UNISEC-Global the 19th Virtual Meeting

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1. Opening Remarks

Dr. Abhas Maskey, UNISEC-Nepal

Dr. Abhas Maskey did his PhD in Japan, and now he is back in Nepal. He founded a non-profit called Antarikchya Pratisthan Nepal (Nepal Space Foundation) which promotes space infrastructure and human resource development while working closely with the government organizations. He is the Co-POC for UNISEC Nepal as well.

Pictured: Dr. Abhas Maskey giving the opening remarks

Highlights:

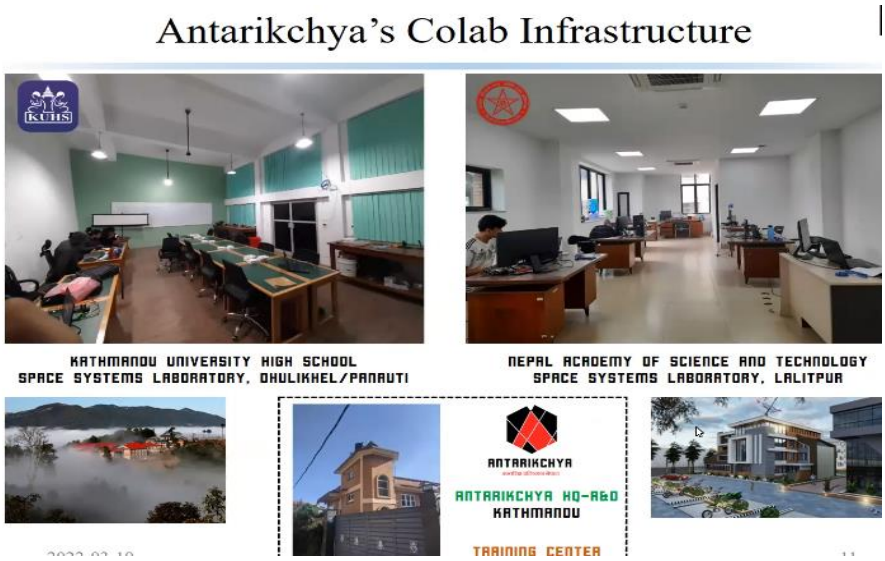
- What ways can we generate the funds for emerging countries when the gov. is not taking an active role
- How do we fund our programs in the beginning?
- There needs to be **creative** ways to fund program
- Idea from Prof. Maeda who emphasized getting creative for Nepal's BIRDS-3 project
- For BIRDS-3, $175,000 including tax was raised for the first satellite NepaliSat-1
- That was a 1U satellite and it was in collaboration with Nepal Academy of Science and Technology, built in Japan at Kyutech.
- There is a SanoSat-1 that was recently launched and it's in the operation phase.
- SanoSat-1 was about $90,000 and it was self-funded and also created crowdfunding.
- Antarikchya ongoing projects:
    - **Danfe Mission,** a payload for 3U
    - **Munal**, 1U.
- Collaboration between Antarikchya, NAST and INSTED, an organization in Thailand led by Dr. Phong
- Dr. Phong is also the point of contact for UNISEC Thailand.
- Danfe mission is in flight model stage, and Munal is in the MDR phase right now.
- **Munal is an interesting project because it is being built by high school students.**
- About $300,000 must be raised for this project.
- Interesting challenge because what if the government entity is not providing the funds right now
- How do we raise that fund?
- The formula Antarikchya has been using to try to get funds is Corporate Social Responsibility Funds.

Highlights (continued):

- Antarikchya is supported by Sanima Bank, Bank of Kathmandu, Garima Bikash Bank, even insurance companies.
- Antarikchya working on to diversify the portfolio:
    - Building **Ground Sensor Terminals**
    - Tinker Lab UNESCO science clubs all around the country.
    - Satellite data analytics.
- Building a diverse portfolio allows Antarikchya to apply to all INGO, NGO, government funds, which are grants and non-grants based.
- Antarikchya crowdfunding website called Patreon: https://www.patreon.com/antarikchya
- Patreon members can give a certain amount of money every month, $10, $100 and $1000.
- With that, Antarikchya provides top secret updates, mission patches, and even services for coming to Nepal and then visiting Antarikchya's space systems laboratory.
- Antarikchya is gearing up for a Kickstarter campaign and has created a number of products to have its own ways to generate funds.
    - PaperSat, which is actually a satellite made out of paper and plastic, people can paint on it, and can use it for educational purpose.
    - Dummies, which look exactly like the NepaliSat-1
    - HEPTASat, an IASat inspired educational satellite, which is based on NepaliSat-1 but the product is developed in a way that uses the sensors that can be found in Nepal.
    - SastoCube satellite and a safari version in integrated and disintegrated form.
    - Kickstarter Website: https://www.kickstarter.com/projects/sastocube/sastocube-your-personal-satellite
- SastoCube will be launched in April 2022
- Antarikchya has been going into the media approaches where social media influencers, and also very prominent figures like Dr.Mahabir Pun who is Magsaysay winner.
- But another way of branding is to try and get big companies in Nepal, which invest huge amounts of money in advertisements.

Pictured: SastoCube Kickstarter Campaign (left) and examples of branding for raising funds (right)

- Antarikchya has a number of programs, costs which can be expensive
- In order to reduce those costs, collaboration with the school where the program is being implemented
- For the tinker lab program, Antarikchya is working with Mahendra Bhawan School
- Antarikchya team actually went to **Khotang** in a school in a remote place in Nepal for SastoCube (CanSat)
- High school satellite project is based on **Kathmandu University High School** which provides space, furniture, and all relevant infrastructures.
- Collaborating with the government to open Antarikchya's offices inside the government building, reducing the utility and furniture cost.



Pictured: Offices of Antarikchya at different places

Highlights (continued):

- Then Antarikchya brings in the manpower and trains the human resource.
- All the interns are being trained at Nepal Academy of Science and Technology.
- Because high school students require supervision, it needs trained manpower.
- Antarikchya has recently opened its headquarters in Kathmandu, and is also planning to open the training center.
- Once we have an idea, we try to build a prototype, but to build a prototype, you need funds and you need manpower.
    - Antarikchya is using its personal funds, soft loans and also grants
    - Once a prototype is ready, it's easier to do a pilot and then get a grant.
    - After piloting is done, and then Minimum Viable Product can be created, which is tested
    - Then the process moves towards mass production.
    - SastoCube (Educational Satellite) is moving towards mass production.
    - Money can come in from preorders, for manufacturing and also equity based
    - Or Angel investment
    - If profit can be generated, it can go back to the primary goal of developing space, infrastructure, and developing satellites.
    - Certain percentage of grants, investments and profits all go towards Antarikchya's primary goal i.e. Satellite Development.
- To start with an idea, some kind of inspiration is needed.
- This program will provide that inspiration.
- How banks are going to use satellite images/how are birds going to be tracked from satellites?
- All these ideas, if they can come to one place and be discussed
- Can create an inspiration for an idea that can lead to profit generating work for the space sector in Nepal and in any other emerging countries.
- The basic idea is that if Nepal can do it, it can be done anywhere else.

Q&A:

***G Maeda**: Quick question. So you talked about Patreon. I think most people have heard of Patreon, but they've never considered using it. Do you have any advice for them?*

Abhas: *Yeah. So, well, it is a really interesting platform. We have about 19 Patreons so far, we raised $500, which is far behind from where we want to be but money is trickling in. Another issue with Nepali is that we don't have dollar. This platform actually allows us to generate that reserve fund as well. And if we have to buy printed circuit boards we can use this money, if we have to do something from outside, if we have to send somebody to do testing in Thailand or in India, we can use it. Anybody who's giving us the money we can and then give them something back. We can give them proper updates. We can give all these perks and we can do one to one meetings as well. Patreon provides a way for people to sort of emotionally invest in the project as well.*

Nate: *Sorry, I'm going to jump in as well and ask you a question right because I think this is really great like all of these projects that you have going on, I'm just wondering what's the overall vision for UNISEC Nepal, you know, because you've got education projects, you talk about corporate partners and sponsors and trying to raise funds and you talk about income generating activities. So, is it more education or is it supporting the space sector creating those opportunities for people, like What are you trying to achieve with this stuff?*

Abhas: *Has to be all of these parallelly, right? Has to be education and have to target as young kids as much as possible so that they get de-sensitized to satellites, to space and eventually we will have more engineers. Important aspect of it at the same time while we are doing that education, we have to build up that infrastructure to support that? So, we have to go from a vicious cycle to into a better cycle and to do that, I think education and infrastructure have to go in parallel . And that's what we are targeting.*

2. Presentation on "Introduction to ICIMOD's Projects and Satellite Data use for Climate Change"

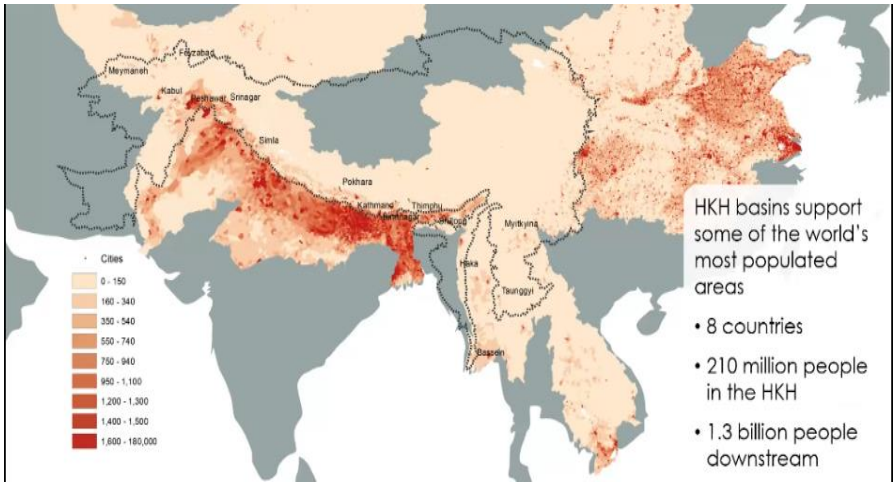
Birendra Bajracharya, ICIMOD

Mr. Birendra Bajracharya is responsible for managing ICIMOD's SERVIR-HKH which is a joint initiative with NASA and USAID. Mr. Bajracharya has 25+ years of professional experience working on various aspects of remote sensing and geo-information system applications in relation to resources and is extensively involved in delivering GIS training.

Pictured: Birendra Bajracharya giving presentation on ICIMOD's Projects and satellite data use for climate change

Highlights:

- ICIMOD stands for International Centre for Integrated Mountain Development
- Is an intergovernmental organization.
- ICIMOD is a regional mountain knowledge, learning, and enabling centre devoted to sustainable mountain development for mountains and people.
- ICIMOD has eight member countries in the Hindu Kush Himalayan (HKH) region: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal and Pakistan.
- Main focus area is this Hindu Kush Himalaya region.



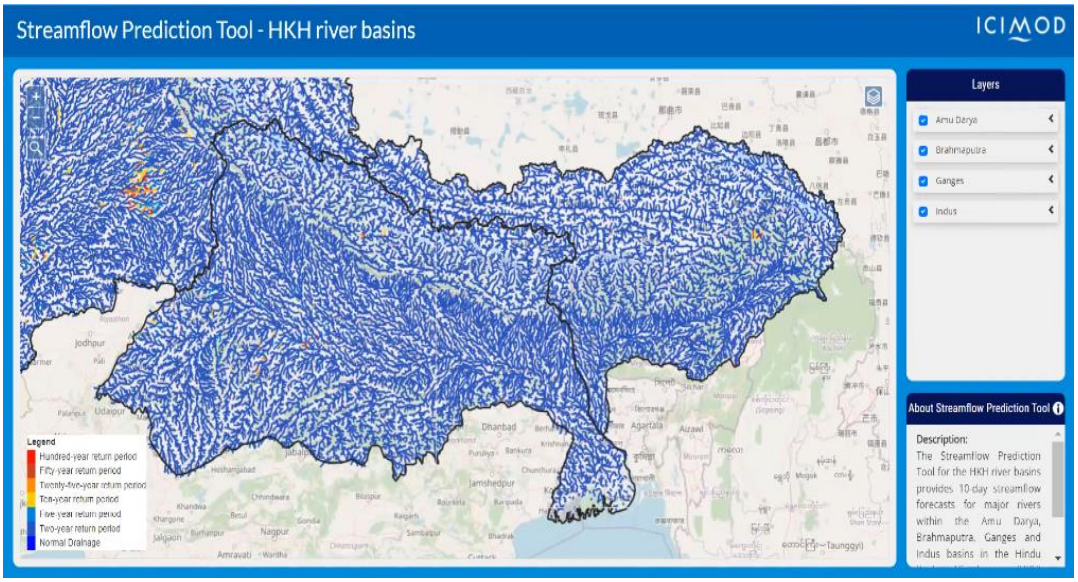
Pictured: Red dots representing population

- Covers part of the mountain regions of China, Afghanistan, Pakistan, and the whole of Nepal, Bhutan.
- Covers a small part of Bangladesh as well as quite some part of Myanmar.
- This case basin is one of the highest regions of the world.
- It is also a very highly populated area where we have 210 million people living here.
- 1.3 billion People are dependent on the resources that come from the mountains downstream.
- Ups and downstream linkages are equally important.
- Earth Observation Applications in HKH from ICIMOD's perspective:
    - ICIMOD established the Mountain Environment Regional Information System (MENRIS) in 1990 where Earth Observation and GIS was very new to the region.
    - **1990-2000 focus:**
        - Introduction of Geospatial Technology to member countries, case studies and a lot of training programs to key government agencies, universities providing support on hardware, software facilities.
    - **2000-2010 focus:**
        - Transition to Internet-based Applications and Decision Support Systems
    - **2010-2020 focus:**
        - Transformation from Applications to Services
- ICIMOD has been a member of GEO since 2008, and also has been the regional support office (RSO) for UNSPIDER mainly in the case of disaster where ICIMOD provides satellite data.
- SERVIR is a global program supported by NASA and USAID, which has five regional hubs.
- ICIMOD is one of the regional hubs for the HKH region.
- Other hubs: Amazon, East Africa, West Africa, America and Hindu Kush Himalaya
- SERVIR Thematic Priorities:
    - Agriculture and food security

Highlights (continued):

- LULC and ecosystems
- Water resources and hydro-climatic disasters
- Weather and climate

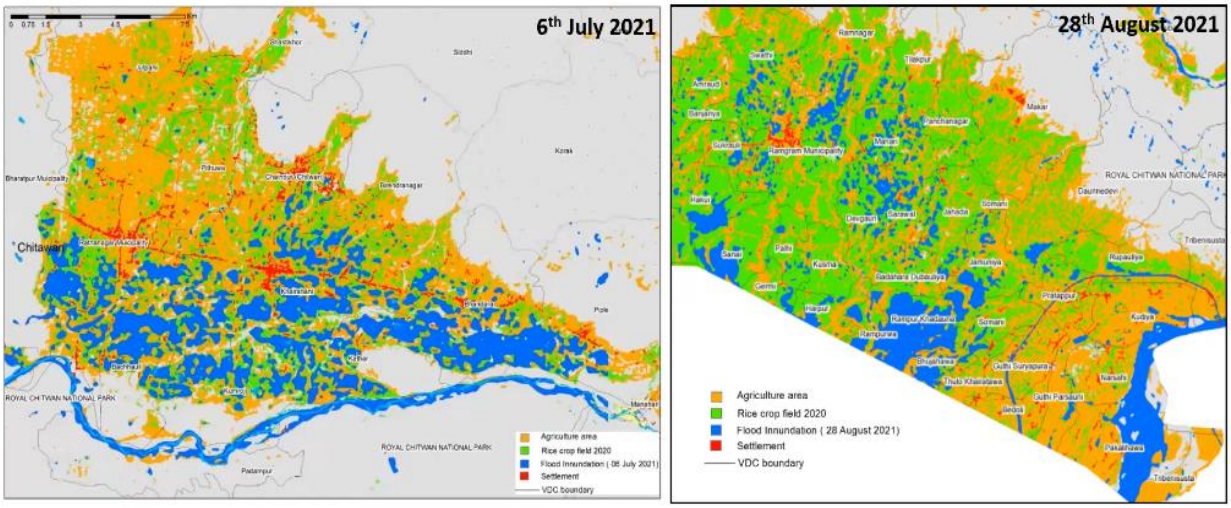
- The main focus of SERVIR is connecting space to villages through innovative solutions using **Earth observation and Geospatial technologies** to address critical challenges, improve livelihoods and foster safe-reliance in Asia, Africa and the Americas.
- Some examples on how ICIMOD has been working on different problematic areas on:
  - Agriculture and food security
  - Agricultural systems are affected by drought, and in terms of climate change
  - Also in terms of disaster, although it has a slow impact on the livelihood of farmers, their migration and even many suicide cases reported due to the problems in production.
- The **Regional Drought Monitoring and Outlook System for South Asia** gives the seasonal outlooks whether there's going to be a normal or abnormal situation coming in three months or six months' time.
  - Drought monitoring and early warning
  - In-season crop area mapping
  - In-season mapping of crops growth time and harvest time to come up with a good assessment of the field.
  - For Nepal, in-season mapping of terai region is done, which is 80% of crops that comes from this region.
  - Collaboration with MoALD (Ministry of Agriculture and Livestock Development) where MoALD is involved in field activities like filling in the data that is used, mainly sentinel data for this assessment.
- **Land cover Monitoring System:** Earlier land cover maps used to take a lot of time and by the time it's completed, the land cover data used to be already updated.
- But now with platforms like Google Earth Engine, possible to cover huge areas within a few weeks
- 2000-2018 land cover of HKH region has now been generated.
- ICIMOD is still developing the national land cover map for Afghanistan, Nepal, and Bangladesh where they're looking into the land cover changes on an annual basis.
- Improving flood forecasting and early warning where satellite information is combined, as well as modeling to look into the stream flow where the discharge is predictive for 10days.



Pictured: Streamflow Prediction Tool by ICIMOD

Highlights (continued):

- It may not be so accurate in terms of the volume itself but was very accurate in terms of capturing the events and for floods.
- Mobile app for flood early warning is created so that users can look into their particular area of interest and get the early information on floods.
- To provide the relief work, as well as to understand the onset and outset of inundated areas it is very important to see how the log datas are given.
- Mainly sentinel data and SAR data are used to look over the inundated areas due to the cloud cover.
- Modeling systems have information like:
    - Rainfall
    - Lightening
    - Hail
    - Wind
    - Supercell storms
- Customization is done in such a way that the interface is easy to use by the people who don't understand too much of technicalities and how to make it usable by the real stakeholders.



Pictured: An example of mapping paddy areas that were flooded on October flood in Nepal

- One emerging aspect is Air quality monitoring and management, where ICIMOD is working with NASA to develop these certain parameters of air quality.
- By Air Quality Watch one can see how pollution is transferring from one region to another.
- Pollution from one country moves to another region and how it's being affected.
- Forest fire is another major issue for Nepal.
- About climate change, ICIMOD has been working for quite some time on glacier mapping of glaciers and glacial lakes of the HKH region.
- Capacity building for all these things to happen or to continue building is very important.
- Different types of trainings:
    - Structured training
    - On the job training
    - Training of trainers
    - Policy dialogs
- Recently, ICIMOD also is focusing on getting more women professionals in this field.
- ICIMOD has compiled all the expenses recently and launched it September last year in 2021.

Highlights (continued):

- Other aspects like user engagement, monitoring evaluation and communication and all those aspects of how ICIMOD has been working on these things
- Opportunities for application of EO in the HKH region are highly influenced by global trends and the priorities set of nations.
- Nanosatellite is also one of the emerging trends where we can really engage from the schools to the high school, to the colleges in this new field.
- Satellite data is becoming more and more accessible mainly making the free access to Landsat data and sentinel data.
- Platforms like GEO (Group on Earth Observation) are promoting space applications for societal benefits and monitoring SDG indicators.
- There is an important role mainly to bring the global as well as bringing in the countries together, at least to bring in some connection on that.

Q&A:

Nate: *Which is how your data that you've received has actually had an influence over government policy? Have you seen that?*

Birendra: *Yeah, as we are working very closely with the governments, government is very positive in terms of adopting these new methods and approaches. And for example, I work with the Ministry of Agriculture on Landover monitoring and all those. So they also part of our core team working on those projects. So that way we could see that they're already we committed to take this forward in their official systems.*

3. Presentation on "What the space industry needs from the academic world?"

Yubin Shrestha, Bird Conservation Nepal Representative

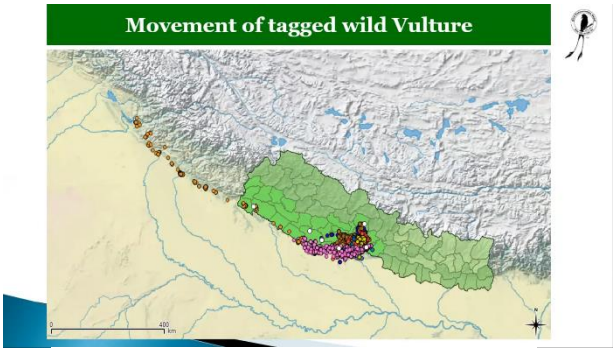
Mr. Yubin Shrestha is a student of Cultural Anthropology, Archelogy and Social work and worked as consultant for Birds Conservation Nepal (BCN) conducting various bird surveys across Nepal. He is the Bird Count Leader of Kathmandu Valley. He's also a eBIRD bird reviewer in five regions in Nepal.

Pictured: Ornithologist Mr. Yubin Shrestha giving presentation on use of Satellite technology for tracking birds migration and conservation

Highlights:

- Birds Conservation Nepal (BCN) is the leading organization in Nepal focusing on the conservation and status of birds.
    - Satellite is being used for tracking in Birds migration
- According to Audubon society, most migratory birds, especially the sunbirds, make their epic annual journey under the cover of darkness
- The reasons include atmosphere, guidance form the stars and safety from the predators
- Impossible to imagine the study of birds without use of satellite as their movement at night
- Every year Bar-tailed Godwit, embarks a nonstop trans-equatorial flight lasting at least 7 days and nights from Alaska to New Zealand by travelling more than 12,000 km.
- Artic terns have been found to travel 70,000 km in a single calendar year from Artic to Antarctica and goes back
- Before the discovery of how the birds migrated, there were certain premonitions about migration:
    - Aristotle thought that some birds such as swallows hibernated in the colder months and transformed into different species.
    - The redstart was seen in Greece in summer, somehow changed into Robin in the winter.
- There was no explanation for the appearances and disappearances of the birds
- The first scientific evidence of long-distance bird migration was revealed after redstart stuck with spear from central Africa was shot dead by a hunter in Germany.
- This discovery of the African spear found in Germany led to the conclusion that redstart migrated to Germany from central Africa.
- Only in the past century, with the advent of bird banding, satellite tracking and more widespread field studies, resources have been able to connect bird population that winter in one area and nest in the place.
- Why are ornithologists tagging the birds?
    - 23 species of birds in the world and nine species of birds as that and recorded in Nepal
    - During the 1980s, there were about 1-1.6 million, but now their numbers have dwindled to about 20 thousand only
    - One of the major causes of death of vulture is use of toxic substance Diclofenac which is used for treatment of birds.
    - Even 30ml of Diclofenac inject cattle can kill cause the dead of up to 800 vultures
- BCN is funded project by Royal Society for the Protection of Birds (RSPB).
- Solar powered bird transmitters log GPS locations and upload data via GSM/GPRS networks
- Users can log into the websites for example Ornitela, Argos, Ecotone and retrieve data by paying the data transfer fees
- Before tagging the birds, BCN has to take permission form Department of National Parks and wildlife conservations
- This satellite tag has to be ultra-light and accepted practice of radio telemetry is used
- 5% of the body mass respect to the size birds, BCN is using 30gm tag of average body mass of 5 kg of white trunk vulture

Pictured: Captured vultures fitted with satellite tracking devices before releasing in wild

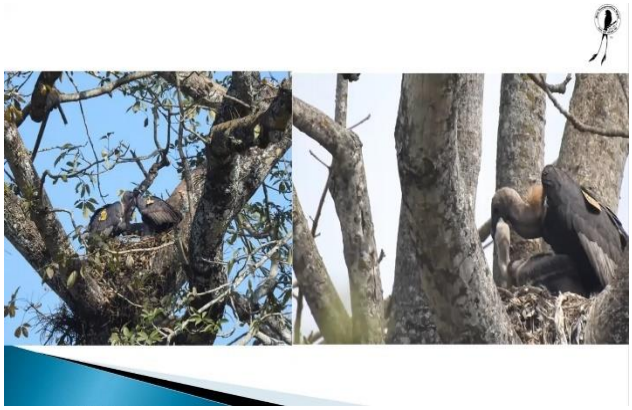


Pictured: Tracking the movement of tagged wild vulture using satellite tracking devices

Highlights (continued):

- Tarp to catch wild white trunk vulture, they are lured into the cage by feeding caraccas.
    - Then catch them to tag the satellite tracking device and release them back to wild
    - This critical endangered species can go extinct in wild in coming 10 years
    - BCN has tagged 79 vultures, 40 wild white trunk vultures and 39 discaptive vultures
    - 3 red vultures are also tagged but they are not as extinct as white trunk vultures
- Beside BCN there are also other organization like Himalayan Nature

Pictured: Movement of tagged Himalayan Griffon by Nepal Raptor conservation program



Pictured: white trunk Vultures successfully breeding in nature

- There are many successful attempts of the introduction of vulture feeding sites known as 'restaurants' that provides diclofenac free carcass to the vultures
- It has made a positive comeback of the vultures after the conservation measures aided by the use of satellite tagging.
- The studies of the vultures were implemented in Nepal to declare Vulture safe zones throughout Nepal
- The project successful these days since they are coming back.
- The transmitters have been used to find the cause of the mortality of the vultures
- When the transmitters saw no movement, these devices are retracted by relocating GPS and the examining by conducting post mortem to find the cause of the dead.
    - It has also been helpful to find the survival rate of vulture.
    - In present context, it has been highly used for the study of Raptors.
- It has been used for the conservation purpose only, subjected to **vulnerable status of birds**
- In future, it could be helpful to know the migratory root of mysterious birds of some common, or even uncommon birds, who's breeding ground is stretched as far as like migrants to Nepal from Mongolia and China and don't know where the Himalayan birds migrates in summer.
- It can also be used to track other wildlife species such as mammals since radio collars have been used in tracking snowy leopards, facing cats and tigers.
- **There's one question if interested, how can UNISEC introduced the transmitters in reasonable price for the wildlife stories in Nepal and how can we access that data with whatever technologies available at the moment?**

Q&A:

Nate: *How important are these vultures within their ecosystems? A lot of species provides ecosystem services (e.g. pollination via bees). I imagine these vultures help with the nutrient cycling.*

Yubin: *within the ecosystem. Yeah, they're very actually helpful and vultures actually they don't kill their prey, you know they just eat, the dead* carcass *they find. And they're actually responsible for cleaning our environment, the dead* carcass*, which could be fatal and which could spread diseases and all the things. Study also shows that if we had to pay to clean those carcasses, then it would have cost a lot of money. The vultures are actually cleaning the environment for free.*

4. Presentation on "Potential Satellite Data use for Financial Institutions in Nepal: Sanima Bank's Case"

Sagun Prajapati, Sanima Bank

Mr. Sagun Prajapati is the Research and Development Specialist at Sanima Bank's Headquarters. Mr. Prajapati has been in the finance/banking sector since 2015 and previously worked in marketing department including overseeing Corporate Social Responsibility funds. He did his undergraduate work from Bangalore University, India. He did his Masters from Pokhara University.

Pictured: Sanima Bank Research specialist Mr. Sagun giving presentation on Potential Satellite Data for Financial Institutions in Nepal

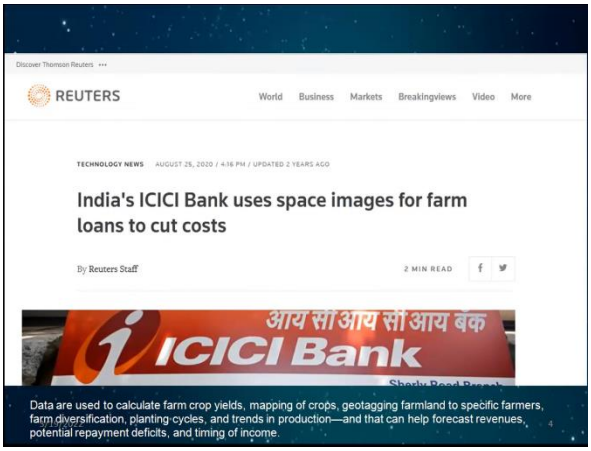
Highlights:

- Short introduction about Sanima Bank:
    - Sanima Bank one of the top "A" class Financial Institution of Nepal
    - Sanima bank has around USD 95.19 Million paid up capital
    - It is listed in one and only stock exchange of Nepal that is Nepal Stock Exchange
- Why satellite images for banks?
- It started thinking about satellite for banking, from panelists discussing that was organized by Antarikchya Pratisthan Nepal.
- The topic was space, planning policy and funding.
- In that panel discussion,
    - How we can fund based satellite?
    - How this satellite images are using by other banks and finance financing institutions involved?
- During research this article it says India's, ICIC bank uses space images for farm loan to cut costs.
- It really fascinating because in Nepal up to that context, we haven't used satellite images to
    - Calculate farm crop yields,
    - Mapping of crops,
    - Geotagging farmland to specific farmers,
    - farm diversification, planting cycles, and trends in production
- These data help to forecast revenues, potential repayment deficits and timing of income
- These peoples are using these to reduce cost and loan processing time
- How loan processing structure works in Nepal?

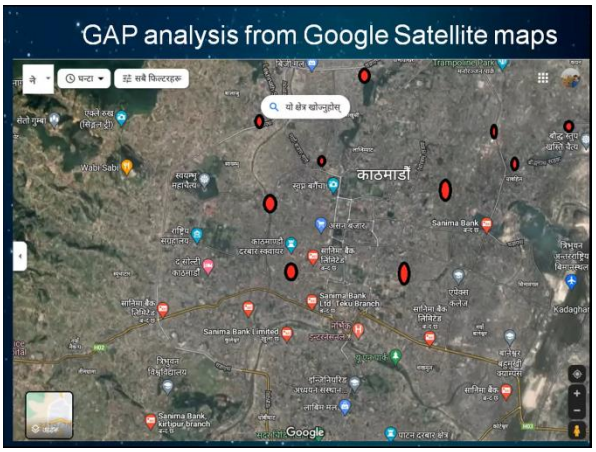
Highlights (continued):

- Client wants the money approach to bank and financing institutions.
- Bank and financing institutions will provide fund only if the borrowers will provide a collateral for security reason. collateral can be land, housed
- With that collateral, before providing a loan, bank and financial institution will give to evaluator, the third party engineers, and assign them to prepare detailed reports.
- Based on that report, the collateral verification will do by staff.

- **ICICI bank removed collateral verification by staff** which saved the transportation cost and they're also saving the time to sanction the loan.

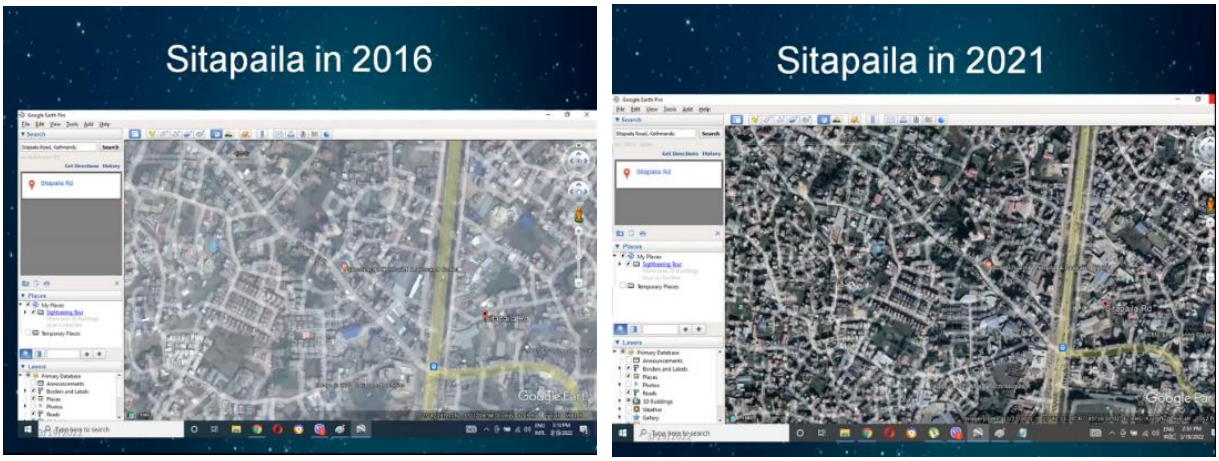


Pictured: India's ICICI bank uses space images for farm loans to cut costs



Pictured: GAP analysis from google satellite maps for feasibility study of new Bank branch

- In context of Nepal, using satellite images is currently very raw state
- Being part of research and development department, our one of the roles is to identify the potential location to open our new branches.
- For opening new branches, what we do is a gap analysis by using a satellite image.
- In a location of Kathmandu area, what I did first is took a picture satellite image of Kathmandu area, where our branches are already located the existing branches.
    - Few branches are not mapped in Google maps. So manually mapped through red and black dots.
    - By satellite images, studying geographic and residence population in that area shows the feasibility for new branch to open
- The construction, residency areas, development of these areas, we have identified that like in five-year time, the growth is pretty high in this area.
    - So probably we can open our branch there for new market for Sanima Bank
- Few of the other use cases, some microfinance, micro insurance companies, in **Nigeria are tracking the specialty crop**, the growth up crop and harvesting time for marketing the insurance products with the help of satellite images
- So currently we are working with, using satellite images only for branch feasibility.
- Similar to the other banks and financing like ICIC is doing, we are actually working on, where we are working on loan assessment project for Agri loan, with satellite images and Machine learning.
- If machine learning could give us an information regarding the growth potential of this area,
- It could be much easier and much scientific.
- There's a lot of areas still. We can work out to identify the areas
- Here in second phase, we are applying to work on the satellite images by agriculture area



Pictured: Development progress tracking of area using satellite images for

Q&A:

Nate: *So, you can use the satellite data to better understand the farming yield and cash flow of farmers, such that you can better adjust repayment, terms and agreements with farmers? With farmers, does that happen or is there any use case of that?*

Sagun: *Actually, ICIC bank is so far whatever I got the information through the press release of ICIC bank. They're actually using that data to identify the cashflow exactly what made for* ***Nate*** *said, using that for cash flow and repayment capacity. They are using that case. But for in context of Nepal so far, we have not used, such data. So, there is a potential to use these kinds of information. These kinds of images are to identify the cash flow. So, there is a potential, but so far, we haven't used that data. Thank you.*

Nadim*: So, it means we can use the satellite to find the area where we can set up a new business.*

Sagun: *Yeah. Very interesting. That's a completely similar to what we are doing right now. Definitely you can start using you can, set up a new business by using satellite.*

5. Breakout Discussion and Sharing

Moderator: Nate Taylor, UNISEC-Global

Pictured: Session focused fund raising for technology demonstration.

Discussion Highlights:

- Team is divided into 25 minutes break out session.
- Team is given the scenario where they have been researching an innovative space technology through university, completing basic technology research and feasibility study and have reached a technology readiness level.
- Each team will brainstorm some ways to raise fund to develop the technology enough to complete a technology demonstration.

Discussion:

Group	Team	Highlights
Room 1		- *In business sector and commercialization nobody is willing to provide fund unless the discovery is interesting.* - *Identifying former Co-operative as possible source of funding.* - *Space technology platform where consumers show agricultural products so that it attracts business person to provide funds.* - *Work on own to make something interesting to attract students and appreciate them to get enrolled in space field.* - *Mission related to space technology to get appreciated by universities and national organizations that seems interesting and developing for the country to raise funds.* *Comments:* - *Interesting point about farmer cooperatives as they do have money for funding.* - *So as long as it is Earth observation mission they can find this advantageous and provide funds.*
Room 2	***Satoru Kurosu***	- *What Nepal is doing is impressive with SDGs type of solution and crowdfunding.* - *Donations and funding from ESG to grow more forest agriculture to absorb carbon dioxide, this is a very hot topic for the investors like ESG.* - *Satellite data can be used as a governance of carbon credit because now carbon trade, carbon credit or carbon tax is a big issue which can bring some more donations.* *Comments:* - *Good point about ESG's environment and social governance.* - *Moving away from sustainability to ESG domain, now companies are looking at more than just environment but about how they influence society.*
Room 3	***Samuel N.*** *Abdulaziz* *Ali* *Yubin*	- *Some professors might be willing to fund the project.* - *Trying crowdfunding* - *Applying for grants as there are hundreds of organization willing to provide grants to student's projects and it is not necessary to be a space project it can be any project.* - *Plan a fundraising event where people can provide some donations to run the project.* - *Look for investors who are willing to invest on interesting idea about space to transform it to something real.*

Group	Team	Highlights
Room 3 (Cont.)		*Comments:* - *Fundraising event is an interesting thing but sometime it can be a little hit and miss although it's been done successfully done previously.* - *The idea of Professor funding is also interesting but whether it is feasible though.* *Because if it's a CubeSat project which is going to cost $300,000, might need to buy-in many professors in order to get some type of substantive movement on that.*
Room 4	***Dr. Waqar*** *Bolton* *Rafay*	- *Apply for the grants on national and international organizations* - *As done in Nepal: approaching banks to finance the project.* - *Approach SDG's and authorities related to disaster management with the scope of disaster management and emergency preparedness.* *Comments:* - *Social cooperative responsibility is something to keep in mind as lot of international organizations do reserve funding projects like this*
Room 5	***Takahashi*** *Birendra* *Mansur* *Kawashima* *Kawate*	- *Selling satellite data.* - *If satellite can take 10 images per day the raw data may be sold for $10 for each which totals to $36500 a year but this can be 10 times larger i.e. $365000 per year once the value is analyzed and added.* - *If there is 50kg satellite then maximum amount that can be earned is hundred million US Dollar and this amount can be 100 times larger than the cost of satellite development.* - *Share machine time of satellite to developing countries where they buy raw data from some satellite consortium and add value to the data themselves*
Room 6	***Takesue*** *Hoda* *Kamran* *Khubaib*	- *Making prototype of something the groups are willing to do as this can make it easy to persuade for funds.* - *Have a competition to win the prize* - *Collaborate with other groups world widely doing the project and share items.*
Room 7	***Sagun*** *Abhas* *Sirash* *John*	- *Approach private company for CSR funds in terms of cash* - *Generate cash by creating non-profit organization and generate a fee based income from members* - *Military support as military group are using satellite images* - *Collaborate with local government like municipalities to get some funds related to social causes* *Abhas:* - *Collaborate with universities, space agency or any non-profit organization where somebody provides internship, another provides equipment and the resources* - *Similar to requesting institution to host the project and provide manpower*

6. Announcements and Acknowledgment

Rei Kawashima, UNISEC-Global

Pictured: Kawashima-san making announcements for the UNISEC-Global Community

Highlights:

- **Preparation for establishing a new local chapter**
  - Columbia enrolled two universities:
    - Sergio Arboleda University
    - University of the Andes
  - Columbia is trying to enroll four more universities
  - Pakistan enrolled three universities:
    - University of Central Punjab
    - Ghulam Ishaq Khan Institute of Engineering Sciences and Technology
    - University of Engineering and Technology, Lahore
  - Conditions to enroll in UNISEC Global
    - Only two universities or more
  - Procedure to enroll
    - Go to UNISEC website and download Excel file http://www.unisec-global.org/pdf/Application_Form_for_Member_University.xls
    - Ask universities to fill out applications

- **Pre-8th Mission Idea Contest (PreMIC8)**
  - MIC8 will be held in 2023
  - Encourage to organize regional competitions in 2022
  - Pre-MIC8 workshop will be held in Istanbul (or virtually) in October 2022
  - Requirement is that the mission is carried out by multiple satellite made **of 6U CubeSat or smaller each**
  - The number of satellites can be anything as long as it is bigger than one and the mission has clear benefits of having multiple satellite in orbit at the same time.
  - Constellation missions and formation mission are both encouraged.
- **Launch opportunities**
  - J-Cube which is a JAXA and UNISEC Japan's program is providing
    - Special discounted launch opportunities 1U-3U
    - Need to collaborate with UNISEC-Japan's university
    - Matching application deadline: October 31 2022: http://unisec.jp/serviceen/j-cube

- **Next virtual meeting**
    - The date for the next virtual meeting is on **April 19, 2022 10:00 pm - 0:00 am (JST)**
    - Program:
        - Theme: TBD
        - Confirmed speaker: TBD
        - Local Chapter presentation: TBD
    - HOST: UNISEC-Global secretariat
    - Virtual UNISEC-Global Meetings take place on the Third Saturday almost every month in 2022
    - Seeking local chapters to host the virtual meeting on May 21, June 18, August 20, Sep 17, Nov 19, and Dec17. Please contact the secretariat.

7. Participant Statistics

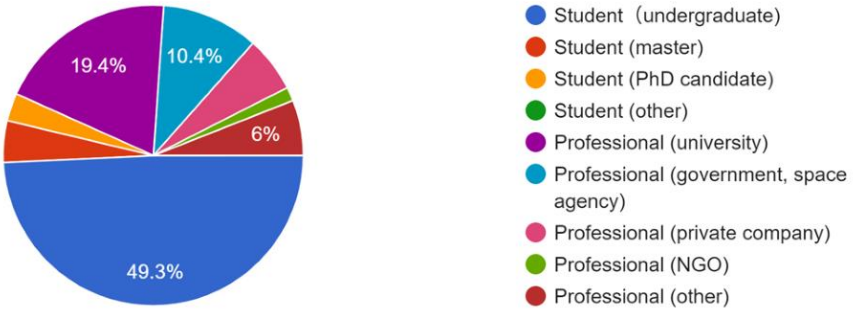
69 registered participants from **16** countries/regions participated in the 19th Virtual UNISEC-Global Meeting.

Country/Region	Number of registrants	Country/Region	Number of registrants
Australia	2	Mongolia	1
Bangladesh	2	Nepal	7
Bulgaria	3	Nigeria	1
Egypt	16	Pakistan	10
Iraq	1	Philippines	11
Japan	9	Sudan	1
Kenya	1	Turkey	1
Mauritius	1	United States	2

8. Participant Questionnaire

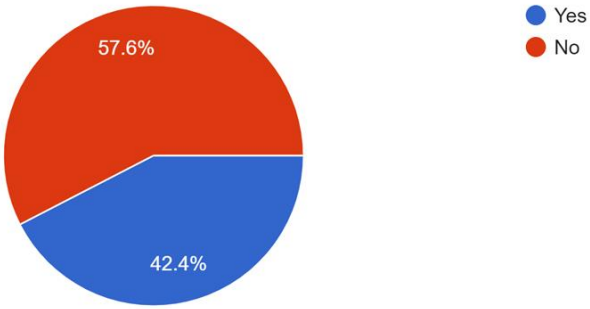
Student or professional?

67 responses



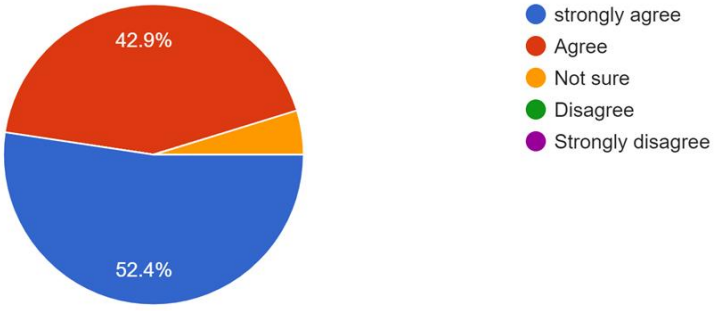
Have you participated in the UNISEC-Global Meeting previously?

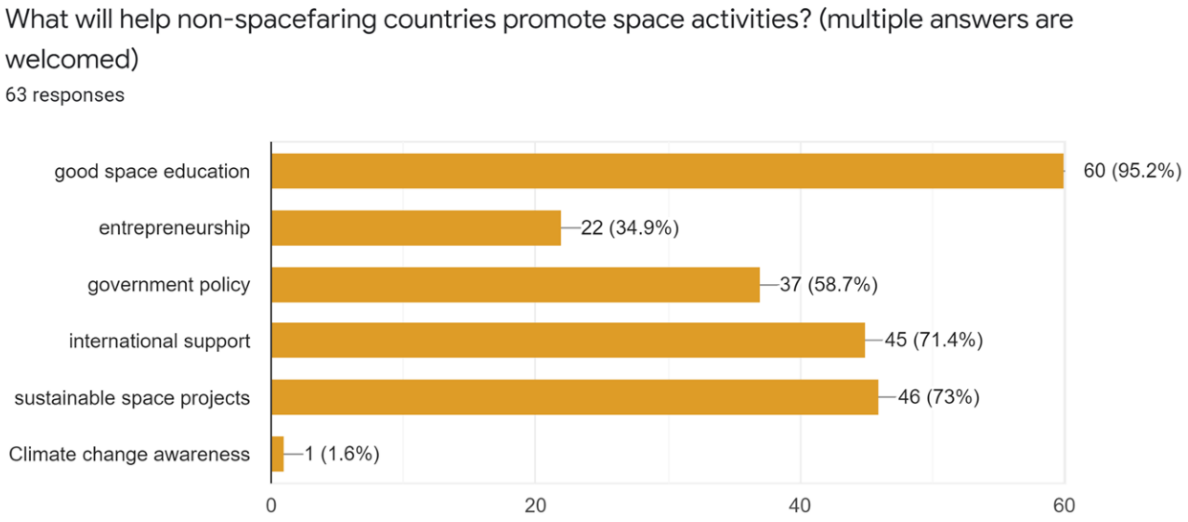
66 responses



Do you agree that non-spacefaring countries should promote space activities?

63 responses





End of Report