented and deliberated and the same are given below.

No.	Reference	Title / Matter	Actions Taken and deliberated
01	April 14 , 2021 (Agenda 1)	**Biodiversity on campus:** It was suggested that to create awareness among the campus residents, activities related to this can be planned with the students of eco club (e.g. Bird watching, etc.). It was also decided that the list of species of the flora and fauna found on the IITR campus through this survey, shall be added on the IITR's website so that the campus fraternity can view the same and also add pictures new species if found by them. The images received will be initially screened and refined by WII before they are uploaded on the IITR database. WII shall make a presentation on the updated status.	Study for Biodiversity in the campus has been completed and a preliminary report was released on launching programme day of 175 years celebration on Nov 25, 2021. https://www.iitr.ac.in/GP/pdf/Biodiversity_of_an_Urban_Greenspace_IIT_Roorkee_Report.pdf The final report is expected from WII by April 2022. **Further Actions** An email message be broadcasted to institute community (staff and students) along with the report to create awareness and contributing to the efforts for sustainability.
02	April 14 , 2021 (Agenda 2)	**Water (Planning for distribution, monitoring, and maintenance including desired water quality to reduce water foot print):** Prof Bihu Suchetana, CED was assigned to undertake the water consumption	1. GPR survey is in the last legs, preliminary drawings have been prepared (attached) which will be finally validated in the upcoming weeks and submitted. Since the last meeting, GPR tender was floated, vendor was finalized- ESI Services India LLP, their work was initiated and preliminary GPR

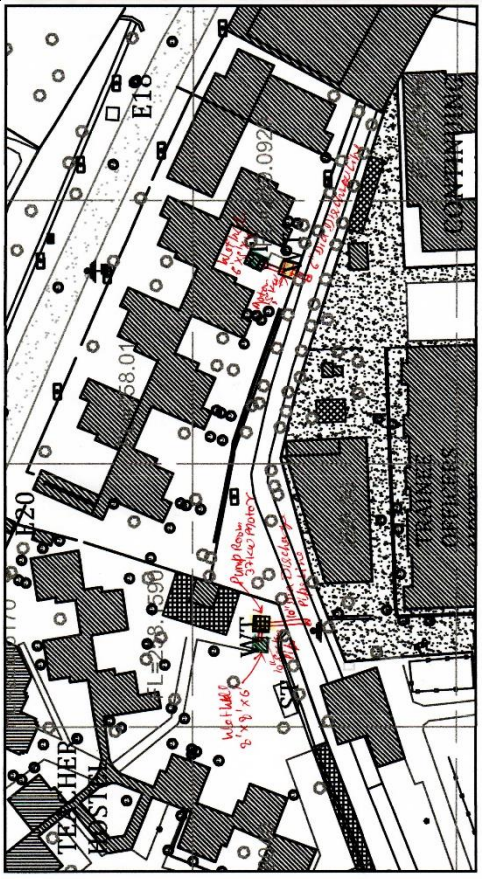
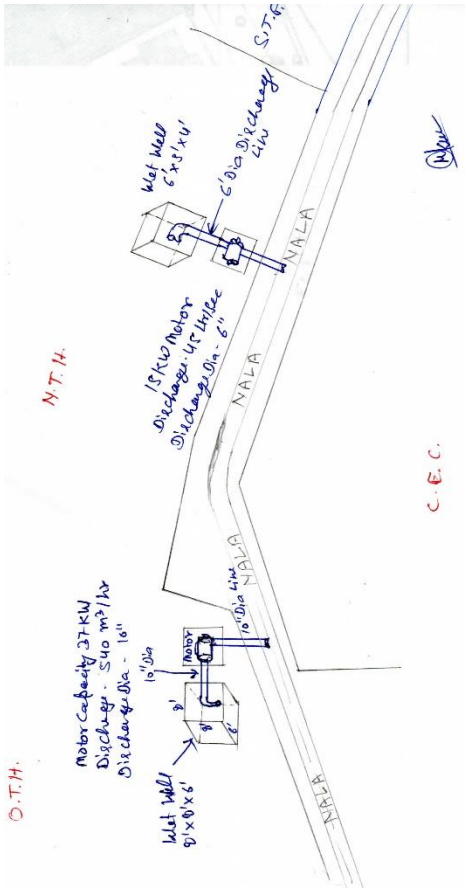
No.	Reference	Title / Matter	Actions Taken and deliberated
		issue and prepared a plan for the campus. It was discussed that the testing for the identification of dead zones and other regions within the water distribution system with relative lesser quality of water can be outsourced. Instruments can be deployed to detect water leakage. It was suggested that Prof Bihu should have a meeting with E&W to determine the zones for bulk water metering in the campus as well as the budget for the same, in a phased manner. It was informed that 1 MLD of treated waste-water from the sewage treatment plant is in use for watering of sports grounds and lawns. Prof Umesh Sharma Dean Infra informed the committee that the laying of underground pipeline for the same has been completed. To carry out this matter forward, it is essential to create awareness among the campus fraternity regarding sensible use of water and that the sweepers, gardeners and cleaners should also be part of this survey and awareness. Proposal of Prof Bihu Suchetana to carry out the survey of the water lines and carryout the water distribution quality and quantity analysis with the required funding of Rs.6.28 Lakh shall be supported by Dean Infra to kick-start the same.	survey, aided by cable locator technology, was carried out. Currently, their on-site team has been de-mobilized and they have prepared initial drawings, which will be validated and finalized in the upcoming weeks. 2. From January, monthly informational emails to the campus community to serve as visual reminders for water conservation has been scheduled. Banners and pamphlets for display across various locations on campus have also been prepared (attached and shown below), which will be put up on display soon. 3. The final analysis of the campus-wide survey conducted to test public perception on water conservation has been completed and the findings are provided in the attached ppt. (Annexure – 1) **Next steps:** Based on the results of the GPR survey, the following tasks will be performed: a. Water quality testing at dead zones/ critical locations and assessment of the risks/related measures b. Locations for installation of bidirectional and/or unidirectional flow meters within the network Further, preliminary decisions on installation of low-flow, water saving fixtures (related to cost, locations etc.) will be explored 

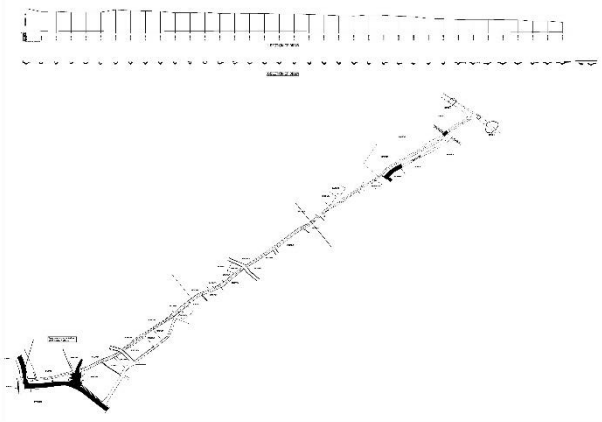
No.	Reference	Title / Matter	Actions Taken and deliberated
			 **Further Actions** 1. Based on the survey a zone/area be selected for making 100% metering for monitoring the water consumption and a suitable telescopic tariff be planned and implemented. 2. In future all water efficient fixtures (taps, shower heads, cisterns, toilets, urinals, lawn sprinklers etc.), be used, whenever/wherever changed are required. For deciding the specifications and quality of these fixtures, a committee may be constituted by Dean (Infra) including Prof Bihu Suchetana.
03	April 14 , 2021 (Agenda 3)	**Waste:** Prof BP Vellanki presented the matter of solid waste management on campus. After a detailed discussion on the same, it was decided that segregation of solid waste and Bio-methanation of organic part is considered as the option to reduce the waste contribution to the society and retrieving the energy from the waste. A detailed report on the feasibility, costing and land requirement shall be prepared by Prof BP Vellanki. For locating bio methenation plant the space shall be identified in the	Before the Bio-methanation unit can be installed, the plan was for sensitisation of the community in a phased manner with assistance of NSS students. Without segregation, the plant will fail. To discuss this and various aspects such as possible fines as a deterrent against not segregating waste, etc. a meeting was held under the aegis of Deputy Director, with relevant people. NSS was supposed to assist in the sensitisation program. Confirmation from NSS is awaited. Followed up with Dean Infra regarding logistic aspects. Meeting was held in September 7th with Infra Team. A DPR has been prepared.

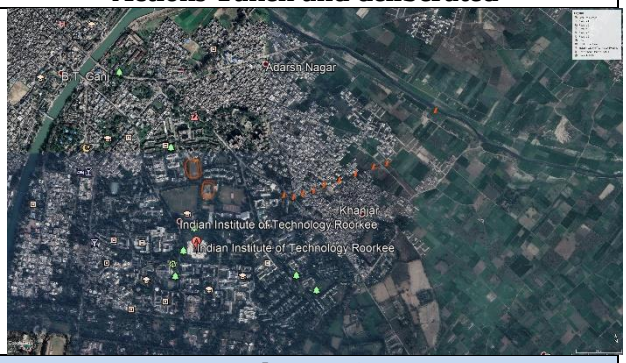
No.	Reference	Title / Matter	Actions Taken and deliberated
		campus or otherwise Municipal Corporation of Roorkee shall be requested to provide. Any budget required for preparing the plan and detailed project report shall be provided by the institute.	Permission given for fabrication of continuous feeder Vermi composting unit which will serve as back up to biomethanation unit and more importantly required for digesting the sludge from biomethanation unit fit for agricultural or horticultural use. The prototype vermi composting continuous feeder unit has been fabricated with help of students of Eco Group. It is set up opposite the STP near the rotary drum composting unit. Will be used to develop the population of Australian night crawlers (red wrigglers) required for larger scale operation later. Initial population of worms will be from a company in Meerut. Visits companies in Meerut which are into large scale vermi composting of cow dung has been completed. Have been running batch unit since 3 months to learn the nitty gritty first hand. 5. Regarding solid waste management, the draft DPR is ready and has been shared with Dean Infra for comments to make it more relevant to the objective. The link is below: https://iitracin-my.sharepoint.com/:w:/g/personal/bhanuprakashv_ce_iitr_ac_in/Ed19Z8z3yB1AhicBkvrl8PAB1m1oWEywklSHTS4Nbemj4Q?e=enfaoP
			Further Actions
			Dean (Infra) and Prof Bhanu P Vellanki have been suggested to move forward on this matter. A cost estimate, time line and details on the proposal be considered by Dean (Infra) for further processing of the matter.
		Under the guidance of Prof BP Vellanki, Shri Praharsh and Shri Devesh students from the ECO Group presented the study conducted by them on the Paper, Plastic & Styrofoam Cutlery problems and substitutes. It was decided that this idea can be initiated by Student's council along with the co-operation of Bhawans and Mess, with the support of Associate Dean (Bhawan and Mess) and guidance of Prof BP Vellanki. This issue can be addressed in stages. One bhawan can be targeted in the first instance. Further decisions can be taken after seeing the results stage-wise. Prof. Avlokita Agarwal also suggested about an organization 'Maathi' who make clay/earthenware cups. This	Since 1st and 2nd year students are not back on campus due to the pandemic situation, the initiative did not take off. This shall be taken up in due course.
			Action awaited.

No.	Reference	Title / Matter	Actions Taken and deliberated
		option might be considered after studying the feasibility of this proposal and looking at the stage-wise results.	
04	April 14 , 2021 (Agenda 4)	**Energy:** An order has been placed for the installation of 1 MWe Solar photovoltaic on hostels roof 1.89 per kWh for a power purchase agreement of 25 years expected to be completed by March 2021 and the work on Opex basis from a RESCO (Renewable energy sources company) recently. DPR prepared by PGCIL has been agreed by the institute and implementation work is under progress and expected to be completed by March 2021.	1000kWp capacity Grid Connected Solar Photo Voltaic System has been commissioned on 10.10.2021. Since IIT Roorkee is installing a capacity of 2.8 MW of roof top solar which may be the highest among sister institutions for which a thorough search may be made and if found confirmed, this initiative can be released to the media on 25th Nov, 2021 on occasion of IITRs 175 years of celebration. **Further Actions** A poster and brochure on solar initiative taken by institute be prepared and circulated among the institute community for creating awareness and utilisation of solar energy in the campus. This may be done at the earliest by taking on the details from Associate Dean (Infra) Electrical.
	April 14 , 2021 (Agenda 4)	**Energy:** Use of energy efficient appliances and systems for reduction in electricity: Use of energy efficient appliances in the campus is being practiced for several years. However this is being done in piecemeal. Recently a MOU has been signed by IIT Roorkee with Power Grid Corporation where they agreed to support the activities of energy efficiency and reduction in power consumption. A report has been received from Power Grid Corporation and shall be shared by institute engineer with green committee convener. It was decided to conduct an energy audit especially of non-residential areas. As has been done in the past, this can be done by involving the students through internship programmes.	After several round of discussions PGCIL is inviting the tender shortly. **Further Actions** The progress on the same be presented during the next meeting by Associate Dean (Infra) El.
05	April 14 , 2021 (Agenda 5)	**Vehicles:** Proposal of procuring e-Car has been initially dealt by Prof In charge Vehicle and as per green committee minutes is being dealt by the convener of Green Committee since March 2020. MMS has again proposed the procurement through GEM but no quotations on GEM are being received even after 3 trials. Prof Arun Kumar suggested that the proposal to procure e-cars should be	Two vehicles have been procured and announced in the independence address by the Director IITR on Aug 15, 2021. Its operation strategy have been finalised and encouraging rates have been announced. Both vehicles are in operation. **Further Actions** In view of its wider acceptability, a poster and brochure on this initiative be prepared and circulated among the institute community for creating awareness and utilisation of electrical

No.	Reference	Title / Matter	Actions Taken and deliberated
		done directly from the manufactures/dealers. Dy Director will discuss the matter with DR MMS and necessary action for early procurement for e-Car / vehicle using the money available shall be taken.	vehicle in the campus. Convenor, Green Committee can take up this Work. Further e-charging stations in different locations may be planned so that community may go for e-scooters and e-cars in future. The charging stations be also monitored/paid with user cards or some other transparent process.
06	April 14 , 2021 (Agenda 6)	**Drainage on Campus:** Prof Arun Kumar, volunteered to undertake the planning of the mitigation for the drainage issue in the next 6 months with the support of E&W personnel as well as data (Topographical survey, details on existing drainage etc.) and other faculty members.	(a) Level sensor based auto operation of existing pumping station was done and it worked as expected during heavy rain on 28 and 29 July, 2021. A new pumping station at CEC of the same capacity as of the OTH pumping station i.e. 540 cubic meter per hour is being planned and shall be implemented after due process.      

No.	Reference	Title / Matter	Actions Taken and deliberated
			 

No.	Reference	Title / Matter	Actions Taken and deliberated
			(b) To examine and plan the smooth flow of rain water from the exit drain near the STP at Khanjarpur. A topographical survey has been carried out of the drain from the exit point of the drain of institute to end. (c) The drawings for the existing drains emerging from Niti Nagar area to NIH Chowk and covered drain from NIH chowk to STP area/Khanjarpur. E&W office have been sent by IA. This shall be studied Every year district administration is being communicated related to clearance of drain off from STP to Kahanjarpur and ahead prior to the commencement to the rainy season. However, in order to prevent inundation of water inside the campus an external drain is also being cleared by our sanitation staff every year). (d) In last few years, the excavated soil from the different part of the campus have been brought and spread in the area near Saraswati Mandir ground and ABN Ground and this has led to higher elevation of the ground thus reducing the area for retention during high rains. In the past the level of ABN ground was also raised because of stacking of surplus soil excavated from the different sites of NBCC. It was levelled in emergency for taking up the student function. The dredging of the area has been done to some extent. However the level of this ground should be maintained about 15 – 25 cm below the normal ground so that these are used for water retention and reduction of peak flows. Since, because of mining issue the work of disposal of soil has become cumbersome process. Permission from the local district administration is a cumbersome process and also involved financial implication. 

No.	Reference	Title / Matter	Actions Taken and deliberated
			 **Further Actions** Prof Arun Kumar shall work out on the plan and IA and IE shall support and provide the details of the existing drains.
08	April 14 , 2021 (Agenda 7)	**Implementation of Mini-forests in IITR:** Green committee recommended that pilot site (Area beside Temple, along the periphery of the volley ball court-3 or 3.5 m wide strip) for Miyawaki forest project be approved by the ISCM (Institute Space Management Committee) and the required funding in the order of Rs. 2.5 lakh be provided by Estate and Works. Post the approval The Estate and Works office may write formerly to the NGO (SayTrees organisation) for starting the project.	The Miyawaki forest (1150 trees, around 70 species) has been planted. Watering the plantation regularly has been made. Growth will be limited during winter period. Should be exponential during the warmer months. **Further Actions** After some growth of plants in the forest is seen the institute community be informed.
09	April 14 , 2021 (Agenda 8)	**Water Conservation Implementation Plan in IIT Roorkee**: As informed by Prof Khare, aggregates are available but are not the ideal choice for the filter material as compared to boulders and pebbles. Since boulders and pebbles are taken from the river bed, there are restrictions from the State Government for their use. Prof Sharma, Dean Infra suggested that the same can be arranged from the adjoining States. Prof Khare to provide Dean Infra with a detailed report along with the type and quantity of filter material needed to process the same. Prof Khare also informed that the testing of the 4 installations for the demonstration would be done in the upcoming monsoon season. It was also decided	Photos of rain water harvesting system installed at WRDM and Kasturba Bhawan. The rain water is collected from the roof of Kasturba Bhawan and WRDM department. The filtered rain water is used to recharge the ground water at Kasturba bhawan through abandoned old tubewell and through recharge shaft and recharge pit at WRDM.  

No.	Reference	Title / Matter	Actions Taken and deliberated
		that the cleaning and maintenance of the roofs for this project can be assigned to the designated JEE of the area pre-monsoon just for these 4 installations (RT-RWH-Recharge, RT-RWH-Storage, Recharge Shaft and Recharge Pit). For long term purposes, the caretaker of the respective departments/bhawans as assigned by the institute shall carry out the cleaning and maintenance works periodically. It was also discussed that recharge shafts and groundwater recharge pits should be constructed along the roads, at the lowest points, to avoid the problem of flooding in the monsoons as well as to facilitate the issues of drainage as mentioned in the earlier point of 'Drainage on campus'. The maintenance and cleaning for the same shall be looked into as the project progresses further. The filter material is awaited from E&W.	   **Further Actions** A brochure on the same may be prepared and institute community be informed by the separate emails. National Water mission be also informed about this.
10	April 14 , 2021 (Agenda 9)	**Other Items:** The awareness campaign of the green committee has been started. E-poster has been sent to all the students, faculties and staff members of the institute. It was also displayed at the LED screen and hard copies of the same are being put up in the notice boards of all the departments and hostels. The poster for the same has been attached herewith. To further facilitate this, an email ID for the Green Committee office has been created where the campus community can share their feedbacks/suggestions/queries. The document with the compiled responses would be presented so that necessary actions can be taken by the concerned faculties. Also the first theme of, "Dry/waste leaves disposal", under this campaign has been rolled out along with the questionnaire to create awareness.	In view of this, the provision of any machinery related to Horticulture work i.e Electric lawnmower, Dry leaf shredder etc. is being kept in the current Tender which is scheduled to start from 1st Jan '2022 for which the contractor shall be asked to procure the same wherein its upkeep, maintenance and wear & tear lies to the contractor. **Further Actions** Institute Architect may make a presentation on the progress / status on this work in the next meeting.
	April 14 , 2021 (Agenda 9)	**Other Items:** M&M office regarding purchase of the recycled paper, shall take necessary action immediately for the for the people	The committee was informed that the M&M office has already arranged the sample of recycled paper for photocopying (A4 & A3 size) in the offices but were not of good quality. M&M office now arranging the samples envelopes and file covers

No.	Reference	Title / Matter	Actions Taken and deliberated
		use in departments and administrative offices.	made from recycled paper for feedback etc and based on the feedback they will proceed with further procurement. **Further Action** The status from MM Office be presented during the next meeting.
11	April 14 , 2021 (Agenda 10)	**Hazardous Waste:** Chairman informed that Hazardous waste is being successfully collected from the Department of Chemistry and Department of Metallurgical and Materials Engineering. The deputy director has been requested to review the same in the meeting with the safety office so that this can become a regular sustainable feature in the campus.	<u>Response received from Safety office on Dec 21, 2021</u> • The sharing of data related to HW collection to the institute GC and related members is being ensured by Safety Office. The details are being shared once again for information, as attached. • The process of identification, collection, disposal is not streamlined and ensured by the Safety office of routine basis. • The safety office has done communication with the respective HODs and as a result of this activity two departments (i.e. Civil Engg and Hydro & Renewal Energy Department) have identified the HW and the safety office ensured its proper collection by the TSDF. Details available in the attached sheet. • The workshop was organised with the support of respected matter experts on 25th August'21.Total 122 students joined the session. • Awareness slides of HW management and disposal has been prepared and continuously displayed over the institute electronic display • Communication was done with mailer of the HW, but till date B&B dept, M&ME Dept and Chemistry Department have its dedicated collection centre, nothing like this is available in other departments. The collection of HW Chemical is being ensured by the Safety Office being personally involved. • As per the received guidelines, the safety office has initiated the collection of the HW by the TSDF from the identified & other (as per request) dept. locations. Following are under process **(a)** In the long term, to ensure sensitisation of research scholars from waste generating departments, every year, or at the time of registration of the PhD students, the students will have to pass an objective quiz. A set of slides about guidelines and what needs to be done in different scenarios, will be provided prior to the quiz. Also, to inculcate habit among the student community, student volunteers from each Department will try to ensure good lab waste handling and storage practices in the labs in the department.

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(b) Students who do well in the quiz along with a team of students from prominent departments (5-6) can assist the safety office in providing reports if any violations are observed in the labs relating to disposal of chemicals. Safety office can visit the labs, monitor and audit them.

Inorganic waste collection details (hazardous waste) fy 2021-22
<table>
<tr><th rowspan="2">Sr. No</th><th rowspan="2">Collection Date</th><th rowspan="2">Department</th><th colspan="4">Category Wise Disposal Details</th><th></th></tr>
<tr><th>Halogenated</th><th>Non-Helogenated</th><th>Heavy Metals</th><th>Others</th><th>Collection Agency Authorised By UKCPCB</th></tr>
<tr><td>1</td><td>09.04.2021</td><td>Metallurgical and material & chemistry</td><td>262.79</td><td>173.88</td><td>0</td><td>371.13</td><td rowspan="4">Bharat Oil & waste Management Ltd. (Authorised TSDF by UEPPCB and U.P Pollution Control Board)</td></tr>
<tr><td>2</td><td>23.07.2021</td><td>Metallurgical, chemistry, bio science & bio</td><td>143.28</td><td>408</td><td>6.5</td><td>149.5</td></tr>
<tr><td>3</td><td>30.11.2021</td><td>Chemistry, civil, hydro & renewable</td><td>74.5</td><td>204.4</td><td>44.3</td><td>200</td></tr>
<tr><td colspan="3">Total (Kgs)</td><td>480.57</td><td>786.28</td><td>50.8</td><td>720.63</td><td></td></tr>
<tr><td colspan="7">2038.28</td></tr>
</table>
Further Actions
Safety office may prepare a brochure on its efforts and be shared with the institute community.
</td></tr>
<tr><td>12</td><td>-</td><td>Solarification of the IITR: Based on the census, a status report prepared by Ms. Saylee Bhogle, Project Associate under guidance of Prof Arun Kumar, for all the 11 Bhawans with Solar Water heating system and 9 Mess areas with Solar Steam Cooking system so that actions can be taken in this regard wherever the systems are not working / non-operational. Reports for the same have already been sent to Associate Dean Electrical for taking remedial actions. E&W started working on the same</td><td>
It was also mentioned that the team assigned with this work should take up this matter seriously and promptly to avoid such issues again in the future.
Further Actions
Associate Dean (Infra) may present during the next meeting about the solar energy related matter on the entire campus covering hostels, apartments, house residences, offices etc.
</td></tr>
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Agenda 2: Institute Annual Sustainability report for the year 2020-21: Reporting Item

The report has been prepared and approved by the Chairman and is available on the website **https://www.iitr.ac.in/GP/pdf/annual_Sustainability_Report_2020-2021.pdf**

The report may be shared with the institute community.

Agenda 3: UI Metric Sustainability Ranking submission:

Institute has submitted the ranking related matter on Oct 31, 2021. The result of the same has been announced on Dec 14, 2021 and is attached herewith.

There are many items which perhaps have not been added / upgraded by the organisers which resulted in such result. The green committee is taking up with them for necessary review.

Agenda 4: Saharanpur Campus related matter

Dean Saharanpur Campus along with colleagues shall present Saharanpur Campus related matter for the consideration of Green Committee.

Saharanpur campus related matter could not be taken up since they could not participate.

Agenda 5: Any Other Item:

Meeting ended with the vote of thanks to the chair.

Annexure – 1

Water usage pattern and awareness survey

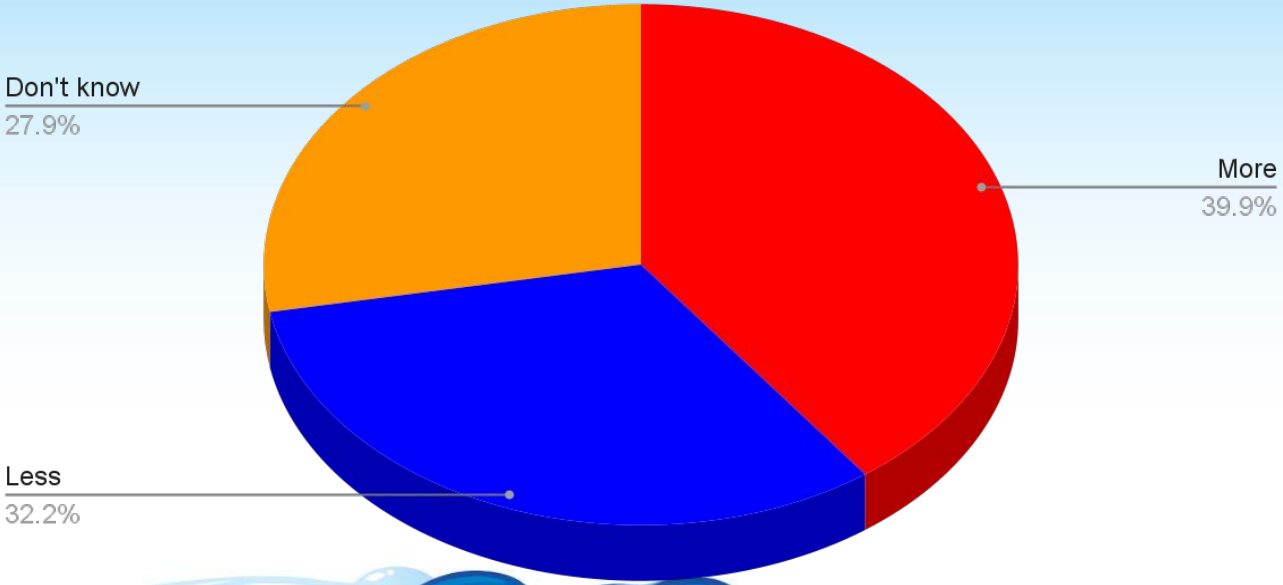
Under guidance
Dr. Bihu Suchetana

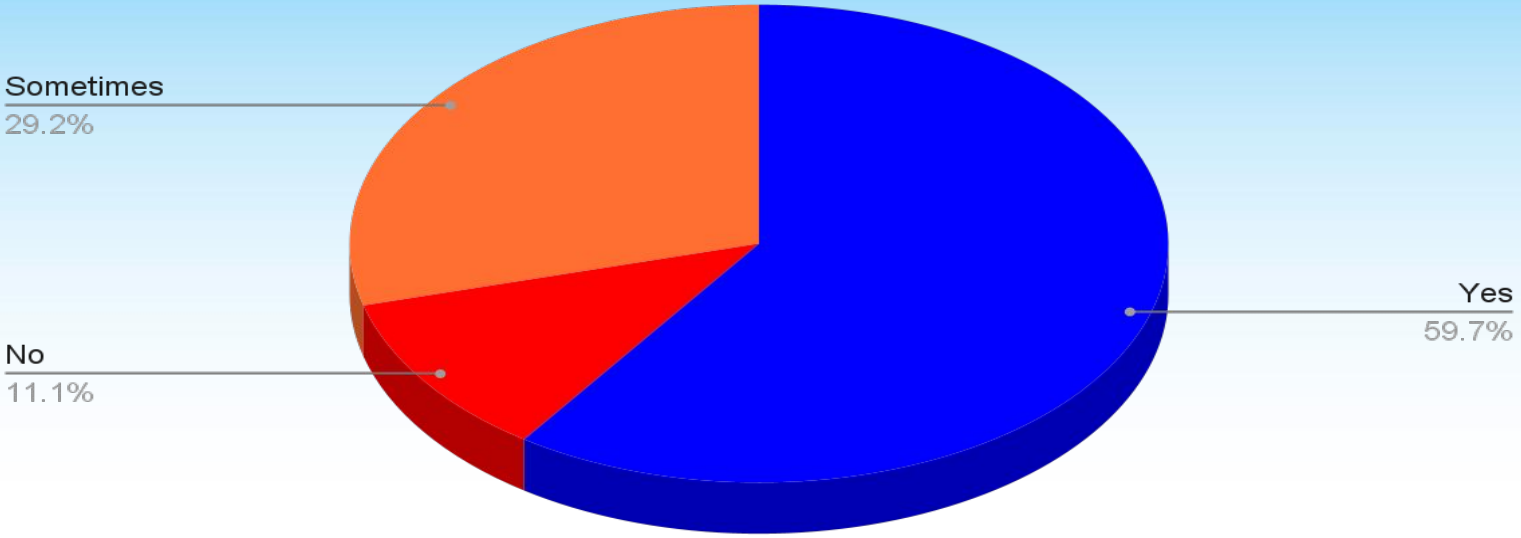
Done by
Siddharth Singh Baghel
Siddharth Yadav
Yash Gurjar

There is a sufficiency in the world for man's need but not for man's greed.

-Mahatma Gandhi

Awareness of water usage relative to national average





The news of a national water scarcity impacts people's daily water usage habits

Survey

- Participation -

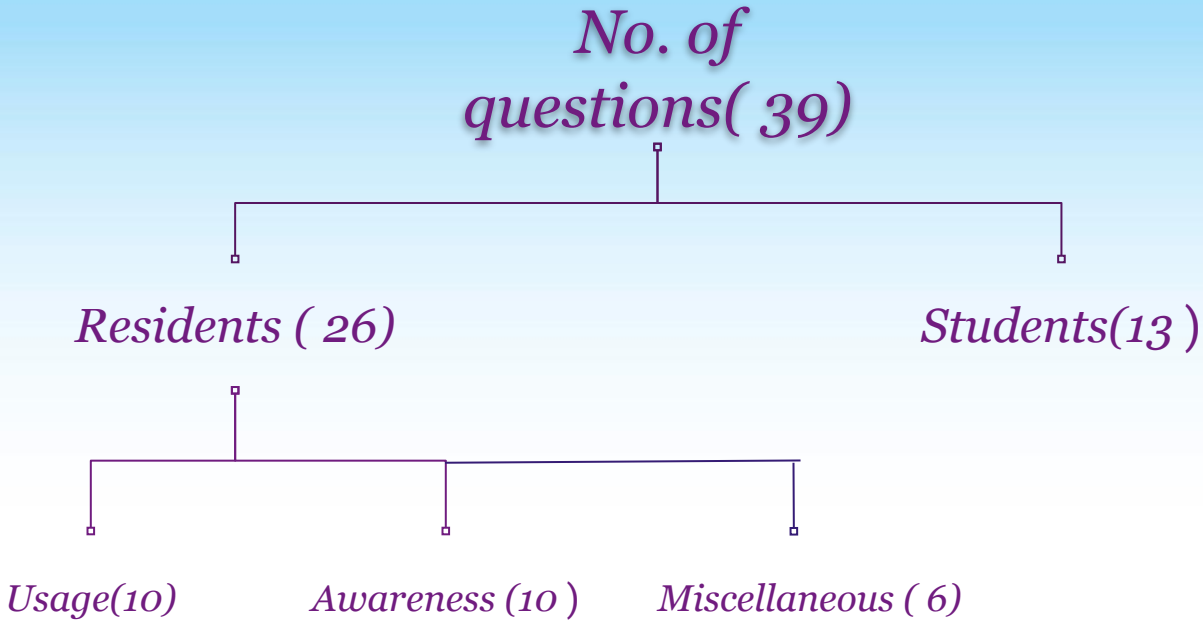
  326 out of which 144 are from resident and 182 are from bhawan

- From this survey,we tried to gauge water usage pattern by institute community members and tried to understand their level of awareness/pro-activeness on water conservation.

- Date of release-21 July 2021
- Date of closure- 31 July 2021

Link for Survey response analytics

Link for survey response


No. of questions(39)
Residents (26)
Students(13)
Usage(10)
Awareness (10)
Miscellaneous (6)

WHY???

Resident

- USAGE- Quantity of water used by residentials people
- AWARENESS- Level of understanding and awareness about this serious issue.
- MISCELLANEOUS - Level of comfort in supporting new, unconventional methods of saving water and possible suggestions for it.

Student

Quantity of water used in Bhawans. General consensus about the consequential water issue possible suggestions for saving water in Bhawans.

Resident

Usage:

- On asking how much water do you use, we got a wide range of answer, the average being **89.84** L.

- We also wanted to know what people think of how much water an average Indian has access to, and the average of replies we got is, **71.6** L.

10 percent of residential people didn't even know how much water do they use

And about 20 percent using water without knowledge of how much water an average indian has access.

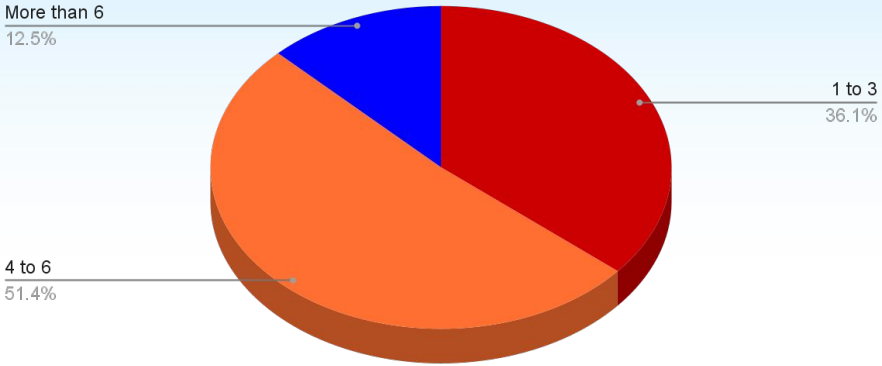
Overview

Usage section

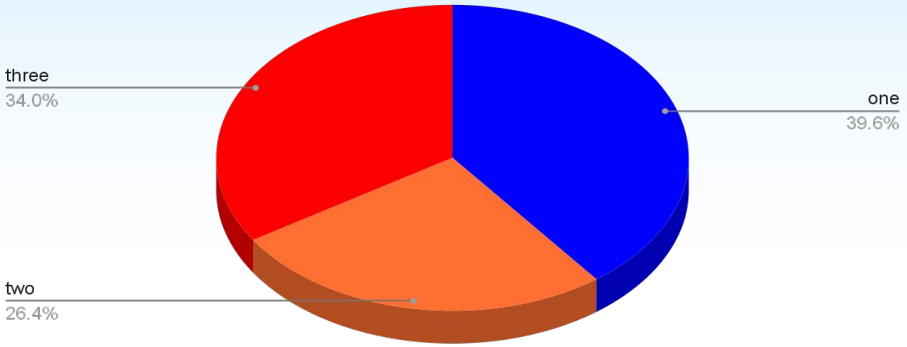
From usage section, we got following data:

- On average, 4 people reside in residential homes.
- On average, there are 4-6 rooms and 2 bathrooms.
- Maximum people are using buckets for bathing purpose, and some kind of water filtration system.
- People who don't own any appliance that use water are in minority.
- Gardening and washing cars are major activities that use water apart from household

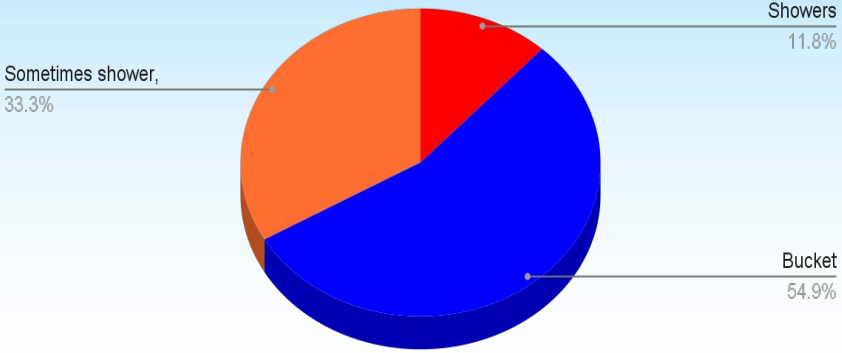
- To get the estimation of how much water do the residents use, we needed to get an idea of the lifestyle residents are living, so we first find out the no. of people in family, no. of rooms, bathrooms
- On an average, the no. of people residing in a residential home is 4.



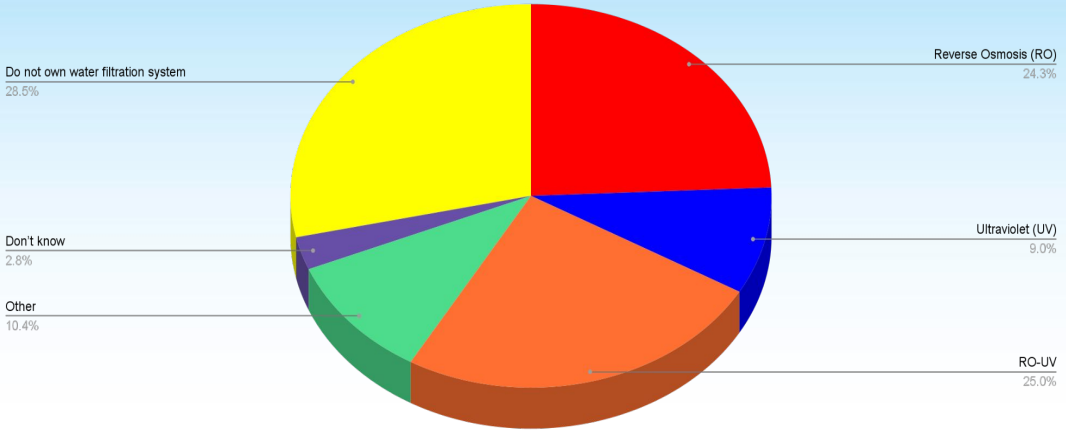
no. of rooms in a house



no. of bathrooms in a house

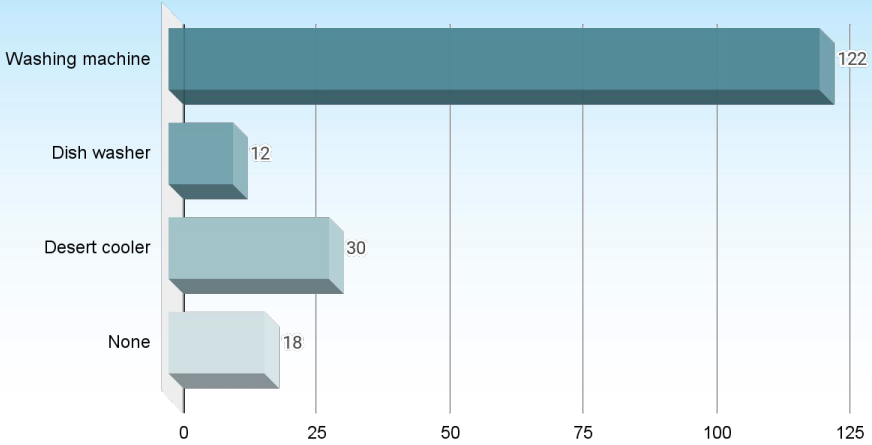


For bathing, people use

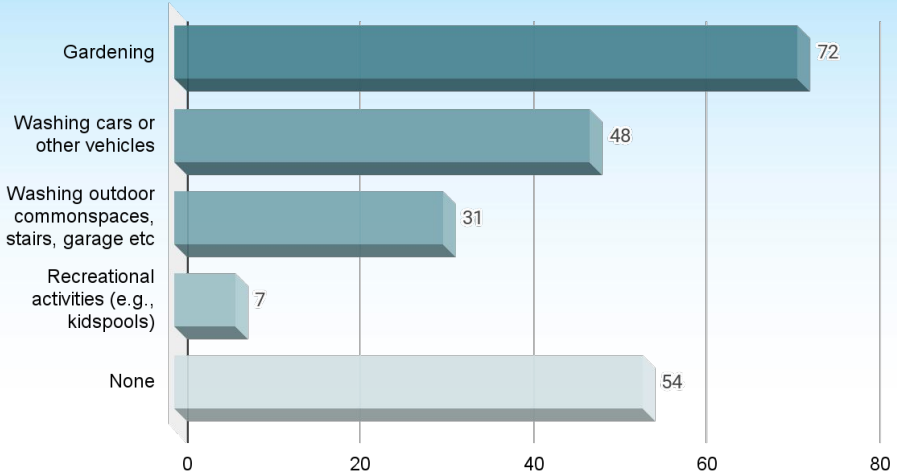


The water-filtration system people own

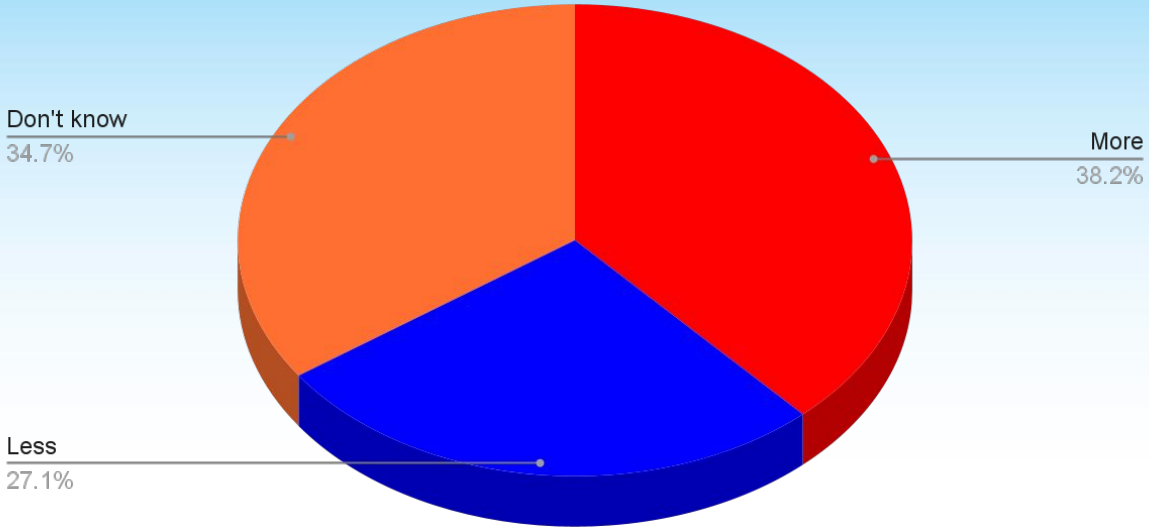
Appliance used by residential people



Activites that use water apart from household



What people think of their water consumption relative to an average indian????



Overview

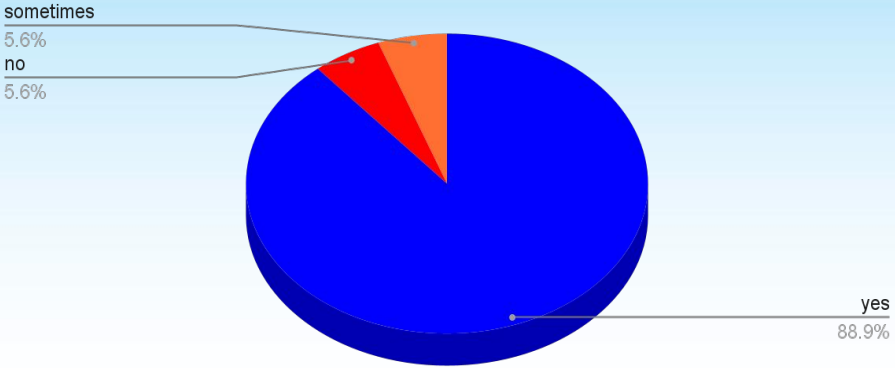
Awareness Section

Most of the people worry about national water scarcity and it impacts their daily life as they care about water being wasted in common space and they even try to get their family/friends engaged in water saving by discussing importance of water.
Most of them are turning of the tap while brushing,shaving etc. and even their domestic helper are turning off the tap while washing dishes as maximum people monitor water usage by their domestic helper.
Moreover, people even care about small leaks and get repaired it asap.

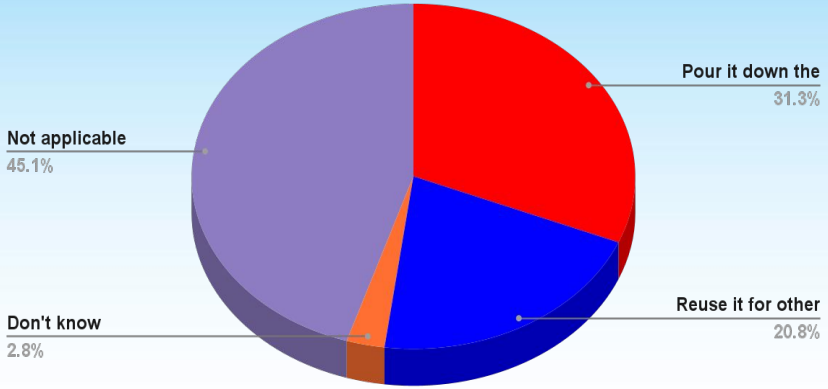
But

Maximum people are not reusing water, they are disposing outlet water of filtration system into sink and live in delusion that there will never be shortage of water in campus.

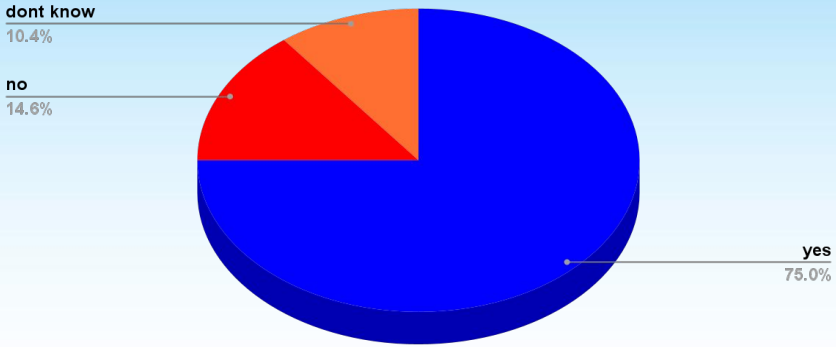
Unconsciously, This hypothetical utopia of theirs results into more wastage of water.



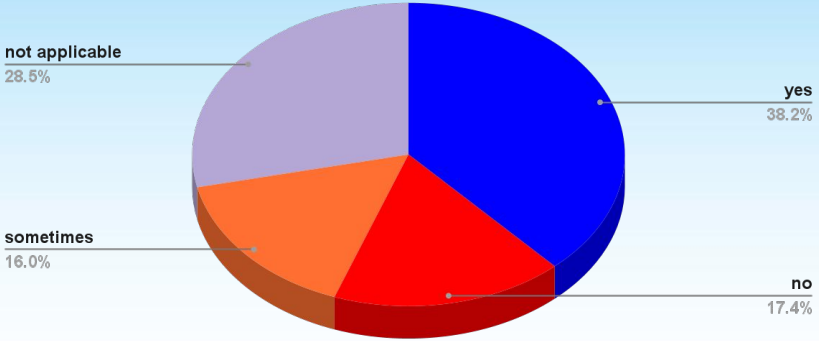
People turn the tap off while brushing, shaving etc.



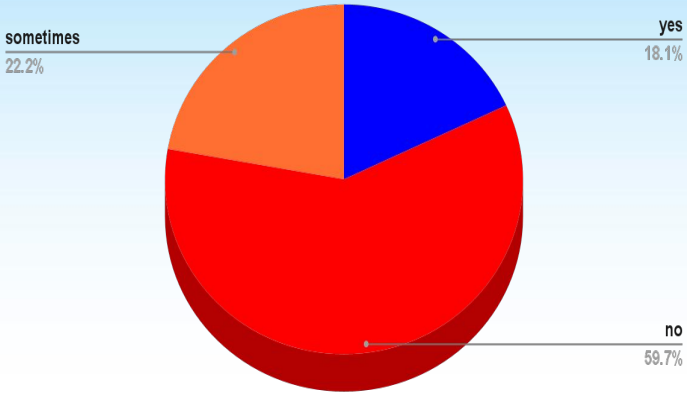
People dispose off the waste water of RO or RO–UV filter



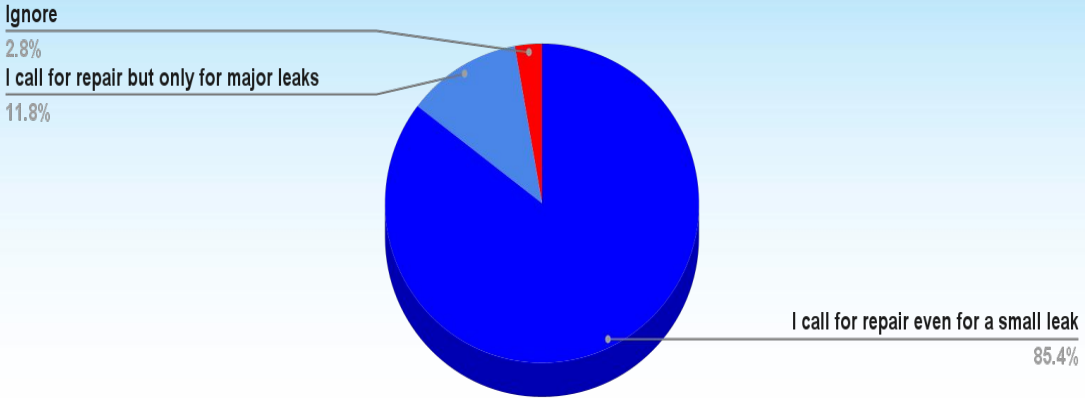
People/ their domestic helper turn the tap off while washing dishes



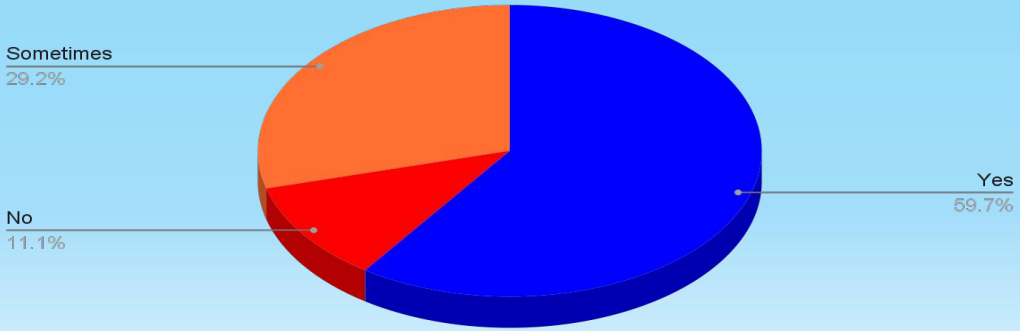
People monitor water usage by domestic helper, gardener



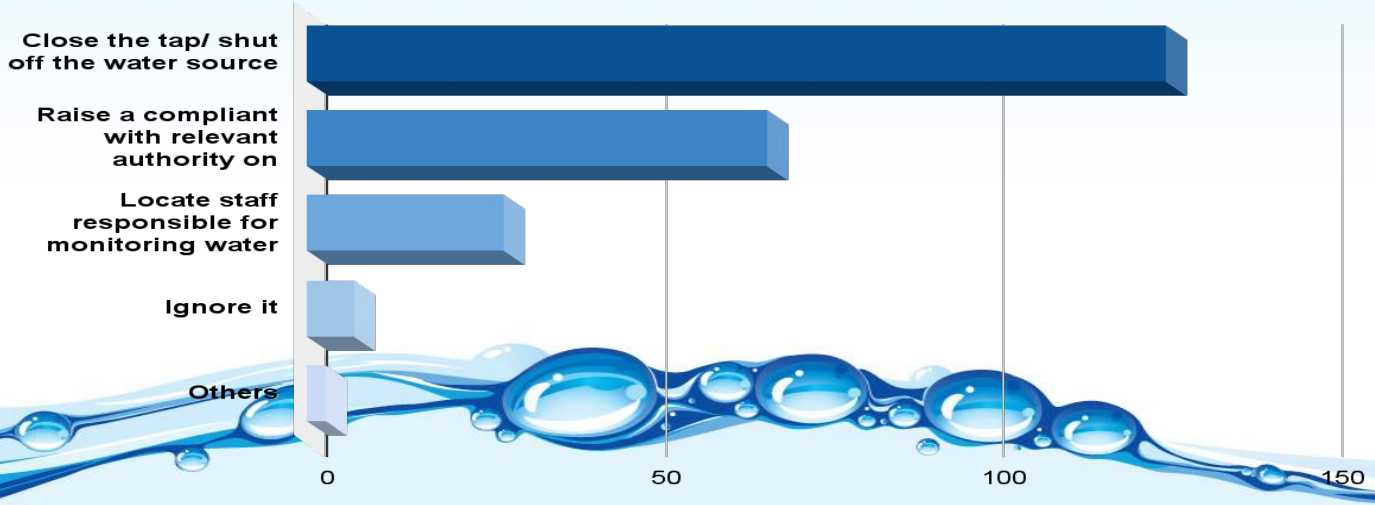
People reuse water



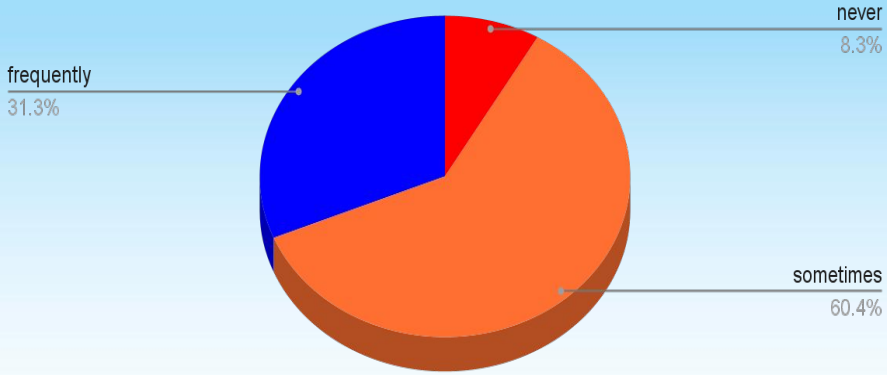
People get the faulty taps repaired immediately



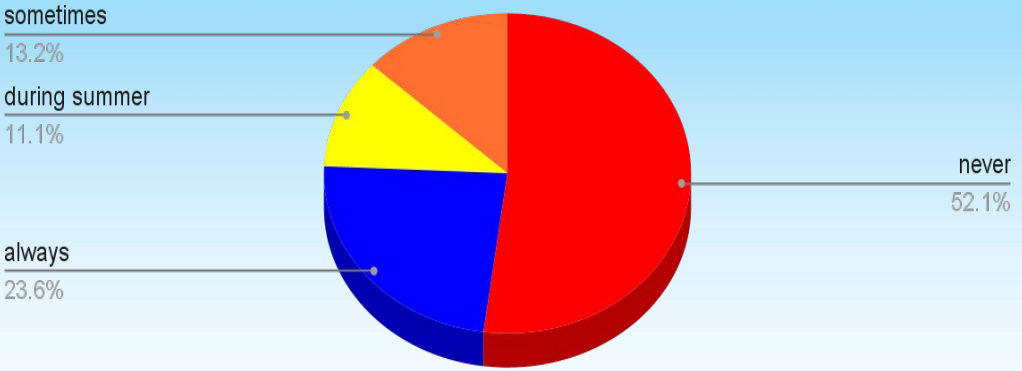
Does the news of a national water scarcity impact your daily water usage habits?



When people see water being wasted in a common space,



People speak to their friends/family about water issues

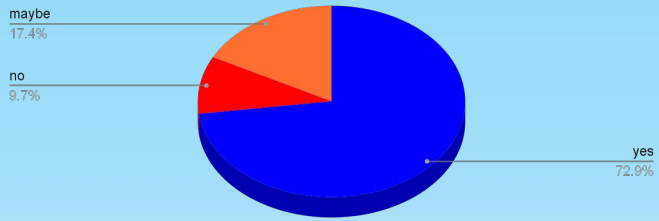


People worry about a shortage of water in campus

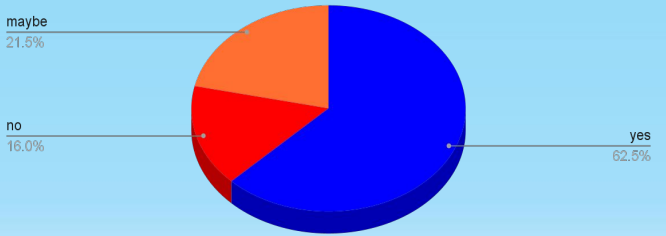
Overview

Miscellaneous

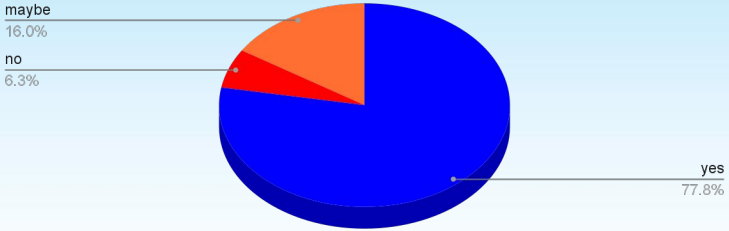
People are in support of installing water meter and willing to pay reasonable rates for it.
They even agree to use treated wastewater and would love to volunteer to install water saving bathing fixture yet they are hesitant to fix at at their expense.

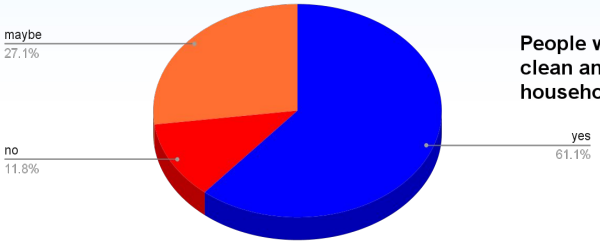


People would support a decision to install water meters at every household to monitor water usage levels

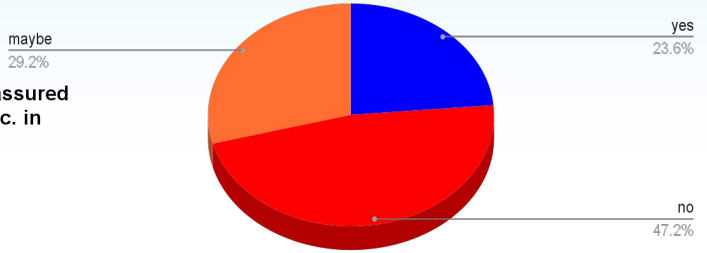


People would support a decision to levy a reasonable per unit charge for water usage





People would be willing to use appropriately treated wastewater (assured clean and hygienic) for secondary uses like gardening, cleaning etc. in household.



If the institute decided to pick a few households to install water saving bathroom fixtures, people would volunteer

People are willing to install water saving bathroom fixtures or rainwater harvesting systems at their own expense

Students

- On asking how much water do you use, we got a wide range of answer, the average being **51.2** L.

- We also wanted to know what people think of how much water an average Indian has access to, and the average of replies we got is, **55.72** L.

12 percent of students didn't even know how much water do they use

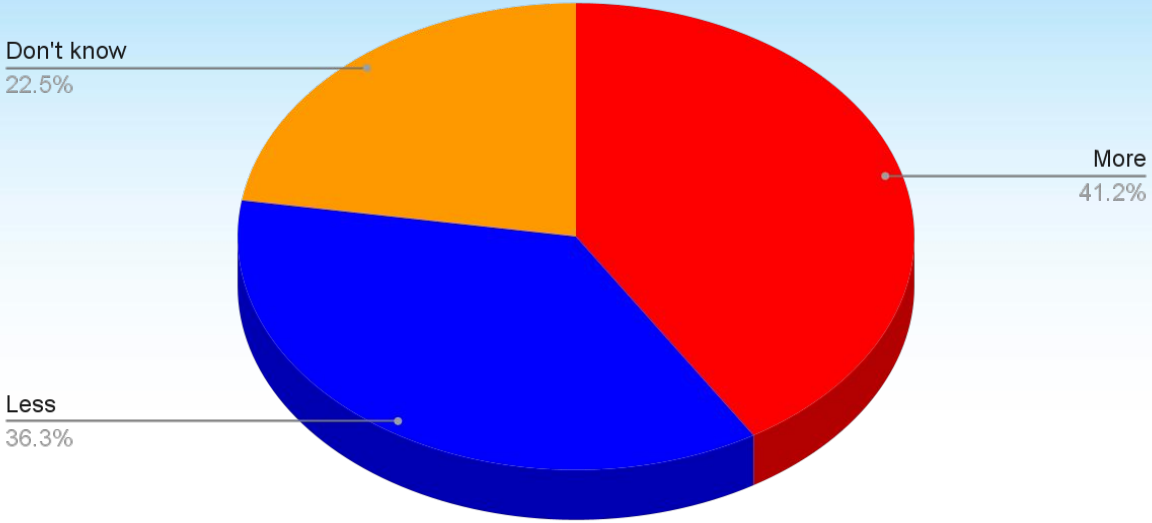
And about 18 percent using water without knowledge of how much water an average indian has access to.

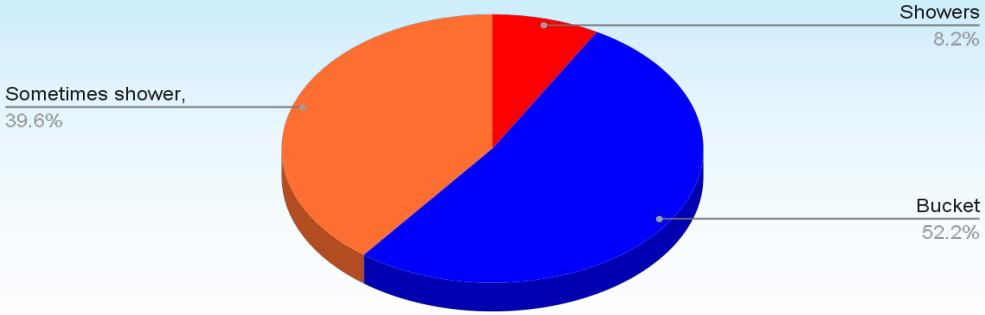
Overview

Students

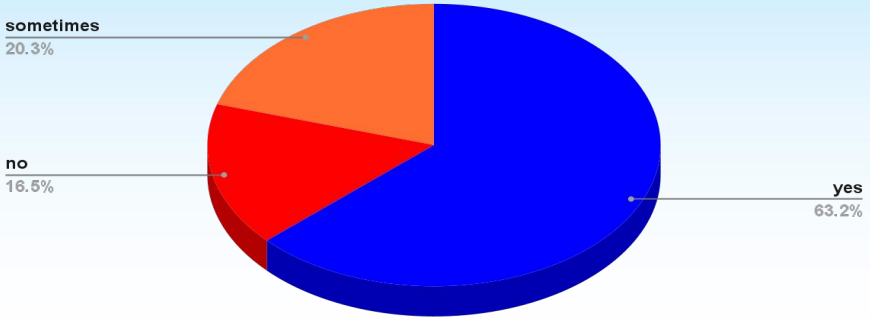
Most of the students agree that they are using more water as compare to an average Indian.
For bathing, they are using buckets and monitor water while bathing.
Most of them are turning off the taps while brushing etc.
They are aware about water issues and discuss with their friends about same.
Most of the students have noticed bhawan staff wasting water and sometimes they try to make them understand.
Almost all of them report about leaks to concerning authority. Most of them never faced any water shortage.

What students think of their water consumption relative to an average indian????

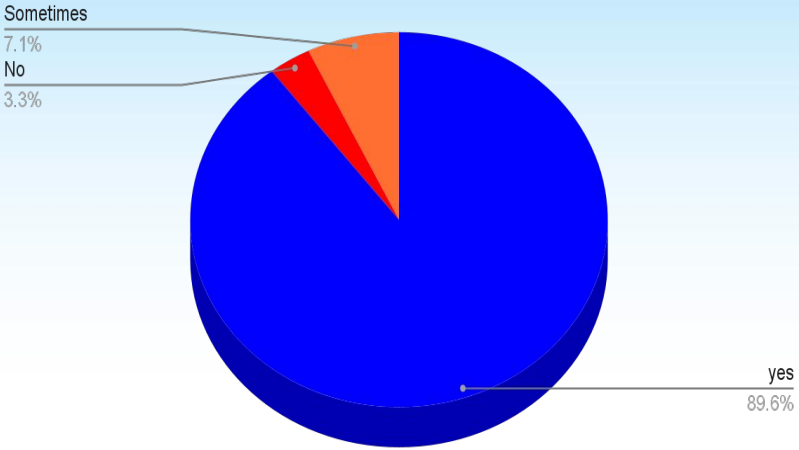




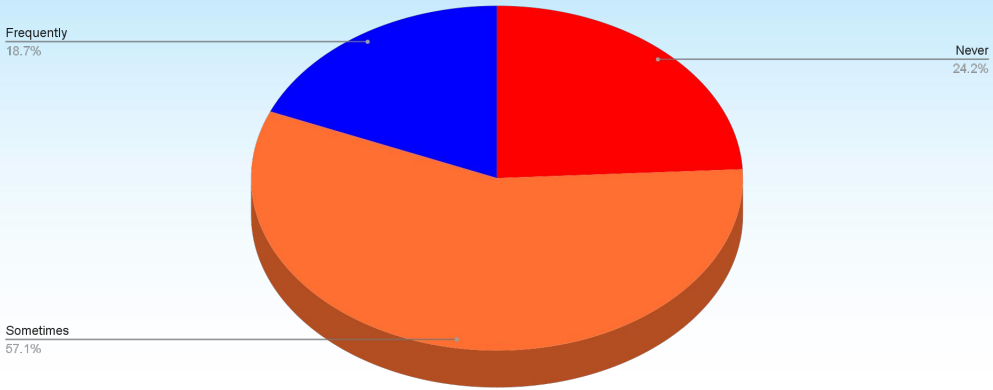
For bathing, students use



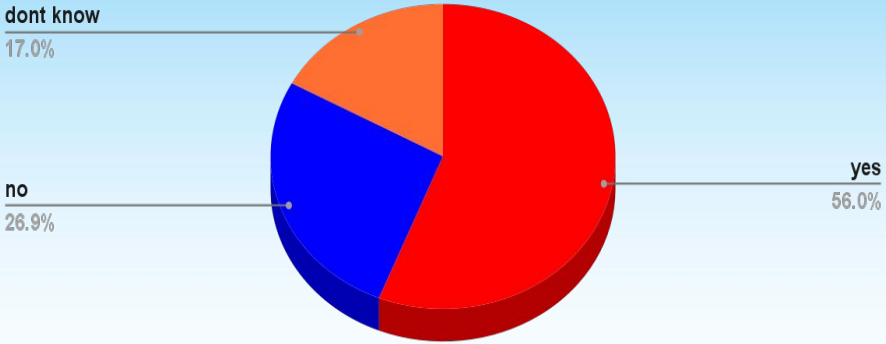
Students monitor their water usage during bathing



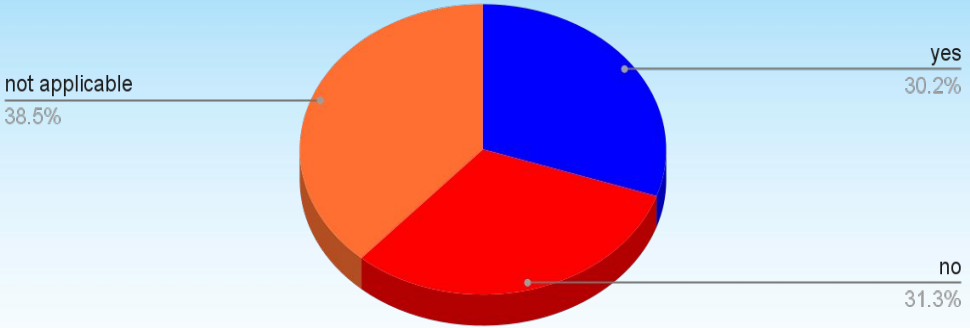
Students turn off faucets while brushing etc..



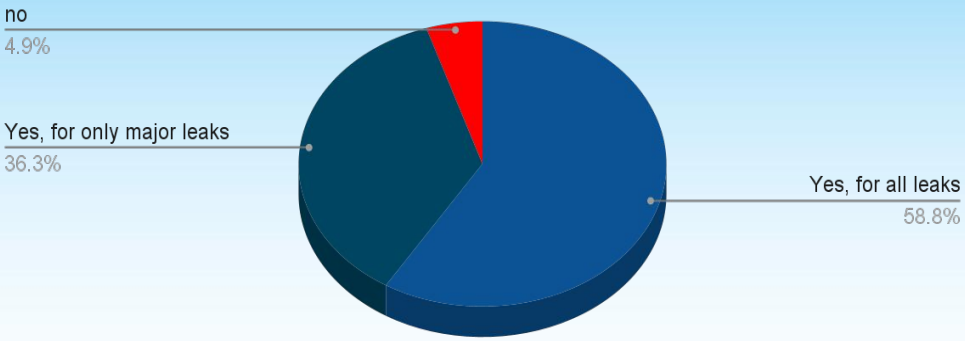
How often do you speak to other IITR community members about water issues (supply, quality, monsoons, etc.)?



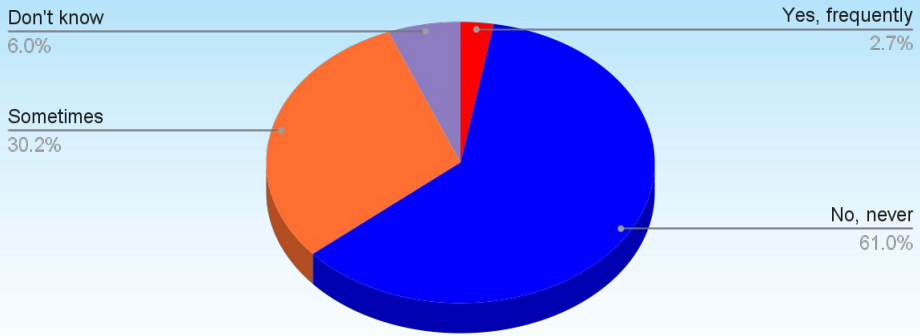
Students have noticed water wastage by bhawan staff



after seeing them wasting, students tried to educate them on water conservation



Whenever water leaks from any tap at bhawan, student inform the authorities about this



Student have faced water shortages in Bhawan

SUGGESTIONS!

From Resident

- Rain water harvesting setup in residential buildings. This water can be utilized for cleaning and gardening purposes.
- Washbasin water, dishwashing water or water from RO should be used for flush water.
- Metered water connections.
- All the houses with gardens should be maintained centrally.
- Central vehicle cleaning facility.

- Toilet cistern should be good and advanced for proper cleaning in less water with small button for urine.
- Kitchen tap should be shower type which is helpful to clean dish crockery.
- Gardening tap should be stopcock type to avoid leak or drop of pipe nozzle.
- Washing machine drain water for cleaning floors.

From Students

- Rain water harvesting setup in every bhawan and residential building. This water can be utilized for bhawan cleaning and gardening purposes.
- Flush water should not be very clean, instead washbasin water, dishwashing water or water from RO should be used for flush.
- Install a water meter and display total water consumption of the bhawan on weekly basis for keeping a check.
- Automatic water cut off taps based on sensors.
- Education and capacity building of bhawan cleaning staff.
- Awareness programmes,posters near basin for reminding everyone to turn the faucet off when brushing teeth or washing face

- Tap Aerators in all taps except in the bathroom.
- Washing machine drain water for cleaning floors. Water softening devices in washing rooms to enable use of lesser detergent and hence shorter washing cycle.
- Water softening devices / Ion exchangers to reduce hardness before supplying water into the geysers. This will save electricity by reducing the lime deposition and also the water losses due to leaking geysers due to high pressure within it.
- High pressure faucets and pipes to cleaning staffs

The irony of life is that we don't value the assets until we are deprived of it.
And when this asset takes form of a life giving entity, then it becomes a matter of concern

Thank you