Equipment and facilities for Royal University of Bhutan supported by SUNRAISE project

Sl no	Title	Description	Photo	Remarks
1	Water Deionizers – 50 litres	This equipment is intended to be used for preparation water than can be used for preparation of microbiological media, buffers, production of chemical and biochemical reagents, cell culture cultivation, chromatography, etc. Students of BSc Environment and Climate Studies, BSc Organic Agriculture, BSc Food Science and Technology and BSc in Animal Science program benefitting over 400 students.		Installed and in operation
2	Mini volume combined sampler (Air quality analyser) – outdoor – Model: TEL-602	This equipment is intended to analyse the outdoor air quality to measure the total amount of particles suspended in the atmosphere. The sample taken can also be used to determine the levels of chemical elements and compounds in the particles or basically to analyse the concentration of pollutants which may pose a risk to human health. About 100 students of BSc Environment and Climate Studies, faculty members conducting research on air quality and PhD students will be benefitted.		Installed and in operation
3	Air quality detector (PM_{10}) PCE-RCM 10: 2 numbers	This equipment is intended to analyse the indoor air quality. This devise can also act as a senor to keep track of airborne chemicals, temperature, and volatile organic compounds for example. The students of BSc Environment and Climate Studies would be benefitted.		Installed and in operation

4	Air quality detector (PM_5) PCE-RCM 05: 2 numbers	This equipment is intended to analyse the indoor air quality. This devise can also act as a senor to keep track of airborne chemicals, temperature, and volatile organic compounds for example. The students of BSc Environment and Climate Studies and PhD students would be benefitted.		Installed and in operation
5	Ultrasonic flow meter TDS 100-H, version 8.5: 2 numbers	This equipment is intended to use in measuring the discharge of streams and rivers (water flow). This equipment is useful for students taking hydrology and watershed management courses which would help them in determining the volume of water available at specific point in time. BSc Environment and Climate Studies, Students of BSc Forest Science, students of BSc Organic Agriculture and PhD in Climate Studies students will be benefitted.		Installed and in operation
6	CO_2 analyser: 2 numbers	This equipment is intended to measure the quantity of Carbon dioxide available in a sample. This equipment benefits students of BSc Environment and Climate Studies in analysing the air quality, and also detecting carbon dioxide at the specific locations. PhD in Climate Studies students also benefits in their research for determination of the carbon dioxide content in the air including the BSc in Food Science and Technology in detecting carbon dioxide in food and beverage.		Installed and in operation
7	Dissolved oxygen meter: 1 number.	This equipment is intended to use to measure the amount of gaseous oxygen dissolved in a water sample. Dissolved oxygen is an important water quality parameter that effects aquatic life, and quality of water due to pollution. Common applications include groundwater remediation and wastewater treatments. Students of BSc Environment and Climate Studies program, BSc Food Science and Technology and PhD in Climate		Installed and in operation

		Studies program students comprising more than 200 benefits from this equipment including the faculty members.		
8	Conductivity meter: 2 numbers	This equipment is intended to measure the amount of electrical current or conductance in a in a water where polluted water can conduct more electrical current due to turbidity. Conductivity is useful for determining the quality of water. This equipment is also useful measuring changes in wastewater treatments plants. Students of BSc Environment and Climate Studies benefits from this equipment including PhD students.		Installed and in operation
9	Spectrophotometer Model: K8001S: 1 number	This equipment has the very wide use as it is intended to use in detection of concentration of substances, detection of impurities, monitoring dissolved oxygen content in freshwater. Students of over 400 from BSc Environment and Climate Studies, BSc Organic Agriculture, BSc Animal Science, PhD in Climate Studies benefits from this equipment.		Installed and in operation
10	BOD incubator: 2 numbers	This equipment is intended to analyse the cell culture, bacterial growth, including fungal growth, Biological Oxygen Demand test, and fermentation and also include to study seed germination process. Using this equipment cooling and heating functions under one unit can be performed. This equipment is also intended to use to determine the relative oxygen requirement of microbes in waste waters, effluents and polluted waters. This equipment will be used by 90 students of Environment and Climate Studies program, 90 students of BSc Organic Agriculture program and also 80 BSc Food Science and technology Students.		Installed and in operation
11	Protein and Nitrogen analyser: Kjeltron, Tulin equipment.	This equipment is intended to automatically analyse the protein and nitrogen in a sample. This equipment is related to use of fertilizer where BSc in Organic Agriculture students benefits, BSc		Installed and in operation

		in Environment and Climate Studies use this equipment to analyse the quantity of nitrogen and protein in organic and inorganic substances.		
12	Chlorine meter: 1 number (Sl. 01470004991)	This equipment is intended to use for monitoring the water quality by ensuring that the sufficient disinfection is executed for drinking water. Also for BSc Food Science and technology students, the use of chlorine for hygienic bottling and packaging.		Installed and in operation
13	Desktop (2 numbers): Dell Optiplex 3070 Core i5 9500, 8 GB RAM, 500 GB HDD, 24 display window.	These computers are installed in the server room to strengthen internet connections and thereby facilitate teaching learning in the college.	 	Installed and in operation
14	Laptop (2 numbers): Dell Vostro 3480, Core i7, 8 GB RAM, 128 GB SSD 1TB HDD, 14 display window	These laptops are used for official communications, research and storing of database for official purposes. For example, the database and record of project plans and equipment bought are stored for future references.		Installed and in operation
15	Laptop (1 number). Dell XPS, Core i7-1065G7, 16GB RAM, a 512GB SSD. 15 Windows.	This computer is bought to facilitate to use in teaching and research involving climate modelling through use of software, using time series data for scenario building. Since the College if starting PhD in Climate Studies therefore powerful computers are required in teaching the students by use of huge datasets.		Installed and in operation
16		These servers are procured to benefit the whole college and also expected to facilitate the online courses in the future.		Arrived and received by CNR RUB and is being installed

All the courses reviewed and offered are regular courses at the College of Natural Resources, Royal University of Bhutan so the laboratory is a common laboratory which will be used by the students of BSc Enviroment and Climate Studies, BSc Forest Science, BSc Agriculture, BSc Animal Science, and also by MSc Natural Resources Management. Therefore till date following students were using the equipment.

Sl no	Title	Purpose of Use	Number of students and faculty members benefitted
1	Water Deionizers – 50 litres	Used by students of BSc Animal Science, BSc Food Science and Technology and BSc ECS for preparing contamination free water for agar preparation	30+30+105 = 165
2	Mini volume combined sampler (Air quality analyser) – outdoor – Model: TEL-602	BSc Environment and Climate Studies, faculty members use the equipment to measure ambient air quality	105 + 7 = 112
3	Air quality detector (PM_{10}) PCE-RCM 10: 2 numbers	To measure ambient air quality	105 + 7 = 112
4	Air quality detector (PM_5) PCE-RCM 05: 2 numbers	BSc Environment and Climate Studies, faculty members use the equipment to measure the indoor air quality	105 + 7 = 112
5	Ultrasonic flow meter TDS 100-H, version 8.5: 2 numbers	BSc Environment and Climate Studies, Students of BSc Forest Science, students of BSc Organic Agriculture to measure water dicharge	105+40+30 = 175
6	CO_2 analyser: 2 numbers	BSc Environment and Climate Studies, faculty members use the equipment to measure the indoor air quality	105
7	Dissolved oxygen meter: 1 number.	Students of BSc Environment and Climate Studies program, BSc Food Science and Technology to measure oxygen dossolved in water samples	105+40 = 145
8	Conductivity meter: 2 numbers	BSc Env & Climate Studies for determining the quality of water.	105
9	Spectrophotometer Model: K8001S: 1 number	BSc Environment and Climate Studies, BSc Organic Agriculture, BSc Animal Science	105+30+30 = 165
10	BOD incubator: 2 numbers	This equipment is used for culture, bacterial growth, including fungal growth, Biological Oxygen Demand	90+90+80 = 260

		test, and fermentation and also include to study seed germination process so allmost every batches use it .	
11	Protein and Nitrogen analyser: Kjeltron, Tulin equipment.	BSc in Organic Agriculture students benefits, BSc in Environment and Climate Studies use this equipment to analyse the quantity of nitrogen and protein in organic and inorganic substances.	105+30 +30 = 165
12	Chlorine meter: 1 number (Sl. 01470004991)	BSc Food Science and technology students, and BSc Env and Climate Studies	105+30 = 135