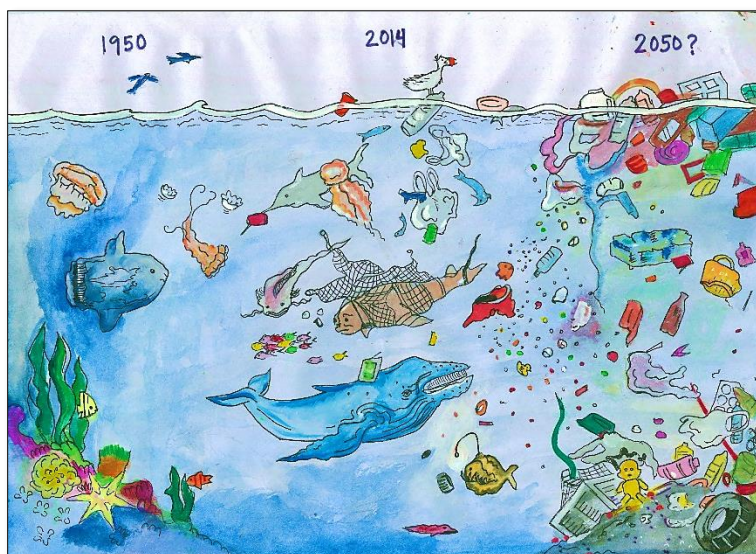


# Newsletter

The Environmental Society of RTC



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### It's not just another tragedy.

It's a tragedy, they say  
 "We all have this wonderful, beautiful life,  
 Yet we are hung up on something dead,  
 The man-made and the so unnatural"

It's a tragedy, they say  
 "What happened to nature?  
 What happened to living in harmony?  
 What happened to being a child of the Earth?"

It's a tragedy, they say  
 "I don't use plastic!  
 I don't kill animals!  
 I don't endorse corporations!"

But their sounds are muffled, scratched, choked  
 Under the heavy weight of our actions.  
 We just think, say, act, listen, taste, see, smell...  
 We just be!

Every single thing we commit to, it is hurts –  
 The ground we stand on smells death,  
 The oceans are a wonderful home to mermaid only in fables,  
 Every life, we share space with, limbs with the swollen fate.

The future is beyond our reach, it is deeper than the destiny.  
 Off the course, we are but digging fresh graves.  
 It's hard to be a human on this Earth,  
 It's even harder to be humane.

Or am I just dreaming,  
 Aching,  
 Praying,  
 So that Mother Earth stays healthy for a little while, longer, forever?

Poem by Phuntsho Choden, VI Semester.  
 Art by Dawa Tshering Lhamo, VI Semester.

## From the desk of Programme Leader



Identity of the people, nationality in this context, is predominantly fixed along the line of politically established boundaries. In this political world, the sense of belonging and allegiance to the nations are delimited by such political boundaries which often trigger conflicts. In the last few decades, one could see emergence of a new identity - 'common citizens' or 'global citizens' conceived through a shared responsibility transcending the rigid notion and claim, such as, 'sons and daughters' of the land/country, without completely abandoning allegiance to the politically established identity. This is indeed crucial to building of our planet earth a better place to live. Accordingly, the elements of commonness, interconnectedness and the diverse nature of global communities are advocated not only in academic discourse but also internalize in everyday of our lives. Such advocacy invites changing in the outlook of the citizens and change in the socio-political praxis as well. The rationale behind such advocacy is that 'rights and freedom' guaranteed to the citizens could meant virtually nothing if the constituents and determinants of human life are not given equal treatment.

Interconnectedness of man and the environment are theoretically critiqued transcending the rights and freedom guaranteed under any form of government. Of the several forms of government, democratic form of government is one that many embrace. The essence of democracy however can be relooked from a more cosmic and extraterrestrial perspective – cosmocracy, to make our planet earth a better place to live. Cosmocracy directs us to see democracy at the cosmic level that the 'global sustainable' means well-being of not only human being but of all living species in a composite form. Cosmocracy is a concept of governance at cosmic level, a democracy for the entire cosmos, therefore the idea of governance must encompass understanding of the power and limitation of nature and of life. Along the same line of assertion, reverence for the planet needs to be internalized in everyday of our lives. Men cannot sustain, cannot be happy and at peace with without thinking of the whole world that encompasses the realm of biosphere and beyond. The 'cosmocracy turn' calls for governance transcending freedom assured under democratic form of governance, any form of government for that matter, at the cosmic level. True freedom can be actualized only when connected with the elements that surround humankind. We, environmentalists, therefore, must look beyond the horizon and aim for establishing common/broader identity under 'cosmocracy'. We are the sons and daughters of this planet earth and not just of a particular community or a country. Be a proud citizen of this planet earth, not of the politically established identity, the whole world is our home. With these few words, I would like to congratulate the committee of Environmental Society of RTC on successful release of its first newsletter. I am certain that this would serve as a platform for students to crucible new ideas and advance their knowledges on various areas of their academic interest.

Leishipem Khamrang, PhD  
Programme Leader  
Department of Environmental Management  
Royal Thimphu College

## Editorial

Around 1600 BCE, Pre-Columbian civilizations in Mesoamerica had a ritualistic ballgame, which revolved around a spherical object cast in a natural substance derived from animal horns and shells. It was soft, flexible and resilient. The figurines and bands used for ritual were also made from the same substance. These objects were revered as very sacred. They believed it brought them luck and wellbeing in the community. Technically, these are the first recorded rubber based articles in the world. Sacred.

Ever since the first official production of plastic in 1284 by Horners Company of England from natural sources, it dominated the world through the 19<sup>th</sup> century. The art of plastic production refined in the last two centuries with new discoveries and innovations approaching the plastic we know today. The use and production of plastic also increased exponentially. If the measure of success is to take a quantitative unit in kilogram, humanity has succeeded far beyond imagination. By 2018, the world produced about 8,483,000,000 kilograms of plastic. Bravo!

However, this success has not engendered any positive change in the collective wellbeing of humanity and the planet. Indeed this has taken a diametric resonance to the universal essence of giving and receiving – the blessing. Mankind receives countless blessing, both in terms of the physical and intangible forms from the nature, or for that matter, the universe. What do we give back? Non-degradable wastes, which would take thousands of year to degrade? Or poisonous gasses, which would sicken the planet and play a bargain game with all the lives?

The story of the plastic was born as a fine figment of human brilliance with an auspicious signs of reverence. It has evolved resounding the undying spirit, to fetch the best to quench human need, and versatile ability to create and recreate to express our ultimate longing. Today the plastic has become most fatefully used commodity in the global market and also a very dreadful substance, to look at it from an environmental point of view. The fad and future of the plastic remains unclear except for it is certainly going to plague the planet's health. However, to find the way(s) to better use it to divinely nurse the planet's health, it depends on the worth, capabilities and motivation of today's earthlings.

In this first edition of the newsletter of the Environmental Society of RTC, launched with an aim to serve as a platform for the students to share their ideas, thoughts and feelings about different areas of study, we have compiled some of the fine articles submitted expressing their thoughts on the theme ***the plastics and the environment***.

We wish you a very happy reading!

Editors

**Bijayata Rai**

**Pema Yeewong**

**Sonam Choden Dorji**

**Tshering Choden**

**Sonam Chhoewang**

**Dechen Seldon**



Art by Dawa Tshering Lhamo, VI Semester

### **Individual action - What can you do about climate change?**

True to the words of David Suzuki, if each of us is a drop of water in a bucket, with enough drops, we can fill any bucket. Collection of an individual activity, good or bad, can bring forth, a big deal of change. So, an individual casually swearing about one pound of greenhouse gas or a piece of plastic cup produces in a day becomes, to the planet, just seven billion people producing one pound or one piece.

The planet is heating up at the pace like never before and the number of factories and cars run on fossil fuel isn't declining. The oceans are choking with the plastic pollution and the world's plastic production rate is increasing exponentially. By 2015, the world produced approximately 7.8 billion metric tons of plastic. One ton of plastic for each of us. As soon as humans learned to use certain things from nature, they learned to hoard it and then learned to produce more and more. In the hindsight, mankind has always undermined and forsaken the wellbeing of the planet in embellishing the crown of his greed. The crown is only getting bigger, brighter and superfluously adorned. Human beings are at the helm of any ecosystem and their influence are taking deep root. Completely restyling and converting the surface of earth.

Now the question is, if we are being too careless about the health of our planet, do we have another planet to be called home? Had this thought been in the minds of seven and half billion people, the world would have been a better place to live. Climate change is just a symptom. The disease is Global Warming and we are the causative agents. As the environment deteriorates and causes immense pain to the planet, I feel, as an earthling, it is very inappropriate to stay idle and watch it. I believe our small actions to tend and nurture the health of our planet, collectively, will beget a huge positive impact.

In order to have the whole world working for good, a change should always come from the foundational unit, meaning at the grass root level. So did the great Mahatma Gandhi believe in being the change that an individual wishes to see in the world. In this vein, a simple thing anyone can do, to start making positive impact on the global climate, is to mindfully watch our daily activities and reduce carbon footprint. There are countless alternatives to our lavish lifestyle. All we have to do is stay humble and dear to the mother Earth and make a cautious choice(s), which will less hurt the planet. If we start making a habit of travelling by electric vehicle, it's just seven and half billion people saying yes to the green transportation that will bring down greenhouse gas significantly. However, it's easier said than done. Nonetheless, just try committing to one good thing to reduce your carbon footprint and it becomes easier. – **Karma Cheki, II Semester.**

### **Why does a tooth paste tube come in a box?**

Certainly the box adds up some cents to the actual cost generating larger profits to the producers while making it expensive for the consumers. But where does the box actually go? We buy the box just to throw it away, so what's the point of buying it? Every year 9 hundred million useless boxes are being produced only in the United States. If we as the consumers don't change our habits no one can bring the positive change. Not even politicians and governments. Why do you think big companies like dove and Uni-leaver are now going cruelty free? Big corporations now include vegan products because they follow their customer's demands. If we create the demand for more sustainable products big cooperation's will have to listen.

Going back to the tooth paste, people of Iceland shifted their way of using this product, now toothpaste in Iceland is box free. You can imagine how much positive impact it can bring to manage waste. This way energy is not wasted and the production of plastic waste is cut. – **Kinzang Gyeltsho, II Semester.**

## No more time to waste

*'Bag go-ni?!' We quickly responded 'No, thank you' as the cashier pulls out a bag to pack our groceries - to our surprise: a plastic bag. It has only been two days since the plastic ban has been reinforced. We think: Maybe it takes a few weeks to implement the law properly?*

The plastic ban was first issued in 1999 to tackle the emerging waste issue prevalent in Bhutan – unfortunately with little success. Twenty years later Bhutan faces the question: How can the 2019 reinforcement be more effective than previous attempts? Prior to the implementation, an initial sensitization programme to discuss available alternatives and a monitoring plan on the ban of plastics was conducted. Previous failures are said to be due to lack of alternatives. In response, cotton and paper bags are promoted extensively nowadays. In combination with a monetary fine as well as the cancellation of the business license, the new measures are supposed to ensure the universal compliance with the law. Finally, a collaborative approach by various authorities to enforce the law and a nationwide appeal to all Bhutanese through extensive media advocacy to reduce waste and becoming a zero-waste society are supposed to provide that desperately needed additional push.

Yet, is this really enough? Is the plastic ban adequate to deal with the serious waste problem? After two months, our answer would have to be 'No'. Firstly, the plastic bags are still circulating and prevalent in many stores. Secondly, the alternative bags might even have a similar or bigger carbon footprint as cotton bags are very resource intensive in the production and paper bags are more spacious in landfills and take a long time to biodegrade. Finally, the waste issue goes far beyond plastic bags and *Doma* wrappers. The vast majority of products in grocery stores are unsustainably packaged. Even, fresh produce at the vegetable market are wrapped in an additional layer of plastic. The issue is exacerbated by improper recycling. Streams and the sides of the roads are filled with trash for which even numerous clean-up campaigns cannot account for. Thus, the provision of more adequate waste facilities is crucial along with a change in consumer behavior to reduce the demand in the first place. While the plastic ban should be applauded for its intention, the implementation is far from effective. To prevent detrimental consequences for the environment and subsequent economic repercussions the laws must become much more ambitious. All agents – society, politicians, engineers, business owners – need to pull together to address this issue collectively. There is no more time to waste.

What can I do as individual?

- ✓ Refuse, Reduce, Reuse, Recycle, Review
- ✓ Refuse straws and plastic cups everywhere, plastic bags in the groceries – get your own utilities!
- ✓ Do not buy plastic water bottles or any packaged product. No *doma* in the plastic wrapper!
- ✓ Become an entrepreneur to produce plastic free products
- ✓ Live a couple of weeks without plastic.
- ✓ Reuse the plastic bags or plastic containers.
- ✓ Pay attention to the product design.

Advocate

- ✓ Leave the trash behind at the supermarket to make shop owners aware of the issue.
- ✓ Contact your local authorities to tackle the waste issue.
- ✓ Send in project proposals to funding organizations with possible solutions to the waste problem.
- ✓ Live by example. Tell your family, friends and people on the street to make them aware.
- ✓ Organize brainstorming session with local government and community to raise awareness and discuss potential solutions.

– Attila Biro, Exchange student, Szent Istvan University and

– Nellie Friedrich, Independent Students, Wageningen University and Research

### **What happens when the plastic reaches the water bodies?**

With the increasing of use of plastics, there has been ever increasing volume of waste at the landfills and in the oceans. What's more worrying is the plastic junks including gazillions of tiny plastic micro-particles which find their way into the oceans and form a giant floating junkyards that go in natural gyres with the ocean currents. For example, Great Pacific Garbage Patch called Pacific Gyre is a collection of marine debris in the North Pacific Ocean. Marine debris is the litter that ends up in ocean, seas and other large bodies of water. It consists of bottles, cans, bags, lids and straws. According to a study from Plymouth University, plastic pollution affects at least 700 marine species, while some estimates suggest that at least 100 million marine mammals are killed each year from plastic pollution. Some of the marine species are deeply impacted by plastic pollution.

Plastic is not a biodegradable material. It is only disintegrated by the sun light. The sun light breaks the floating plastic debris into very small particles. When these micro particles enter the marine food chain, the smaller fishes and sea animals ingest the plastic particles. The bigger fishes, turtles, and sea birds eat many such fishes. This way considerable amount of plastics is accumulated in their stomachs. This is called **Bioaccumulation**. Human beings are also affected by eating these fishes, shrimps and crabs. Toxins from plastic cause death of many smaller species of animals and poses huge danger to human health. – **Deki Wangmo, IV Semester.**

### **Microplastic**

Microplastics are small pieces of plastic (less than five millimeters long) which pollute the environment and aquatic life.

Plastic is made of many chemical compounds. One of the most commonly found chemical is polyethylene, which is used in a variety of plastic bags by the plastics manufacturing companies around the world. Polyethylene was found to take more than a century to decompose. Further studies on impact of microplastic on oceanic wildlife have shown that plastic particles frequently accumulated in the gills and stomachs of fish. It was also found that pollutants in the water could be easily ingested by living organisms. Ingesting microplastics may harm animals due to toxin in the plastic.

A recent study found that the table salt we consume is highly contaminated with large amount of microplastics, and our diet contaminated with microplastics poses major danger to our health. According to scientists, the smallest particles are the most damaging to our body. Therefore steps to reduce exposure to microplastics has to be taken, preventative measures such as controlling the environmental discharge of mismanaged plastics and more importantly reducing plastic waste by reducing our usage of plastic products.

There are many small ways in which we can also take actions, like replacing the plastic straw and switching to reusable straws, bringing our own bags for shopping, bringing our own pet bottles, and the list goes on. These practices can make a huge difference in the amount of plastic waste generated – reduce plastics waste tremendously. Instead of just watching and despairing, we should try following these practices and spread the message to the people. We should encourage people to adopt similar behaviors, who will then further spread the positive message and hopefully over the next decade, plastic users will be frowned upon and potentially stigmatized. – **Jigme Wangmo, VI Semester.**

## The bottled water - a beautiful paradox.

“...by supporting the carbon negative country, dedicated to preserving the environment for generations to come.”

Just the other day, I read somewhere about the bottled water and the environment. The article said that the companies producing bottled water doesn't produce water but the plastic bottles. This is certainly true.

The global market for bottled water reached \$200 billion this year following 9% yearly average growth for the last ten years. The market value is projected to touch \$350 billion by 2021. However, this is in common parlance of regressive speculation, without taking into account the factors like diminishing fresh water resources and Climate Change (the later will exacerbate the former).

Today Asia Pacific region accounts for 42% of the global bottled water production - highest regionally. Due to growing awareness about the health implications related to drinking contaminated water and increasing per capita income leading to more disposable income, many studies posit that the consumption rate of bottled water is likely to double in the coming years. Same will happen in African continent.

Despite bottled water being cheap, convenient and very popular, it comes with high environmental cost. Every year approximately 38 billion water bottles end up in U.S. landfills. Recent studies also noted that more than 1.1 million marine creatures die each year due to plastic pollution. Not to say, the resources consumed, GHGs pumped into our atmosphere during the production, micro-plastic impacting human health and degradation of the life supporting systems, and impairing aesthetic values of the places we live in. These issues are just a tip of an iceberg. What will happen when the ocean chemistry changes or when the Artic, Antarctic and Himalayan glaciers become laden with micro-plastic?

Sadly, we can still see many production houses of such products boldly stating how environmental friendly their products and the production processes are, and how sustainable their market is.

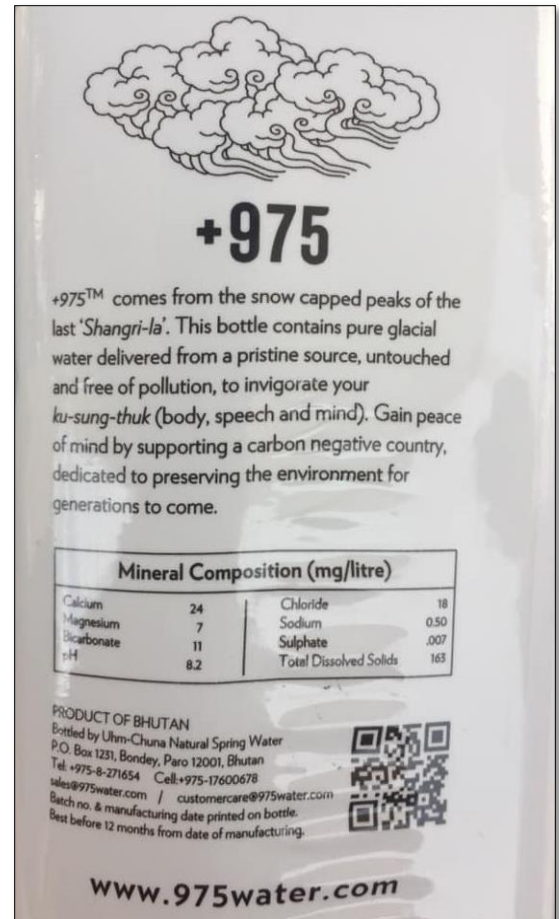
That's a *Strategic greenwashing!* The future is as bizarre as equivocal these proclamations are!

Humankind has become a tumour, and we are ailing our host. Either way - treat the disease and let the host live or don't treat the disease and let the host die - tumour will die. Humanity will end. There are no alternative ways to let the tumour live by killing the host. So, its time find our way to survival. — **Kinley Dorji, Faculty**

People buy about 1,000,000 plastic bottles per minute in total.

500 billion disposable cups are consumed every year.

Source: Earth Day Network



### **Ocean Plastic: Its impacts on Marine and human lives.**

With the increasing human population, industrial development and rampant consumerism, the pressure on the already beleaguered environment continues to proliferate relentlessly. One of the major sources of marine pollution is undoubtedly the plastics. Over the years, the oceans have become an ultimate garbage bin for all kinds of plastic and other waste materials. When plastics reach the ocean, the global wind and ocean currents easily transport it to all parts of the globe. Plastic pollution has a pervasive impacts on the marine ecosystem. However, owing to its huge array of unique properties; strength, durability, inexpensive production, corrosion resilience, lightweight, and high thermal and electrical insulation properties, the use and the production of plastic have been exponentially growing. The epilog of plastic application includes packaging, building and construction materials and different utilities in medical, electrical, agriculture arena and so on. Seville states that globally 311 million tons of plastic were produced in 2014 which is 4% more than in 2013.

The illegal dumping and inadequate waste management, unsustainable industrial activities, inefficient wastewater treatment and the coastal littering are some of the ways plastic reaches the oceans. However, the key problem, all together, lies in the fact that almost all the plastics produced are either used as disposable packaging items for short lived product. Barnes and friends estimates that about 80% of the marine waste on land, shorelines, ocean surface is plastic. This makes plastics a crucial environmental hazard.

Instead of biodegradation the plastics undergo photodegradation producing smaller pieces, entering the marine or terrestrial food web. It has now been confirmed scientifically that all the marine species ranging from smallest plankton to biggest marine mammals now contain plastic despite living entirely far from humans. Plastic ingestion can cause physical damage, intestinal blockage which can lead to infection, starvation and potentially death due to the PCB (polychlorinated biphenyls-plastic micro fragment) and DDT which could lead to biomagnifications.

Ocean plastic pollution intensifies pressure on ocean ecosystem. The social impacts of marine plastic pollution include loss of aesthetic and recreational value. Littering immensely impacts the recreational and aesthetic values affecting economic gains. It often results in reduced revenue. In particular, there are lost revenues associated with a decline in tourism and losses to fisheries and aquaculture. Marine litter has seen to affect shipping industry by causing vessel damage and downtime, removal and management in harbours and marinas, and emergency rescue operations to vessels.

The ocean plastics also pose a huge danger to human health. Toxin (carcinoid) like Diethylhexyl phthalate (DEHP) contained in some plastics has also been found in the ocean fish. Other toxins in plastics are directly linked to cancers, birth defects, immune system problems, and childhood developmental issues. It includes, BPA, which is normally used in packaging food and plastic bottles.

Ocean plastic pollution is an urgent problem in the world requiring an immediate action. One way to reduce plastic would be to halt the unsustainable production. Many efforts are also made to clean up the ocean plastics. Albeit many more intended solutions, a coordinated action across a number of sectors and stakeholders is strongly required. Policy and decision makers have a prime role to play in creating the appropriate legislative frameworks to encourage mitigation actions that contribute to a reduction in plastic waste at source, as well as encouraging cleaning up plastic pollution on coastlines before it does the most significant damage.

– Sherub Choden and Sherub Zangmo, VI Semester.

### **Plastic - Banned!**

Plastic pollution is caused due to the accumulation of the waste plastic material in the environment. Plastic is a non - biodegradable substance. It remains in the environment for hundreds of years and causes air, water and land pollution. It is hazardous for the humans, animals as well as the plants.

Bhutan, realizing the harmful impact of plastic wastes, reinforced the ban on plastic bags from April 1<sup>st</sup> 2019. National Environment Commission issued a nationwide notification on the ban of use/sale of plastic carry bags on April 20, 1999. Yet it was a futile attempt with no effective measures for those who failed to comply. As long as there is no strong substitute and clear cut policies in-place, it is going to be a challenging task for National Environmental Commission in particular and nation as a whole. A country which globally enjoys its carbon negative status should act as forerunner and set examples to the rest of the world. Today tourism industry in the country stand as the second most government's revenue generator which helps to meet current and capital expenditure, it is vital that its pristine and virgin environment remain at apex to sustain tourism industry alongside. No matter where the global economy drives it is our responsibility to do our part. – **Tshering Choden, IV Semester.**

### **Nature club report 2018 - 2019 Semester**

Nature club has been active on the campus since last two semesters. Under the leadership of the teacher coordinator, two club coordinators, a secretary and a treasurer, the club has organized various on-campus activities as well as out-campus activities. With the club motto "To keep the nature fit, we must do our bit," our club activity mainly aims to sensitize, create awareness, motivate and educate students about environment conservation. Our activity includes social service such as cleaning campaigns and tree plantation and literary activities based on nature. Currently, RTC nature club has 30 members from all the programs. Regular meetings were held before the start of any activity to make sure that everyone's view is taken into consideration.

During the fall semester of 2018, the nature club conducted an essay competition (5th November) with the theme - Individual actions; what can you do about climate change? The nature club also carried out a cleaning campaign at the Cremation ground and other areas. Our club was more active in the spring semester of 2019. Our club collaborated with the Rovers club to clean our locality on every Saturday morning. This was initiated to keep our members active and also help the locality stay clean. Our club gathered more than a hundred volunteers on 10th March to help RSPN complete their 18<sup>th</sup> Chubachu stream cleaning program where we collected 804 Kgs of waste that was segregated and handed over to Thimphu Thromde. Inspired by the viral Trash tag challenge on Instagram, the nature club took a lead role in gathering more than hundred volunteers from the college to take up the challenge and clean the wastes dumped in the Ngabiphu stream. Our club held an essay competition of 25th April on the theme of water crisis. On 5th June, the club gathered 18 volunteers to participate in tree plantation to mark the environment day with Nehru Wangchuck Cultural Center and the Department of Forest and Park Services. The day also marked birth anniversary of Mahatma Gandhi. Our club also initiated to find out the name of the tree species within the campus and labeled them so that people can identify them.

There are lots of pending activities listed in our goals which will be carried out from the start of the new semester. We are planning to carry out exhibitions and other interesting activities. We look forward for your continuous support. – **Sangay Dorji, IV Semester.**

## The department in picture



**The class of 2016 – 2019 during their study trip to Paro.**



**The class of 2017 – 2020 during their study trip to Haa.**



**The class of 2018 – 2021 during their study trip to Royal Botanical Garden.**

# Faculty Profile



Dr. Leishipem Khamrang, Associate Professor, is the Programme Leader for the Department of Environmental Management.

He teaches subjects related to regional development, urban development, welfare studies, population and development, and environment and society.



Professor Govinda Prasad Sharma (FT) is a recipient of Gold Medal on National Merit List. He teaches subjects related to research and development, project planning and development, forestry, environmental ethics and economics, agroforestry, religious studies and beekeeping.



Ms. Leslie Backus, Associate Professor, teaches subjects related to GIS, research & development, biodiversity conservation, and wildlife biology.



Ms. Bach-Lien Ngo, Senior Lecturer, teaches subjects related to food and environmental sciences, international cooperation and project management, research and development, agro-business, and sustainable development.



Ms. Jamyang Pelmo, Associate Lecturer is a recipient of HM's Certificate for Academic excellence. She teaches subjects related to waste management, environmental impact assessment, research and development, GIS and development project.



Mr. Tshewang Dorji, Associate lecture, is a recipient of HM's Certificate for Academic excellence. He teaches subjects related to agriculture, ecology, research and development, analytical skills and development project.



Mr. Kinley Dorji, Associate lecture, teaches subjects related to natural resources and management, biodiversity, urban environment, forest and landscape, ecology, GIS and sustainable development.