



Royal University of Bhutan

STATE OF RESEARCH AND INSTITUTIONAL LINKAGES

Royal University of Bhutan

2020 - 2021



Institute
for GNH Studies

iGNHaS



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Preface

The Department of Research and External Relations (DRER) is pleased to publish the 3rd Annual Report (2020-2021) of the 12th Five Year Plan (2018-2023) for research and external collaborations implemented by the University. This is expected to serve as documentary evidence for the 12FYP in research, innovation, and international linkages of the University.

The annual report of the DRER lists details of publications, research events, grant projects, international relations, and higher degree research programmes recognizing the efforts made by Colleges in achieving RUB's mandate to conduct and promote research relevant to Bhutan as well as of international context.

The COVID-19 pandemic regulations and lockdown during this reporting and the University's research activities such as organizing events, training that requires mass gathering, and international mobility have been severely affected. However a positive impact of the pandemic to research is the increase is noted in the number of research grants applied and secured and increase in the number of publications, the assumption is that the academics had more time to focus on research.

During the recent review exercise of the University's research strategic plan in March 2020, the key success indicators are further improved and realigned as per the University's overall strategic direction. However, to have a consistent structure of reporting for at least 5 years, this report is presented using the previous reporting structure.

RUB has strengthened research institutions in various thematic areas and endorsed the operation of 18 Research Centres with an addition of a new Research Centre in the third year of 12FYP. The report is not intended to compare performance across the colleges since research capacity, research infrastructures, and establishment years of the different Research Centres are at varying levels. The intent of this comprehensive annual report is to inspire proper record-keeping at a one-stop-office in respective colleges to allow better communication, intervention and assist one to make an evidence-based judgment (s).

The DRER commits to facilitate not only the conduct of research but also to promote research through publications, in order to enhance research that is relevant to Bhutan and at international levels.



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BVSc & AH (Hyd); MSc (Abdn); PhD (UniMelb)

Director

Department of Research and External Relation

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1 Executive Summary

Research, innovations, and institutional relations in the Royal University of Bhutan (RUB) are being promoted by establishing Research Centres (RCs) and enhancing the capacity of research institutions in each college. During the third year of the 12th Five Year Plan (12FYP), RUB successfully operated eighteen Research Centres spread across the colleges out of which three Research Centres were approved during the 12FYP.

One major activity of the research and industrial relations of the University is to develop the research capacity of the staff to conduct and promote research of international context that is relevant to Bhutan as well. Due to the current pandemic, the annual budget allocated for the research activities in Colleges has been dropped for this financial year. A restriction of movement and mass gathering most of the research events such as international conferences, seminars, workshops, and symposiums were conducted online, and also some of the Colleges had received funding from external agencies.

The data for research capacity building activities indicate that 32 professional development programmes were conducted by the colleges. From around 600 academics spread across the ten colleges, almost 85% of them were engaged in doing research during the planned period. The University has organized as many as 39 events to disseminate research activities online and face-to-face.

The External Relations division, with the Government shutting down borders for international arrivals, all institutions, including the RUB, which is mandated to facilitate services for international mobility, had to park its services and shifted gears to start work on developing guidelines to facilitate participation in conferences and seminars to learn and network. The University is now posed with unique challenges enhancing the student learning environment. Until the onset of the COVID-19 pandemic, the short-term study abroad programme, followed by a semester abroad, was a popular choice for international students to get an opportunity to enjoy physical experience and exchange of knowledge at the international level. Now, universities across RUB included, are confronted with instituting a 21st-century learning environment using technology and new pedagogical models.

Entering into a Memorandum of Understanding (MoU) with an external partner strengthens its offer of academic and research services as it engages with its partner and there is cross-fertilization of ideas. Therefore, it is meaningful to have linkages with universities, institutions and organizations in a mutually beneficial and reciprocal system that looks at enhancing education and its instruments. In 2020-2021, the Royal University of Bhutan sought approval on eight Memorandum of Understandings for collaboration.

The first-ever Ph.D. programme in Bhutan was validated in the CNR owing to the presence of required facilities and human resources at the college. With this, in an unprecedented time, the first-ever Ph.D. degree in the country was introduced since the establishment of the University.

In order to enhance research and innovation of the University, academics have developed Colleges actively collaborate with external partners to apply for research funds. A total of 182 proposals were written by faculty of Colleges which includes proposal for college grants and a total of 89 project proposals to external grant agencies. During the FY 2020-2021, RUB secured a total of Nu. 66.49 Million (Approx. Ngultrum Sixty Five Million) including consultancy grant, as a research grant from external sources such as Erasmus+, IDRC Canada, ICIMOD Nepal, Japan.

RUB colleges published twelve journals during the reporting period. A total of 235 papers were published in various peer-reviewed as well non-peer-reviewed journals. A total of 74 articles were published in a journal printed by RUB, while 161 articles were published in various types and standard journal publications. A total of 16 conference and seminar papers and a total of 13 books and 27 book chapters were published this fiscal year. BJRD which is managed before has been published two issues and also developed specific websites to ease at management.

Ensuring quality service to the University through various success indicators is vital. Three Research Degree Committee (RDC) meeting was convened i.e 4th, 5th, and 6th with series of agendas related to the administration and monitoring of the higher degree research degrees in the University. Some of the notable agendas from the meeting are the launching of a Ph.D. in Climate Studies, a Ph.D. in Anthropology, and an

MSc in Conservation Biology. Besides it, the meeting also deliberated and reviewed the existing MSc NRM programme.

Likewise, the Research and Innovation Committee (RIC) meeting is crucial in steering research culture in the Universities. The RIC Secretariat within the Department convened the mandatory requirement of four meetings where important endorsements on research and development were reached.

The 7th Annual Conference of the Deans of Research and Industrial Linkages was an opportunity for Deans and Research Officers of all colleges and the Department of Research and External Relations (DRER) meet to review, share information, discuss and propose solutions for improvement of research and international relations in the University provides a critical platform to improve the services.

To provide efficient and effective services, the DRER continues to draft enabling standard operating procedures (SOPs) and turn-around-time guidelines to be implemented by the colleges.

In order to enhance collaborations and coordination across colleges, DRER initiated to institute three technical advisory bodies in the University namely Advisory Committee for Food Security, Youth Engagement and Water Infrastructures and Technology.

The DRER continues to sit on many decision-making bodies of the University including the Academic Board (AB), Academic Planning and Resource Committee (APRC), Programme Quality Committee (PQC), University Human Resource Committee (UHRC), Academic Selection Committee (ASC), University Executive Forums (UEF) besides two other University committees facilitated by the Department namely the Research and Innovation Committee (RIC) and the Research Degree Committee (RDC).

2 Introduction

The Royal Charter of the University in Article 2.2 mandates the University to promote and conduct research in an international context and promote the transfer of knowledge relevant to Bhutan. This visionary objective is part of the dual functions of the University besides offering academic programmes. However, changing the mindset and working practices of academics to research, innovation, and use of knowledge to work stations is a challenge. With persistent efforts put in place collectively from the all sectors of human capital, continuous curriculum integrations, and adequate financial resources, the University has made a breakthrough in changing the mindset and working practices of the academics in engaging in research activities in a predominantly undergraduate teaching-learning university.

While the majority of the RUB faculty are in the beginning and mid-career researcher categories, the University now has seasoned faculty who are able to conduct quality research work to contribute in policy discourse and make an impactful contribution. For example faculty in Samtse College of Education (SCE) conducted research on a topical issue of promoting class 10 students to class 11 without a cut-off point. And a team of faculty in the College of Natural Resources (CNR) are specialized in environment and climate change and they published book chapters and research papers on Bhutan to renowned publications such as Springer and Nova publisher. Such instances show the improvement of the research culture and the capacity of the University generate knowledge and findings that could be used at the policy level.

A situational analysis study in a peer-reviewed journal reveals that the performance of research and development in the University has improved with several initiatives undertaken during the past fifteen years to enhance the culture of inquiry, curiosity, and learning to infuse the importance of research and innovation in higher education. The study observed that while the structures and mechanisms to support research are put in place within the university, there is still a need for improvement in the participation of academics in grant writing and collaborative projects.

The University's visibility both within and outside Bhutan has improved exponentially in recent years and the trends indicate increasing opportunities

to leverage formal and informal academic exchanges and joint research projects with international institutions and universities. However, there are still improvements required in creating enabling environment for academics to engage with international universities to enhance research activities both in terms of quality and quantity since RUB is traditionally a teaching-learning higher educational institution.

3 Operational Research Centre

Research Centres (RC) in the college are key institutions to develop appropriate infrastructure, enhance research capacity and support, and maintain a sustainable financial base for research within the institution. Research Centres provide research leadership within the University and is headed by an academic as a Research Centre Coordinator that shares a position status similar to the Head of Department and Programme Leader in terms of workload within the college. However, the actual implementation of the workload of the Research Centre Coordinator is yet too formalized across the University.

During the third year (2020-2021) of the 12FYP (2018-2023), the University has eighteen University Research Centres, with the Centre for Education Research and Development (CERD) established way back in 2001 in PCE, and the latest being the Centre for Innovation in Educational Practice and Research (CIEPR), Samtse College of Education reviewed and endorsed by 31st RIC Meeting on 2nd October 2020.

The details of the 18 RCs located in various University campuses with their year of establishment is presented in Table 1.

Table 1 Operational Research Centres during 2020-2021

SI No	Research Centre	RC Campus	Year (Estb.)
1	Centre for Educational Research and Development (CERD)	Paro College of Education	2001
2	Centre for Buddhist Studies (CeBS)	College of Language and Culture Studies	2008
3	Centre for Population and Development Studies (CPDS)	Sherubtse College	2008

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4	Centre for Rural Development Studies (CRDS)	College of Natural Resources	2010
5	Bhutan and Himalaya Research Centre (BHRC)	College of Language and Culture Studies	2011
6	Centre for Climate Change and Spatial Information (CCCSI)	Sherubtse College	2011
7	Centre For Business Research and Entrepreneurship Development (CBRED)	Gedu College of Business Studies	2012
8	Institute of GNH Studies(iGNHaS)	Department of Research and External Relations	2014
9	Centre for Appropriate Technology (CAT)	Jigme Namgyel Engineering College	2014
10	Centre for Renewable and Sustainable Energy Development (CRSED)	College of Science and Technology	2015
11	Centre for Archaeology and Historical Research (CAHR)	Sherubtse College	2016
12	Centre for Disaster Risk Reduction and Community Development Centre (CDRR&CDS)	College of Science and Technology	2016
13	Centre for Science & Environmental Research (CSER)	Sherubtse College	2017
14	Centre for Environment and Climate Research (CECR)	College of Natural Resources	2018
15	Centre for Lighting and Energy Efficiency (CLEE)	Jigme Namgyel Engineering College	2018
16	Centre for Sustainable Mountain Agriculture (CSMA)	College of Natural Resources	2018
17	STEM Education Research Centre (SERC)	Samtse College of Education	2019
18	Centre for Innovation in Educational Practice and Research (CIEPR)	Samtse College of Education	2020

4 Enhancement of Quality and Relevance of Programmes

Under this development theme or objective of the 12FYP, the DRER was mandated to facilitate two actions, namely, i) to develop capacity, and, ii) to enhance the student learning environment. Each action had specific success indicators performed by the respective Research Centres in the colleges as envisioned to steer research and innovation. Some of the success indicators (SIs) are directly facilitated from the office of the Dean of Research and Industrial Linkages (DRIL) in absence of the Research Centre, and also being crosscutting SIs within the college.

4.1 Research Capacity Building Budget Allocation

Capacity building through the conduct of research professional development (PD) programmes, organizing and conducting research-related programmes, facilitating international staff exchange programmes, and reviewing the performance of existing Research Centres are some major activities to enhance research and development within the University.

The RUB Research Policies 2014 endorsed by the Academic Board require the College to allocate a minimum of one percent (1%) of the annual operating budget as a college research fund. However, due to the current pandemic having impacted the whole financial year the budget allocations for the whole colleges were dropped due to restrictions of movement within and outside of the Country. Therefore, many of the international conferences, seminars, workshops, and symposiums as part of professional development were converted into the online platform, and also some of the Colleges had received funding support from external agencies.

4.2 Organization of Research Professional Development Training

4.2.1 Training Organized

To build research capacity in the University, Colleges organize a series of training and workshops for their faculty and students. This fiscal year, despite the lockdowns and restrictions on mass gatherings, a total of 32 research training were organized. Counting the number of participants,

where possible, Table 2 shows the minimum number of attendants in the various training programme. A total of 344 RUB faculties and staff availed training programs.

For example, SCE organized a *Certificate course in Place-based Education* for 25 faculty members and Dzongkha Development Commission provided training on Translation to 25 faculties of CLCS. Similarly, along with the faculty, 1581 students also availed various training programs and CST organized their *8th Annual Green Technology Challenge* for their students on the Campus. In Sherubtse College a group of faculty organized a training titled *Effective Communication and Analytical Skills* for their Arts and Humanities students.

RUB also extends its expertise in offering training programs to people outside of the University and this fiscal year 650 external participants took part in various training. For example, a group of faculty from CNR conducted a *Training of Trainers on Smart Farming* to 23 participants from other agencies. Similarly, a team of faculty organized a virtual training on design thinking to 55 teachers of Tendruk Central School, Samtse.

Table 2 Number of staff, students, and External staff who participated in Professional Development programmes

Sl. No.	List	Total
1	Number of staffs engaged	344
2	Number of student engaged	1581
3	Number of External Participants	650

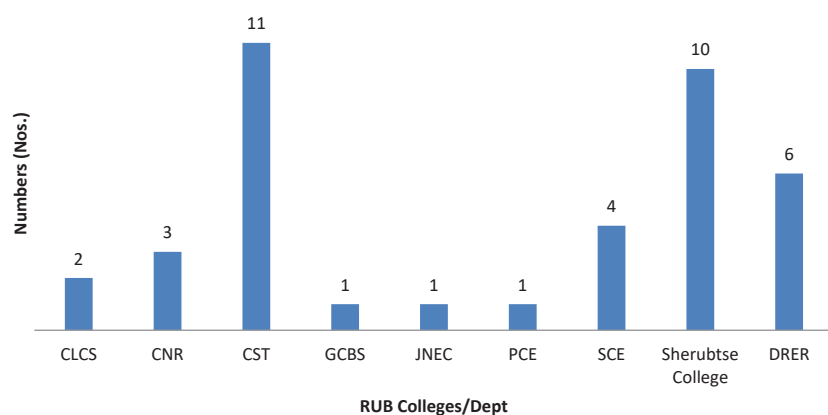


Figure 1 Number of training conducted by RUB colleges and department

DRER initiated at least 6 training programs this fiscal year, the International Relations Division provided a training titled *Guideline for international staff and students visiting the university* to the relevant officials in Colleges. DRER organized training on Policy Analysis and writing Policy Brief to members of 3 advisory committees of RUB such as Water Infrastructure and Technology Advisory Committee, Youth Engagement Advisory Committee and Food Security Committee. For a structured operation of the research activities in RUB, training on planning, monitoring and reporting system was conducted to Centre Coordinators and Research Officers in June 2021.

Table 3 Details of Research Training and Workshop Conducted

Sl No.	Title	Resource Person (First Name, Last Name)	No. of staffs engaged	No. of student engaged	No. of External Participants	College
1	Training on Graphic Designs	Passang Dema	5	7	0	CLCS
2	Translation	DDC Team	25	75	0	CLCS
3	Manuscript Writing workshop	Om Katel	25			CNR
4	R statistics training	Joshua Goldberg	20			CNR
5	Training of Trainers on Smart farming in Bhutan	Tshering Penjor Ugyen Yangchen Tashi Lhamo Jigme Thinley Gyembo Namgyel Sylvain Touchard Kalpana Karki Paweena Suebsombut	3	0	23	CNR
6	Training Course "Leave no one behind: Quantification and Mapping of SDG Indicators that identify the most Vulnerable in today's Society"	Sangey Pasang ITC and NLCS.	2	0	0	CST
7	Slope Stabilization Challenges in Infrastructure Projects	International Society for Rock Mechanics and Rock Engineering (India)	5	0	0	CST
8	Skills Development Training for Electrical Engineering Students	Cheku Dorji, Gom Dorji and Namgay Tenzin	6	30	0	CST

9	Half Day Workshop on Reference Management Software	Namgay Tenzin	1	30	0	CST
10	A Workshop on Switch Gear and Protection System in Bhutan Power Corporation.	Cheten Tshering, Sr. Divisional Manager, Transmission & Maintenance Division, BPC, Phuentsholing	8	45	0	CST
11	Training on Intellectual Property	Kezang Dorji, Karma Kelzang Euden, Manoj Chhetri	5	33	0	CST
12	Innovation/Entrepreneurship Training	Sourav Saha	2	27	0	CST
13	Technology based Business Idea Competition	-	6	69		CST
14	The 8th Annual Green Technology Challenge (2021)	-	8	600		CST
15	Arduino Uno Training	Kazu Hiro Muramatsu	25	-		CST
16	Training on Google SketchUp and DialLux Evo	Sangay Penjor, Jigme Thinley, Gom Dorji	17	10		CST
17	Policy briefs writing training	Water Infrastructure and Technology Advisory Committee members	15			DRER
18	Policy briefs writing training	to the Youth Engagement Advisory Committee members	9			DRER
19	Policy analysis training	Dechen Zam, UNDP Bhutan	20		1	DRER

20	Guideline for international staff and students visiting university	Tshering Choden, IRO, DRER	17				DRER
21	BHCS website maintenance and word press development training	Samuh Bhutan	4		1		DRER
22	DRER strategic plan development	Kinley Rinchen, DPR	5				DRER
23	Online FDP in Pedagogy and Research Methodology	Indian Institute of Management, Ahmedabad	17				GCBS
24	Intellectual property training	JNEC and WIPO	45				JNEC
25	Introduction to University teaching and learning for the faculty of Jigme Singye Wangchuck School of Law	Deki C Gyamtso, Kezang Sherab Phuntsho Dolma, Tshering Wangmo, Kinley Dorji, Tshewang Tobgay, Karma Chimi Wangchuk	7	0	14		PCE
26	National Webinar on the promise of Ictizing Education: Making online teaching-learning engaging, interactive and immersive.	Ran Singh Tamang, Tandin Penjor and Reeta Rai	3	-	500		SCE
27	Certificate course in Place-based Education for the 25 faculty members.	Alexander Sivitskis	26	-	-		SCE
28	Organized a virtual training on Design thinking for the 55 teachers of Tendruk Central School, Samtse.	Reeta Rai, Alexander Sivitskis, Kinley	3	-	55		SCE

	Professional Development on Quantitative Data Management and Analysis	Pema Drukpa, DMITE	Faculty members	None	None	SCE
29						
30	Introduction to basic research and oral history methods	Yezer Pajlor Galay Tashi Chopel Sonam Wangdi Tashi Jamtsho Sonam Dendup		65		Sherubtse College
31	Climate Conversation- from Climate Change Impact to Societal Adaptation	Dendup Tshering C.S Pant Karna Yangzom Sonam Pema Yangchen		76		Sherubtse College
32	Research Methods	Bishal Gurung Dechen Wangdi Pema Wangdi	3	53		Sherubtse College
33	Analytical Workshop	Sonam Dendup Leki Sangay Tashi Dorji Tashi Jamtsho	4	50		Sherubtse College
34	Scientific Writing and Communication	Jas Raj Subba Bishal Gurung Tshering Nidup Tshewang Dendup Dendup Tshering		70		Sherubtse College
35	Introduction to Research	Jas Raj Tshewang Dendup Sonam Dendup			30	Sherubtse College

36	Social Policy	Sonam Dendup Paljor Geley Ugyen Lhuendup Sonam Chopel Yeshey Wangmo			26	Sherubtse College
37	Effective Communication and Analytical Skills	Ugyen Lhendup, Tashi Chopel Sonam Dendup Dechen Lhundup Dawa Wangchuck Gyalpo	151			Sherubtse College
38	Personal Development on Effective Communication and Analytical Skills		100			Sherubtse College
39	Film Language Workshop	Prachi Mokashi-Punekar	90	3		Sherubtse College
Total			1581	246	648	

4.3 Staff engagement in research activities

4.3.1 Academics engaged in research/innovation

Despite the impact of a global COVID-19 pandemic, one of the signs of success and encouragement in research is the number of faculty engaged in research. In this fiscal year, 85% of the academics of RUB are actively engaged in research work. Figure 2 shows the breakdown of the percentage of faculty in each College engaged in research. CNR and GCIT have 100% of their academics engaged in research as either lead or co-researcher, or engaged publications.

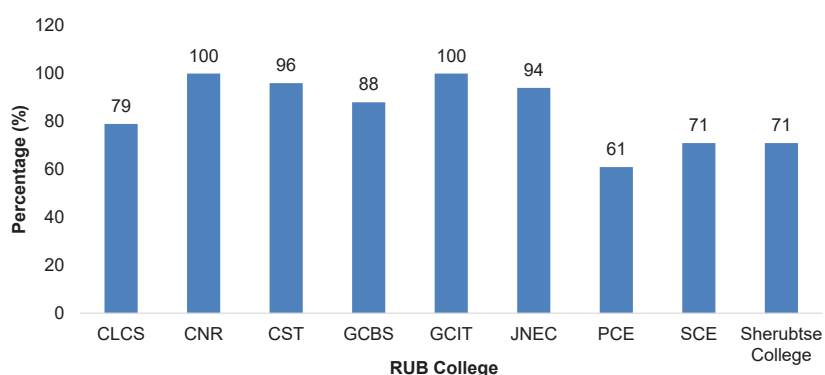


Figure 2 *Percentage of staff engaged in research activities in each college during 2020-2021*

4.3.2 Number of academics and students engaged in conducting research

Figure 3 shows the number of RUB academics and students engaged in research activities. This fiscal year with the highest number of grants secured, Sherubtse College has 77 academics engaged in research activities. The grant secured from ERASMUS for the project titled HAPPY has involved 21 faculties from Sherubtse College and CLCS to train other academics on qualitative research methodology. Dhendup Tshering, DRIL, Sherubtse College also secured a grant from prestigious and highly competitive Global Challenges Research Fund-UKRI-GCRF as a member *GCRF South Asian Nitrogen Hub (SANH)*. Similarly, Gom Dorji and a

team of faculty from CST are conducting a project titled *Development of smart greenhouse (SGH) for temperate and alpine regions to enhance agriculture farming for future food sustainability* funded APN Global Research CRRP2021 Call.

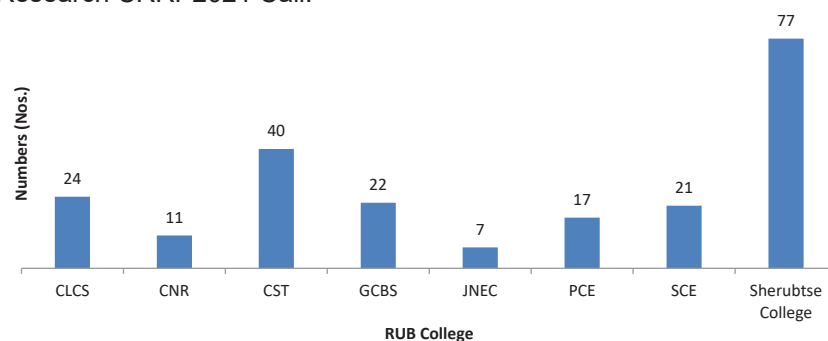


Figure 3 Number of Staff/Students engaged in Research activities

4.3.3 RUB academics engaged in consultancy services

As shown in figure 4, GCBS has secured the highest number of consultancy services with the involvement of 22 faculties that were mainly based on business and financial management. Likewise, CST in collaboration with a construction firm in Bhutan conducted a consultancy on a project titled Civil engineering Material test b. Sherubtse College also applied for international consultancy and has secured 4 consultancy services with the involvement of 5 academics in partnership with Waseda University and also offered consultancy service to the State Mining Corporation Limited (SMCL). The other six colleges of RUB haven't conducted any Consultancy Services for the Financial Year 2020-2021.

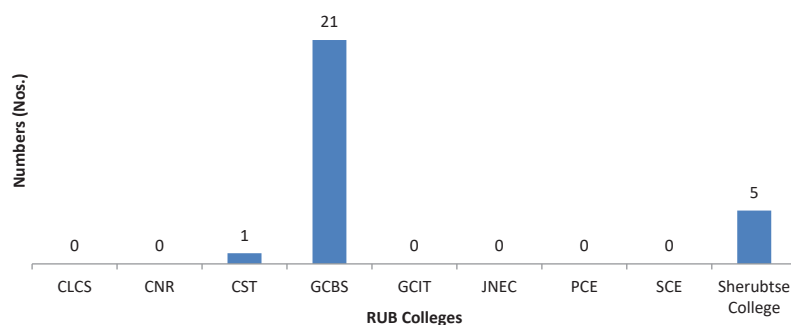


Figure 4 Number of Staffs engaged in Consultancy Services

4.3.4 RUB staff and academics engaged in trainings and workshops

Trainings and workshops are one of the capacity-building programmes held by DRER and RUB colleges. Figure 5 shows; CST has the highest number of staff and students engaged in training and workshops organized within the college and in collaborations with national and international organizations. There is a total of 11 trainings and workshops organized by CST with the engagement of 929 academics. The *8th Annual Green Technology Challenge (2021)*, organized by the college itself has a maximum number of participants and also a Workshop on Switchgear and Protection System in Bhutan Power Corporation Organized by Roshan Chhetri, Asst. Professor EED in collaboration with EED and CRSED.

Similarly, Sherubtse College also organized almost 10 trainings and workshops both online and face-to-face mainly focusing on building knowledge and skills for staff and students.

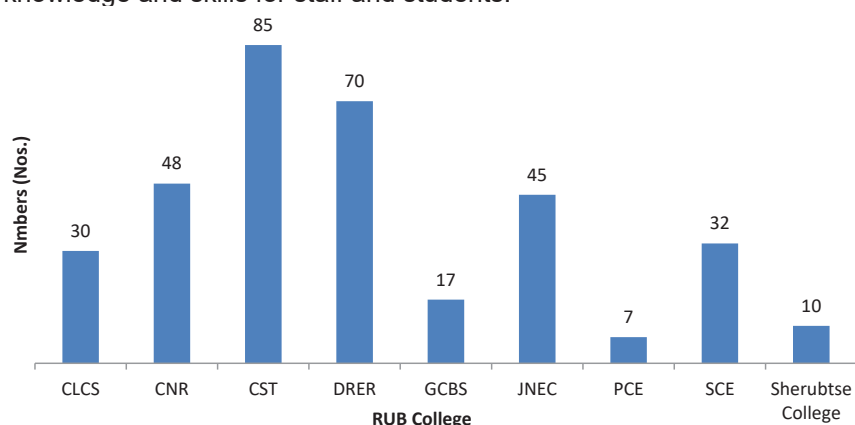


Figure 5 Number of Staff engaged in training and workshops

4.4 Research Dissemination Events Organized

4.4.1 Research Events Organized

The University organized a total of 38 research events during this financial year as shown in Figure 6, the objective of organizing such events is to showcase the findings of the researcher in RUB. It also allows researchers to network with policy and decision-makers, peer academics and researchers, end-users to have a bigger impact on their hard work.

Despite the global pandemic restricting on mass-gatherings, Colleges adjusted and adopted the virtual environments such Zoom, CISCO webinar particularly Colleges in the high-risk zone such as CST, GCBS, and SCE made use of the technology and completed their planned activities.

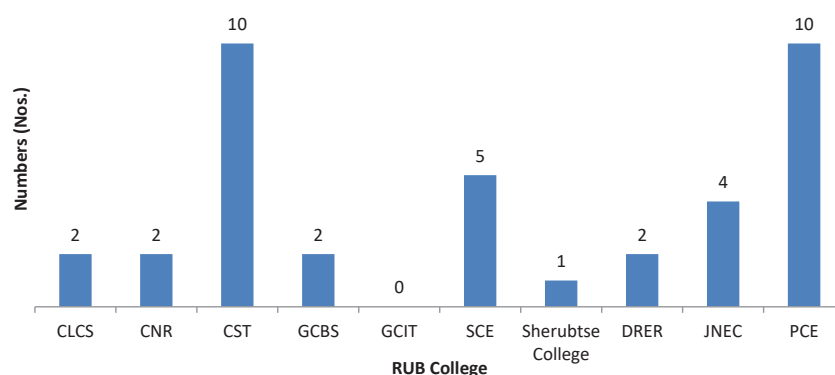


Figure 6 Number of events national and international research events organized

DRER in collaboration with the United Nations Resident Coordinator's Office, University of Sydney, Macquarie, and James Cook University organized a series of Science Dialogue titled *Bhutan Himalayan Climate Studies Dialogue* (BHCS). Series 1 was on *Bhutan as a Biodiversity Wonders in the Himalayas* in November 2020 and BHCS Science Dialogue Series II was on *Food Security and Livelihood in the Himalayas* in March 2021.

The Annual Conference of Dean of Research and Industrial Linkages (ACDRIL) is an important conference featured every year and the 7th ACDRIL was held in December 2020 bringing together all Deans of Research and Research Officers of the colleges with the DRER staff. Summary information events conducted are listed in table 4.

Table 4 Summary table of events organized

Sl. No.	College	No. of National & international research events organized	College Level	Number of Events	Summary of events conducted
1	CLCS	1	1	2	1 National Seminar on language, cultural studies, Buddhism and art and science on the 10th 11th of the December 2020
2	CNR	1	1	2	BHCS Science Dialogue Series 2 in March 2021
3	CST	4	6	10	4 inter/national research event organized: 1. International Conference on Science, Engineering and Technology. 2. Webinar on Awareness Program on e-learning platform and tools for School Education. 3. Seminar on Construction Management. 4. Webinar on Unveiling the Character of the Frequency in Electrical Power Systems
4	GCBS	0	2	2	2 activities conducted: Webinar and student seminar
5	GCIT		0	0	
6	JNEC	2	3	5	1. International webinar 2. Training on IP
7	PCE	1	0	1	1. Webinar on "Making Online Teaching and Learning Interactive and Engaging for Primary Students". The target group was primary teachers https://fb.watch/6ggrTkve6y/
8	SCE	1	1	2	The promise of ICTizing Education: Making online teaching and learning interactive and immersive by STEM faculty

9	Sherubtse College	2	2	4	2 college level research event organized: 1. Webinar on First Edition of Knowledge submit 2. Annual College Research Seminar- verified invitation letter, program brochure and photos
10	DRER	10		10	1. Launching of Book title "Reaching New Heights Through Research and Policy Practices" and BHCS website 2. BHCS Science Dialogue Series I: Bhutan as a Biodiversity Wonders in the Himalayas 3. 7th Annual Conference of Dean of Research and Industrial Linkages 4. Bhutan Democracy Dialogue 5. BHCS Science Dialogue Series II: Food Security and Livelihood in the Himalayas 6. Raising Climate Ambition: Voices from Bhutan 7. Climate research strategy and roadmap workshop 8. Presentation of collaboration areas between RUB and NTU, Singapore 9. Institutional collaboration meetings and workshops with Madanjeet Singh Foundation, South Asia Chapter 10. International Seminar on rural Development in Asia-Pacific Region with special reference to North-East India and its Bordering countries.

4.5 Rationale for International Relations

Since the establishment of the University in 2003 as a teaching-learning institution to the inclusion of research as an essential component to informing teaching, the need for the university to collaborate with external institutions has picked up steam. The objective of making the university's teaching-learning and research relevant is met through its linkages with the industry, its immediate community, government, and the society at large.

The External Relations division, therefore, has to constantly stay relevant with agencies like the Cabinet Secretariat; Ministry of Foreign Affairs; Department of Immigration, Ministry of Home and Cultural Affairs; Tourism Council of Bhutan; and, the Gross National Happiness Commission to ensure that academic exchange programmes, signing of a memorandum of understandings, implementation of collaborative projects, and international events are streamlined with a line with the governmental mandates.

4.6 International Staff Exchange Facilitated

For the University that is strategically looking into internationalizing its institution by increasing mobility to provide international experience to its staff to give them the much-needed international exposure and also engaged interaction with their international peers in projects and funding, this has been adversely affected by the onset of COVID-19 pandemic. And it is not wrong to say that the pandemic has completely halted internationalization initiatives that were starting to gain momentum in the last few years.

Trends in the last few years, since the time of maintaining records of international visits, have begun in the DRER in the External Relations division; recording staff visits to RUB and our staff visiting external universities across the border, shows that the international staff exchanges have been pursued to enhance capacity building, exchanges to strengthen curriculum, execute joint research projects, avail international teaching experience on Erasmus mobilities, and partake in conferences and seminars, besides, networking in projects to strengthen different aspects of the University and to learn from the international peers working in similar fields around the world.

The challenge was magnified when the colleges within the University had to even close their doors and do away with face-to-face learning and switch to the online mode, which presented a new situation and reality that everyone had to prepare and adjust with. The usual meetings of external partners in academic exchanges switched online as well, and the University had to quickly rethink the way we manage our operations as the traditional conventional way of doing things was no longer applicable.

With the Government shutting down borders for international arrivals, all institutions, including the RUB, which is mandated to facilitate services for international mobility, had to park its services, and relook at *RUB Strategic Plan 2020-2030* to focus on activities that could be seamlessly carried out during the pandemic. Therefore, the External Relations division during the mid-term review of its targets shifted gears and started work on developing *Guidelines to Facilitate Participation in conferences and seminars to Learn and Network* in place of the four Success Indicators which were not feasible with travel restrictions during the pandemic as follows: 1. International Staff Exchange facilitated 2. Long Term International Students facilitated, 3. Short Term International students facilitated, and 4. International remittances through study abroad programmes. The *Guidelines* were successfully developed and approved to be implemented in the University during the 34th RIC meeting.

To highlight how the international staffs' exchange at RUB is impacted by the pandemic, the trend below tells a compelling story:

Table 5 *The numbers of international staff visits to RUB on a short term basis w.e.f 2016 to 2021*

Fiscal Year	Total number of staff visits
2016-2017	175
2017-2018	249
2018-2019	251
2019-2020	119
2020-2021	0

A new trend in internalization of the universities has shifted from face-to-face mode to a virtual one, and while the number of visits may indicate otherwise, the colleges have pursued international initiatives by

meeting online, applying for joint projects and funding and carrying out online conferences and seminars. This shift in internalization initiatives previously carried out face-to-face in a traditional mode has moved online and since then has opened avenues to network with external partners through different mediums. And, therefore, there is a need to account for such exchanges when we measure the milestone of the colleges on their internationalization journey(s).

With internationalization being an important mandate of the University, the University will have to explore, innovate and respond according to the changing times but continuously strive to enhance and rethink the University's

Internalization approaches, its teaching-learning, and research through all forms of interactions as it moves towards the new normal out of the pandemic.

5 Enhance Student Learning Environment

The University is now posed with unique challenges enhancing the student learning environment. The mobility of international students to RUB college campuses gave Bhutanese students on their very own soil the international peer experience, while the Erasmus mobilities also gave students the physical experience of cultural immersion in partner European universities. Until the onset of the COVID-19 pandemic, the short-term study abroad programme, followed by a semester abroad, was a popular choice for international students.

Now, universities across RUB included, are confronted with instituting a learning environment that is non-traditional and includes the use of technology and new pedagogical models. With the new education reform, there is the need to institute teaching-learning methodologies for students of the 21st century.

5.1 Semester Abroad Students (SAS)

Semester abroad at RUB provided faculty to have international students in their classes, and provided immersion experience to international students, and, international experience to Bhutanese students. While the

demand for semester abroad programme in the colleges was steady, the pandemic has made studying overseas more complicated.

For the University that has strategically looked at internationalizing our campuses with an international presence there are a need to look at existing trends internationally and the scope of international tertiary education going forward. Some universities outside have ventured on virtual study abroad programmes, which are yet to be embraced by the students that want international exposure as part of their studies. The semester abroad opportunity has been halted since the onset of the pandemic in March 2020, whereby, the respectively countries quickly called back their students to safety.

Table 6 Semester Abroad students number during 2016-2021

Fiscal Year	Semester Abroad student number
2016-2017	10
2017-2018	13
2018-2019	14
2019-2020	13
2020-2021	0

5.2 Short-Term Study (STS) Programme

Bhutan warily opened its doors to international tourists only on 6th August 2021 (*Kuensel*, 6th August 2021) after its shutdown in March 2020. The door for international students was still not opened, during the reporting year as the focus of the border policy was to allow construction workers in the industry hugely impacted by the pandemic.

Before the pandemic, the short-term study abroad programmes for international students was in high demand by international universities and RUB facilitated various short-term study abroad opportunities to students from the United States, Australia, Japan, Canada, India, Singapore, and the Erasmus European partners. And it was a steep and steady rise every year.

With the disruption caused by the pandemic, this has directly impacted short-term study abroad and going by the present trends, where students are increasingly availing study opportunities within their own countries, the future of short-term study abroad does not look bright. Even within Bhutan, Bhutanese students availing study opportunities outside Bhutan has decreased and has therefore spiked the national enrolment in the colleges in the last few years.

This also provides an opportunity for the University to rethink study abroad opportunities besides the traditional mode, and creatively look at instituting creative study abroad programmes by engaging with our international partners, while also looking at strengthening and enhancing our capacity, both infrastructural and human resource to respond proactively against challenges posed by the pandemic and institute and design programmes that provide value addition and have an edge over a range of similar study abroad programmes offered around the Himalayan belt.

Table 7 *Number of students on short-term study abroad programmes facilitated by the university*

Fiscal Year	Short-Term study abroad students enrolled
2016-2017	14
2017-2018	64
2018-2019	59
2019-2020	140
2020-2021	0

5.3 Visiting Research Students

Research opportunity for international students at RUB is constrained by the very rigorous acceptance process and lack of competent faculty in colleges that are still upgrading their staff qualification to be able to supervise the visiting research students. Given the present scenario, where a tutor's full-time teaching load pegged is against the student-teacher ratio of each college, supervision of external students seems like an extra responsibility.

While international knowledge networks are crucial to enhance one's research capacity, many of the research projects are impacted by the

pandemic. In Bhutan, research is yet to receive the support, recognition, and inclusion it deserves at the current moment, and a felt need to include research as a competent agenda in Government's policy development. Therefore, there is a need to have a cross collegial seminar discussion on challenges of cross-cultural research and the way forward to navigate the issues.

Table 8 *Number of international research students for FY 2016-2021*

Fiscal Year	Number of international research students
2016-2017	0
2017-2018	2
2018-2019	3
2019-2020	4
2020-2021	0

Table 9 *Trends of International Visiting Research Students over the Last Four Years*

Fiscal Year	Number of international research students
2016-2017	0
2017-2018	2
2018-2019	3
2019-2020	4

5.4 Full-time International Students

There is a lack of consolidated data of international students enrolled in full-time RUB award-bearing programmes in the different college campuses of the University. A considerable number of international students enrolled in the UNESCO Madanjeet Singh Center for South Asian Forestry Studies (UMCSAFS) from the SAARC region have gone unnoticed as the enrolment was directly facilitated at the College of Natural Resources, Lobesa.

With the DRER mandated to look into contents of the international student enrolment since the transfer of the Memorandum of Understanding (MoU) between the South Asia Foundation with the Ministry of Agriculture and Forests to RUB in Fall 2020, the University expects to have a fairly accurate picture of international student enrolment in RUB college campuses every year.

Table 10 Number of Full-time students enrolled for FY 2016-2021

Fiscal Year	Full-time student enrolled number
2016-2017	0
2017-2018	1
2018-2019	3
2019-2020	0
2019-2020	0

NB: The numbers here from 2016-2017 to 2019-2020 indicate international students enrolled as full-time RUB students and do not include international UMCSAFS students. Even in 2019-2020, due to the pandemic, the UMCSAFS scholarships for international students have been conferred to the national students.

Table 11 Comparative Data of International Students on various Study Abroad Programmes from 2016-17 to 2020-21

Sl. No.	Study Programme	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	TOTAL
1	Full-Time Students	1	0	3	0	0	4
2	Semester Abroad Students	10	13	14	13	0	50
3	Short-Term Study Students	14	64	59	140	0	235
4	Visiting Research Students	0	2	3	4	0	9

The COVID-19 pandemic has negatively impacted the mobility of both international staff and students into RUB colleges and vice versa. The External Relations division continue to offer its administrative services to colleges to apply for joint projects and partnerships with external agencies. The people in the division also take part in online seminars offered regularly by the international offices of different projects, such as the DAAD, for example, through virtual platforms to strengthen institutional relations in the face of the new pandemic, and to share exchanges on this new reality, and to accordingly align external initiatives.

At the national level, the External Relations division has remained strategic in its vision and has submitted a paper titled *Rethinking Internationalization*

for RUB to share ideas with the Policy Development Executive Retreat of the University on how the University should stay relevant in the current context and to leverage our internationalization efforts.

With the External Relations office being a fairly new office set up only in 2015 through the recruitment of an international relations officer, and in a federated set-up that we are in, there was a need to bring about its offer of services to the colleges in line with governmental processes and regulations. Approval and recommendation to sensitize the *Guidelines for International Staff and Students Visiting the Royal University of Bhutan* was conferred by the 15th USRC meeting on 21 January 2021. In line with the direction to facilitate sectoral clearance for the private colleges, including Royal Thimphu College (RTC) and Norbuling Rigter College (NRC), the DRER sensitized the *Guidelines* to RTC, NRC, PCE, GBCS and OVC in April 2021, but halted the sensitization to CNR, CLCS, GCIT, and Sherubtse College due to lockdown in different parts of the country in between the two COVID vaccinations in 2020-2021. The sensitization of the *Guidelines* to JNEC, CST, and SCE, colleges lying in high risk zones, have been decided to be scheduled in the next fiscal year from 2021-2022.

Another initiative of the External Relations division has been the submission of the proposal to institute suitable hostel facilities for international students. As mandated by the *RUB Strategic Plan 2018-2030*, the DRER office as the international relations wing of the University, was to submit a proposal titled *Improve facilities to make hostels conducive to international students* to the Executive Forum in the 2020-2021 fiscal year, based on feedback received from international students' experience in RUB colleges. Since a huge part of the proposal concerned infrastructural assessment and resource check and required investment from the college or the University, a proposal was submitted to the 52nd Academic Planning and Resource Committee (APRC) to review and advise resource allocations to materialize RUB's infrastructural goals to facilitate its internationalization strategy.

The External Relations division also submitted a *Proposal to improve facilities at OVC to organize research events* during the 491st SMT held on 26 February 2021. The proposal submitted that an academic institution must have the basic facilities to facilitate research and academic activities

to allow engagement and the need to set up appropriate facilities at OVC to organize events and provide a platform to enhance RUB's brand. With the approval conferred, the DRER assisted in the design of Gawa Hall to host competent research and academic engagements, both on campus and also virtually, across the globe.

The External Relations division was also involved in 2020-2021 in coordinating the meetings of the one of the three think-tanks recommended to be instituted within the University: 1. Water, 2. Food Security and Nutrition, and 3. Youth Engagement. As the Convener to the Youth Engagement Advisory Committee Meeting (YEAC), three meetings, one capacity building training on Policy Brief Writing and to kick-start the discussion, even a paper titled *Need for sustained engagement by the University in youth related issues* was submitted. This was followed by a submission of report on the status of YEAC initiatives for onward submission to the Vice Chancellor, to report the narratives and on-goings and way forward for the three think tanks at the University.

1. Schedule meeting date, time and mode in consultation with the Chairperson.
2. Collect agenda, prepare meeting agenda, circulate agenda and convene meeting as agreed mode (face to face As a member secretary to thre during the mid-term review of its targets shifted gears and started work on developing *Guidelines to Facilitate Participation in conferences and seminars to Learn and Network'* in place of the four Success Indicators: 1. International Staff Exchange facilitated, 2. Long Term International Students facilitated, 3. Short Term International students facilitated, and 4. International remittances through study abroad programmes. The *Guidelines* were successfully developed and approved to be implemented in the University during the 34th RIC meeting.

5.5 HDR Supervisors Appointed

Research Degree Programmes in the University are supervised degrees and overseen by the Higher Degree Research Division under the Department of Research and External Relations. Under the Division, the University aims to offer supervised research projects in its postgraduate programmes. This is one way to enhance student learning objectives within

the University. Due to lack of capacity within the University and also due to lack of committed funding to develop and offer postgraduate programmes in general, the University has only one Masters's by research programme i.e. the Masters's by Research in Natural Resources Management at CNR.

Twenty-one HDR supervisors, including the Principal and Co-supervisors, were appointed to six students of MSc. NRM students enrolled during the reporting year. The students were the sixth cohort admitted for Masters by research at CNR. This is as per the requirement of a minimum of two supervisors to be appointed for each student for successful completion of the degrees. The Principal supervisors were appointed from the college while some Co-supervisors were from other colleges and external agencies.

5.6 HDR Dissertation Examiners Appointed

The research degree students are required to submit the dissertation as mandated by the University for the Successful Conferral of a research degree. The dissertation goes through a series of stages such as proposing, drafting, and defending orally before it reaches the final external examination.

The final examination of the dissertation is done to ensure that the dissertation is of original contribution to scholarship or scientific knowledge and maintain quality of University and standard of the programme, for this, six external dissertation examiners were appointed for three out six students of MSc NRM students at CNR. The students were the fifth cohort of MSc NRM students who were graduating at end of the year.

For the first time, two external dissertation examiners for the dissertation were appointed from the international agencies i.e. ICIMOD through the courtesy extended by the Director-General. This is the first time; the dissertation of the University was sent outside of the country to assess its quality with the international standard and received satisfactory scores and comments which were submitted to the college formally.

5.7 HDR Programme Reviewed

On receiving the proposal for the review of Master in Natural Resources Management from the College of Natural Resources, the HDR Secretariat

initiated a review of the existing HDR program and the proposal was deliberated during the 4th RDC meeting whereby the members endorsed for the review of the programme and also gave substantial comments for the incorporation and redirected college to send the revised document for the review.

Subsequently, the review team endorsed during the 4th RDC meeting conducted a two-day review for the programme, and the report was submitted to the college for immediate compliance and effect. The revised document based on the recommendation of the review panel was submitted to the USRC meeting and RDC for information.

Besides this, the HDR Secretariat has also submitted the Annual Progress Monitoring Report (APMR) of MSc in NRM during the 4th RDC meeting and reviewed by the members. The substantial comments made by the members were submitted to the college for the necessary references and improvement.

5.8 HDR Programme Validated

The College of Natural Resources (CNR) submitted the proposal for the launching of a Ph.D. in Climate Studies during the 4th RDC meeting. The members endorsed the validation of the programme along with the validation panels and suggested the college submit the list of potential members and revised document in the 5th RDC meeting.

Subsequently, the revised document was submitted to the HDR Secretariat by the College of Natural Resources (CNR) based on the recommendations and comments raised by the RDC members. Accordingly, the first-ever Ph.D. programme in Bhutan was validated in the CNR owing to the presence of required facilities and human resources at the college. With this, in an unprecedented time, the first-ever Ph.D. degree in the country was introduced since the establishment of the University.

However, in the meantime, the College of Language and Culture Studies resubmitted the revised document of Ph.D. in Anthropology during the 6th RDC meeting after it was first submitted in the 3rd RDC meeting. The meeting approved for the validation and suggested the college submit the revised document based on the comments and recommendations passed during the meeting along with the potential panel members.

5.9 BJRD published

The Higher Degree Research Division is also mandated to coordinate the publications in the Department of Research and External Relations. In the capacity of the Production Editor, the division published two issues of the journal as a part of the usual publication.

However, as there is a need to standardize the quality of the journal published within the University, the Production Editor for the Journal initiated the proposal on the common framework of the journal to be sensitized within the University.

The common framework consists of the basic components of the journal as per the international standard and practice which every journal must encompass. The proposal was submitted to different levels of the meeting including the DRER and RIC meeting and was endorsed subsequently for the up-skilling of the editorial team of a different journal within the RUB. The Production Editor also presented the draft journal website of the journal for the BJRD.

6 Enhancement of Research, Innovation and Scholarship

6.1 Research Grant applied

Applying for a research grant is an important activity for the promotion of research and innovation in the University. Colleges actively collaborate with external partners to apply for research funds. A total of 182 proposals were written by the faculty of Colleges which includes a proposal for college grants. As presented in Figure 7, during FY 2020-2021 Colleges applied for a total of 89 project proposals to external grant agencies. CST submitted a total of 30 project proposals to different external agencies such as Asia@connect, Asia Pacific Network, and PEER grant network, while JNEC applied for 3 project proposals to Erasmus + funding. GCBS submitted a total of 17 proposals to the Annual University Research Grant (AURG) and 1 to the Research Endowment Fund (REF). Table 12 provides the details of research grants applied and secured by faculty including research proposals applied to the college grant.

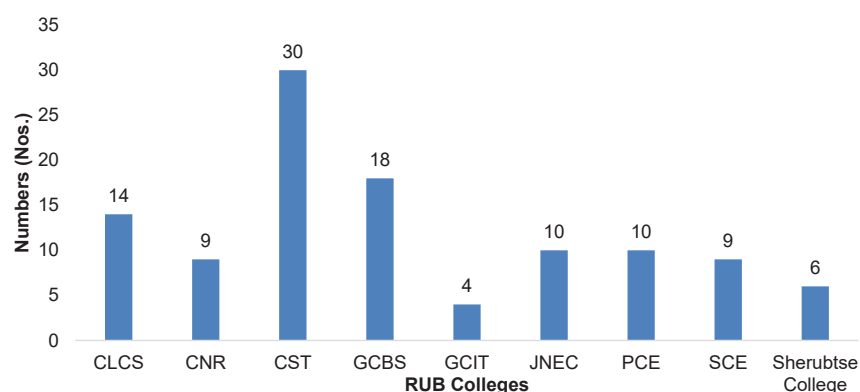


Figure 7 Number of research proposals submitted for external grants

6.1.1 Research Grant Secured

While colleges are actively seeking out research grants, colleges also continue with projects received previously. This fiscal year, CST and GCBS have the maximum number of externally funded research projects. CST is implementing 11 AURG projects and 2 Erasmus + projects, 2 projects with Lund University and one with an international computing company in India called the RedHat. GCBS is implementing 7 AURG projects and 1 REF project and the rest of the projects are consultancy services which are explained in the consultancy subsection. SCE received grants for a total of 9 research projects which include 4 AURG awards, 2 REF awards and 1 each from UNICEF Bhutan and the Ministry of Education.

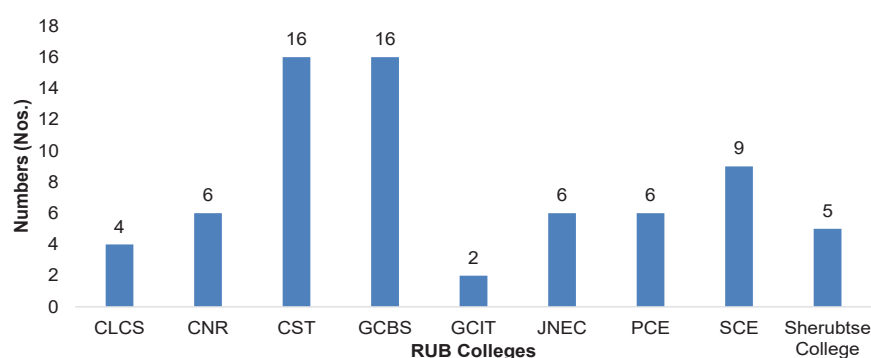


Figure 8 Number of externally funded research projects

6.2 Research Grant Amount Secured

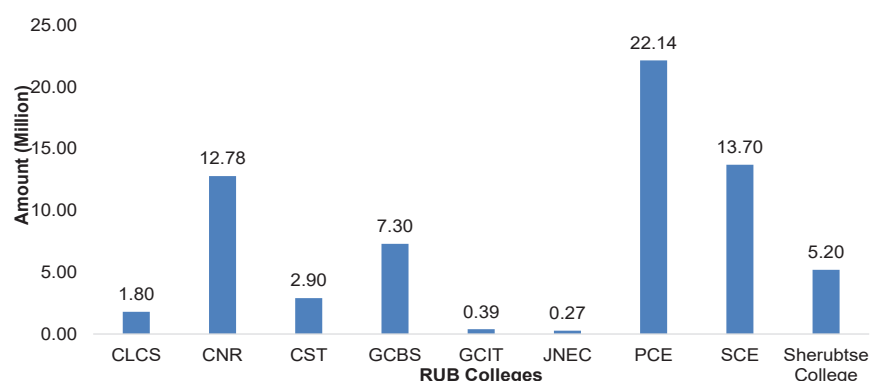


Figure 9 Amount of Research Grant secured

During the Financial Year 2020-2021, RUB secured a total of Nu. 66.49 Million (Approx. Ngultrum Sixty Five Million) including consultancy grant, as a research grant from external sources such as Erasmus+, IDRC Canada, ICIMOD Nepal, Japan. Through Erasmus+, PCE secured a sum of Nu. 22.14 Million for a project titled *Accreditation and Training of Teacher Assistants in Bhutanese Schools*. SCE secured a total of Nu. 10 million from IDRC, Canada to undertake a project titled *Connected Learning for STEM (CL4X)* to promote STEM education. SCE is also undertaking an explorative study on inclusive education to Samtse College of Education supported by UNICEF Bhutan with a grant amount of Nu. 0.631 Million. Bhutan Trust Fund for Environment Conservation awarded a total of Nu. 0.4 Million to CNR to study organic farming. RUB supports 2 types of university-wide research grants called Research Endowment (REF) and Annual University Research Grant (AURG) and during the fiscal year, RUB invested Nu. 3.02 Million, a total of 35 research projects in Colleges. The breakdown of the research projects grants received by Colleges is listed in Table 12.

Table 12 Details of Research Project Grants Proposal Developed and Submitted

Sl. No.	Project Title	Researchers Details (Name, Designation)	Funding Source Details		Secured Grant Details	College
			Name/ Institution	Country		
1	གཏིར་སྟོན་པ་རྒྱ་གྲིང་པའི་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	རྫོང་གི་ཁྱེད་པོ་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan		CLCS
2	འབྲུག་པའི་ཐགས་འདི་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	ཀླུ་མཁའ་ལྷ་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan		CLCS
3	སྤྱི་ཤིང་འཛིགས་མེད་རྒྱུ་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	རྒྱུ་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan	80,000	CLCS
4	ཀླུ་མཁའ་ལྷ་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	རྒྱུ་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan		CLCS
5	པ་རྒྱ་གྲིང་པའི་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan	60,000	CLCS
6	འབྲུག་པའི་ཐགས་འདི་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	Sangay Phuntsho	AURG, RUB	Bhutan		CLCS
7	ཆང་ལ་པའི་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan		CLCS
8	པ་རྒྱ་གྲིང་པའི་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan		CLCS
9	གཏིར་སྟོན་པ་རྒྱ་གྲིང་པའི་ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	ལྷོ་ཐོག་ཐུག་པའི་ལམ་ལུ་རྟེན་གྱི་ཞིབ་	AURG, RUB	Bhutan		CLCS

10	Sexism in Dzongkha Language: an Explorative Study on Inherent Linguistic Bias against Women; Exploring Cultural Nuances and Gender Bias	Tshering Yangki	AURG, RUB	Bhutan	60,000	CLCS
11	པདྨ་མེད་པོ་འཛོམས་བརྒྱུད་དང་ལྟ་བུ་གྱུ། ཞིབ་འཛེལ་དོན་ཚན། ཚོས་ཇུས་ཁྲ་དང་འོ་མོ་ ཏུ་དང་རྒྱ་མེད་ཚུ་ག་དག་འཕམ་འབད་ ལག་ལེན་ འཕམ་བུ་བཞིན་ནེ?	ཡེ་ཤེས་ རྒྱ་མཚོ་རྒྱ་མཚོ། འཕྲིན་ལས་ རྒྱལ་མཚོ།	AURG, RUB AURG, RUB	Bhutan Bhutan	CLCS CLCS	
13	Koi, the Cross Breed of Bull and Zomo: The Study on Slaughtering of Koi in Bhutanese Brokpa Society	Sonam Deki	AURG, RUB	Bhutan		CLCS
14	HAPPY project	Choney Dorji	Erasmus+ Project	EU	8,274,852	CLCS
15	རྒྱུ་གི་མཚན་པ། Study of Dzongkha Standard between Students from Rigzhung Schools and General High Schools	Tshering Dema	ACRG, CLCS	Bhutan	30,000	CLCS
16	11Admitted in CLCS	Jigme Dorji	ACRG, CLCS	Bhutan		CLCS
17	མོང་སྒྲུང་རྩོམ་ཁག་ ཚམྱིང་གཡུས་སྒོ་ནང་ འོ་བསྐར་ འགོ་འདྲེན་འཕམ་སྤེལ་ཡོད་པའི་ ཁ་རམ་གསེལ་ མཚན་གྱི་འོ་རྒྱས་དང་རྒྱལ་ཁྲུངས་ལུ་དབྱེད་པ། Sumthrang Dragtsen:	Dechen Tshering	ACRG, CLCS	Bhutan	30,000	CLCS
18	Understanding the Divine through Faith, Relief, Logic and Pranamism	Sonam Nyenda	ACRG, CLCS	Bhutan	30,000	CLCS

19	Virtual Learning During COVID 19 pandemic: Effect on Student's Learning in CLCS	Chencho Tshering	ACRG, CLCS	Bhutan		CLCS
20	ཤོད་གསལ་རྒྱ་ཚད་ལག་ནང་ས་མཐོ་དམན་བར་གསུམ་ དང་འབྲེལ་ཐགས་རིགས་འབལ་ཡུང་པའི་སྐོར།	Namkha Wangmo	ACRG, CLCS	Bhutan	30,000	CLCS
21	Using Sentence Translation to assess Bilinguality of ESL Learners	Tshering Om Tamang	ACRG, CLCS	Bhutan	30,000	CLCS
22	Content Tutors attitude towards code-switching in an English medium content classroom	Gangaram Bhattarai	ACRG, CLCS	Bhutan	30,000	CLCS
23	Is GNH just for Human?	Deki Peldon	ACRG, CLCS	Bhutan	30,000	CLCS
24	ལྷུ་རྩའི་འབྲུང་ཁུངས་དང་བརྟེན་ནི།	Kelzang Dorji	ACRG, CLCS	Bhutan	30,000	CLCS
25	གསལ་བདག་ལྷག་ཅན་དོན་ཤིང་འཁྲུངས་རབས་དང་བརྟེན་ནི་རྩགས་གསུམ།	Dema Tshering	ACRG, CLCS	Bhutan	30,000	CLCS
26	གར་ཕྱོགས་ལུང་པའི་ནང་གོ་ན་མཚན་འབད་བའི་སྒྲིལ་ དར་ལྷུ་རང་གོ་ན་མཚན་འབད་ཐངས།	Nidup Gyeltshen	ACRG, CLCS	Bhutan	30,000	CLCS
27	Annual ritual celebration in Punakha & change in ritual culture	Dawa Zangmo	ACRG, CLCS	Bhutan	30,000	CLCS
28	གར་འཆམ་རྒྱུ་མི་ལྷ་གིས་དམིགས་ཤིང་འབྱུང་ཐངས།	Sangay Thinley	ACRG, CLCS	Bhutan	30,000	CLCS
29	མཁས་དབང་ལྷ་ཁང་གི་ཆགས་རབས་དབྱེད་ཕྱད་ཏེ་ ཐོག་ལས་བྱིན།	Lhakpa Dema	ACRG, CLCS	Bhutan		CLCS
30	བསེ་མར་བཅོང་ཐངས།	Sangay Phuntsho	ACRG, CLCS	Bhutan	30,000	CLCS
31	སྤྲུལ་དུལ་དྲགོ་པའི་དགོས་པ།	Singye Wangchuk	ACRG, CLCS	Bhutan		CLCS

		Tashi Phuntsho	ACRG, CLCS	Bhutan	30,000	CLCS
32	དབུ་མ་ཐལ་རང་གི་ཐ་སྙད་ལ་དཔྱད་པ།					
33	ཚིག་ལྷན་ཀློག་ཀློང་པ་ཅན་གྱི་ཡི་གེ་ཁྱེད་མཐུ་ལུ་ཤོད་ འཇུག་པ་ཡོད་ མེད་ལུ་དཔྱད་པ།	Thinley Gyeltshen	ACRG, CLCS	Bhutan	45,000	CLCS
34	ཤོད་གསལ་རབ་བྱེད་སྤྱི་ གཤམ་ཚན་གྱི་མོན་ ཁའི་ནང་མིང་ཚིག་ བརྒྱུད་པའི་ལག་ལེན་འཐབ་ཐངས།	Tenzin Dorji	ACRG, CLCS	Bhutan	45,000	CLCS
35	རྩོད་ཁའི་བྱ་ཚིག་ ལས་ཀྱི་ཐུབ་པའི་མིང་ལ་དཔྱད་པ།	Kencho Tshering	ACRG, CLCS	Bhutan	45,000	CLCS
36	བྱིད་སྤྱི་ལག་ལེན་འཐབ་ ཐངས་ལ་དཔྱད་པ།	Yeshe Jamtsho	ACRG, CLCS	Bhutan	30,000	CLCS
37	Simulation of climate change impacts on distribution of Aconitum lucidum	Ugyen Thinley	CNR Grant	Bhutan		CNR
38	Cave fauna of Bhutan: Vulnerability to climate change	Cheten Dorji	CNR Grant	Bhutan		CNR
39	Cook stove	Tsho Tsho	SANDEE ICIMOD	Nepal	1,504,317	CNR
40	Is Dapa production reaching the poor in Trashiyangtse	Tashi Dendup	CNR Grant	Bhutan	292,142	CNR
41	KAP study on small holder farmers adaptation to climate variability and change in Punakha	Pema Rinzin	CNR grant	Bhutan	1,564,000	CNR

42	Determination of listeria monocytogenous in cheese	Anooja Nair	International Foundation for Science (IFS)	Sweden	852,000	CNR
43	Is Bhutan ready for Organic Agriculture?	Ugyen Yangchen	International Foundation for Science (IFS)	Sweden	852,000	CNR
44	Organic farming and use of FY manure	Sonam Gaki	CRG	Bhutan	145,000	CNR
45	Organic farming	Phub Dorji	BT FEC	Bhutan	400,000	CNR
46	Study the effect of industrial wastewater/leachate on transboundary water bodies and treatment technology & methodology for waste management facility in Pasakha industrial estate (PIE) Bhutan.	YeshiChoden, Monika Thapa, Kirtan Adikari	CRRP 2020 Project, Asia-Pacific Network for Global Change Research (APN)	Japan		CST
47	Bhutan-Urban-Policy-Notes-Urban-Resilience	Sameer, New delhi	World Bank			CST
48	Sustainable Earth Technology as Environment Friendly Construction Material.	Nimesh Chettri	Coalition for Disaster Resilient Infrastructure (CDRI)			CST
49	Building relevant housing using appropriate earth technologies	Nimesh Chettri				CST

50	Water infrastructure and Technology as climate resilient agriculture	Leki Dorji	CRRP 2020 Project, Asia-Pacific Network for Global Change Research (APN)	Japan	CST
51	Air Quality Monitoring and Understanding the Transboundary Pollution in Bhutan	Kirtan Adhikari	CRRP 2020 Project, Asia-Pacific Network for Global Change Research (APN)	Japan	CST
52	Disaster Resilience Building Construction Practices on Hilly Slopes of Bhutan-A research Compliance and Recommendation for National Adaptation	Monika Thapa	CAPABLE 2020 Project	Erasmus+	CST
53	Disaster Resilience Building Construction Practices on Hilly Slopes of Bhutan-A research Compliance and Recommendation for National Adaptation	Monika Thapa	CDRI 2021	Bhutan	CST
54	Electric Energizer	Kamal Kr. Chapagai	NPPC, MOAF	Bhutan	CST

55	Development of Hybrid Low-Cost Cold Storage by using Locally Available Building Materials in Bhutan	Namgay Tenzin	APN Global Research CRRP2021 Call	Japan		CST
56	Development of smart greenhouse (SGH) for temperate and alpine regions to enhance agriculture farming for future food sustainability.	Gom Dorji	APN Global Research CRRP2021 Call	Japan	4,104,000	CST
57	Solar Microgrid as Platform to Promote Renewable Energy Generation in Bhutan	Tshewang Lhendup	PEER Project; USAID	USA		CST
58	Electric Energizer	Kamal Kr. Chapagai	NPPC, MOAF	Bhutan	630,000	CST
59	Development of Hybrid Low-Cost Cold Storage by using Locally Available Building Materials in Bhutan	Namgay Tenzin	APN Global Research CRRP2021 Call	Japan		CST
60	Development of smart greenhouse (SGH) for temperate and alpine regions to enhance agriculture farming for future food sustainability.	Gom Dorji	APN Global Research CRRP2021 Call			CST
61	Solar Microgrid as Platform to Promote Renewable Energy Generation in Bhutan	Tshewang Lhendup	PEER Project	USA		CST
62	Application of Remote sensing and Geographic Information system analysis with Unmanned Aerial Vehicles in Bhutan	Sangey Pasang	PEER Project	USA		CST
63	Hydrological assessment through remote sensing data for climate change adaptation in the Himalayas	Kritan Ahikari	PEER Project	USA		CST

64	Impact of Longterm Environmental Changes on Water Resources and Agriculture in Bhutan	Leki Dorji	PEER Project	USA		CST
65	Vulnerability and hazard risk assessment to temporal flash flood using in Bhutan	Karma Tempa	PEER Project	USA		CST
66	Asia@Connect project: "Implementation of e-Learning and associated Capacity Building in identified schools in Bhutan"	Tandin Wangchuk	Asia @ connect Project	South Korea	10,899,058	CST
67	Impact of Climate Change on Heating and Cooling Energy Demand of Residential Buildings in Bhutan and Adaptation Techniques	Tshewang Lhendup	REF2021-2022	Bhutan		CST
68	Integrated GIS system for Building Fire Hazard Assessment and Risk Reduction in Cities of Bhutan-A Database for Immediate Action	Monika Thapa	REF2021-2022	Bhutan		CST
69	Cost Benefit Analysis of the Use of Solar Water heating System in Students Mess Among Member Colleges of Royal University of Bhutan.	Gom Dorji	AURG, RUB	Bhutan	80,000	CST
70	Fractals in Kunzang Choden's Bhutanese Folktales	Pema Choezom	AURG, RUB	Bhutan		CST
71	Assessment of Forest Cover Change in Bhutan	Chimi Wangmo	AURG, RUB	Bhutan		CST

72	Field Implementation and Analysis of Sensor Network for Landslide detection and early warning at RinchendingGoemba.	Kamal Chapagai	AURG, RUB	Bhutan		CST
73	Evaluation of cause of geological hazards and possible mitigating solutions for the Damchu-bypass landslide area.	Tshering Dendup	AURG, RUB	Bhutan	60,000	CST
74	Quantification of greenhouse gases emitted from municipal solid waste dumpsite/landfills in Bhutan using 3 GHG models and potential use of waste as energy source.	Yeshe Choden	AURG, RUB	Bhutan	60,000	CST
75	Mathematical Modelling of Water Storage in Thimphu and Phuntsholing	Tshering Denka	AURG, RUB	Bhutan		CST
76	Construction and Demolition (C&D) Waste Management Practices; A Case of Bhutan	Sangay Penjor	AURG, RUB	Bhutan	60,000	CST
77	Urban temperature variability and Heat Island assessment: A Case Study in Phuentsholing	Sangey Pasang	AURG, RUB	Bhutan	80,000	CST
78	Study on Atmospheric constituent over Bhutan through Long term satellite data and understanding trans-boundary pollution in Bhutan	Kirtan Adhikari	AURG, RUB	Bhutan	60,000	CST
79	3D visualization of heritage site using high resolution drone image in Bhutan	Sonam Chuki	AURG, RUB	Bhutan	60,000	CST

80	Performance Analysis of Low Voltage (LV) Distribution System and Possible Interventions to Reduce Power Loss and Improve Reliability	Roshan Chhetri	AURG, RUB	Bhutan		CST
81	Design of off-grid photovoltaic energy supply for remote villages and monasteries focusing on user awareness and acceptance	Martin Elborg	AURG, RUB	Bhutan		CST
82	Identification of appropriate Drone technology and application areas for Agriculture automation in Bhutan	Manoj Chhetri	AURG, RUB	Bhutan		CST
83	Landslide risk assessment of Baunijhora for Future Planning and Decision Making	Monika Thapa	AURG, RUB	Bhutan		CST
84	Feasibility of Retrofitting the traditional Bhutanese houses to enhance thermal comfort.	Penden Wangchuk	AURG, RUB	Bhutan	60,000	CST
85	Analysis of Water distribution system of Phuentsholing Thromde	Rigden Yoezer Tenzin	AURG, RUB	Bhutan		CST
86	CST students' perceptions and experiences of academic workload and their wellbeing	Karma Yangdon	AURG, RUB	Bhutan	60,000	CST
87	Vulnerability assessment of network with pen testing	Kezang Dema	AURG, RUB	Bhutan	70,000	CST

88	Exploration of Groundwater potential zones for irrigation water source in Gelephu area (Peirithang) using seismic refraction Tomography (SRT) and Geographical Information System	Leki Dorji	AURG, RUB	Bhutan		CST
89	Co-relation between Bhutanese Astrology and Site responsive architecture. མིའགཞུང་དང་བཟོ་བོད་རྒྱུ་ལྟ་བུ་གྱི་ཐོག་ལས་ཀྱི་མཁུ་བོད་པ་གླེགས་པ་གྱི་སྒྲིག་པ་	Pema Youden	AURG, RUB	Bhutan	55,000	CST
90	Effectiveness of Online Teaching and Learning on Students' Academic Performance (COVID-19 Pandemic): A Case Study from RUB	Rajnish Ratna	REF	Bhutan	130,000	GCBS
91	A Study on Employability Skills of University Students in Bhutan	Sonam Loday	REF	Bhutan		GCBS
92	Online Teaching Experience during the COVID-19 Pandemic: Findings from the Survey of Faculties at the Royal University of Bhutan	Dhanapati Sharma	REF	Bhutan		GCBS
93	Study on Domestic Violence against Men in Bhutan	Tshewang Norbu	REF	Bhutan		GCBS
94	Effectiveness of Online Teaching and Learning on Students' Academic Performance (COVID-19 Pandemic): A Case Study from RUB	Rajnish Ratna	REF	Bhutan	130,000	GCBS

95	A Study on Employability Skills of University Students in Bhutan	Sonam Loday	REF	Bhutan		GCBS
96	Online Teaching Experience during the COVID-19 Pandemic: Findings from the Survey of Faculties at the Royal University of Bhutan	Dhanapati Sharma	REF	Bhutan		GCBS
97	Study on Domestic Violence against Men in Bhutan	Tshewang Norbu	REF	Bhutan		GCBS
98	A Study on the Challenges of Insurance Sectors: A Case of Insurance Companies (RICBL and BIL) in Bhutan	Elangbam Haridev Singh	AURG, RUB	Bhutan		GCBS
99	A Digital Banking Pathway to Financial Inclusion: Evidence from Selected Dzongkhags in Bhutan	Purna Prasad Sharma	AURG, RUB	Bhutan	150,000	GCBS
100	Error Analysis of Corpus of ESL College Students' Written Assignments: A Case Study	Chencho Wangchuk	AURG, RUB	Bhutan		GCBS
101	Effect of Active Learning on Learning Outcomes and Student Satisfaction at Gedu College of Business Studies, Royal University of Bhutan.	Madan Gurung	AURG, RUB	Bhutan		GCBS
102	Students Perception of Teacher Talk Time and its Impact on their Academic Achievement	Phub Dorji	AURG, RUB	Bhutan		GCBS
103	Effectiveness of online Teaching and Learning among the Colleges of the Royal University of Bhutan.	Tshewang Norbu	AURG, RUB	Bhutan	80,000	GCBS

104	Skill Set of Graduates: Through the Lens of Private Sector Employers	Yangzom	AURG, RUB	Bhutan		GCBS
105	Perception on faculty mentoring of teaching staff in colleges under RUB	Gaki Dem	AURG, RUB	Bhutan	60,000	GCBS
106	The Influence of Peer Assessment on Students' Group Performance and Cohesiveness	Khem Prasad Gautam	AURG, RUB	Bhutan		GCBS
107	Reflective Practices in Teaching: A study on faculties of RUB Colleges.	Kinga Wangpo	AURG, RUB	Bhutan	57,000	GCBS
108	མཐུན་སྦྲེལ་དཀོན་པའི་གཞུང་སྒྲིག་། Factors affecting usage of mobile banking application (mBob) in Bhutan.	ཀུན་རྩེགས། རྩེ་ལྷུ། Priya Sharma Amrit Prasad Sharma	AURG, RUB	Bhutan		GCBS
109	Effectiveness of online teaching offered by the faculties of Royal University of Bhutan.—A study from faculty perspective.	Purnendu Basu	AURG, RUB	Bhutan	60,000	GCBS
110						
111	Contribution of Self-Compassion to Positive Mental Health of Undergraduate Students of Royal University of Bhutan	Sonam Dema	AURG, RUB	Bhutan	60,000	GCBS
112	Play as a Teaching Strategy for Early Learning and Development in the Bhutanese Primary Schools	Lhaden	Research Endowment Fund	Bhutan	115,000	PCE
113	སློབ་པ་ལྟ་ཚུ་ལུ་ གཡུལ་ཁྱིམ་གྱི་གཞི་རིག་ལས་བརྟེན་ནི་ སློབ་པ་ལྟ་ཚུ་ལུ་ བྱེད་པ་བར་དགའ་ཞིབ། Exploring science teachers' efficacy beliefs and practices in implementing STEM education in Bhutan.	Samten Tharchan	Research Endowment Fund	Bhutan	100,000	PCE
114		Som Gurung	AURG	Bhutan	74,900	PCE

115	Accreditation and Training of Teacher Assistants in Bhutanese Schools	Karma Jigyel	Erasmus+ Project Co-funded by European Union	EU	25,234,522	PCE
116	A multi-country study on Educational Innovations for out of School Children(OOSC) and Children at Risk of Dropping out	Karma Jigyel	International Development Research Centre and Global Partnership for Education	Nepal	12,980,017	PCE
117	Enhancing Mental Health, Counseling and Wellbeing Support for University students in Bhutan	Sangay Dorji	Erasmus + Project Co-funded by EU	EU		PCE
118	ཇོ་ལའི་སློབ་སྦྱང་པ་ཚུ་གི་སྤྱད་ལུ་ ཇོ་ལའི་སློབ་པ་ཚོ་ འབད་ཚུགས་པའི་ཚུགས་གྲུབ་ལུ་ གློ་སློབ་སྤེལ་དེ་ཡིད་ ཚེས་བརྟག་ཞིབ།	Samten Tharchen	AURG, RUB	Bhutan		PCE
119	Exploring science teachers' efficacy beliefs and practices in implementing STEM education in Bhutan.	Som Gurung	AURG, RUB	Bhutan	74,900	PCE
120	Student teachers' Perceptions on online teaching and learning	Rinchen Tshewang	AURG, RUB	Bhutan		PCE
121	Connected Learning for STEM (CLIX)	Rinchen Dorji	IDRC,	Canada		SCE

122	Preparedness of Bhutanese Higher Education Institutions for Inclusive Education; An Exploratory study	Ramesh Kumar Chettri	UNICEF Bhutan	Bhutan	631,000	SCE
123	Adapting and Scaling Place-Based Education to Achieve Equity and Actualization of 21 st Century Curriculum Goals	Nandu Giri	IDRC	Canada		SCE
124	The Impact of Gender and Inclusive Pedagogies on Student Participation and Learning Achievement at Secondary School during the Pandemic and	Ganeshman Gurung	IDRC	Canada	7,000,000	SCE
125	Student's perception of the relationship between the teacher's interpersonal behaviour and their motivation for learning in the Higher Secondary Schools of Bhutan.	Ramesh Kumar Chettri	AURG, RUB	Bhutan	123,000	SCE
126	Opportunities and challenges of STEM education in Bhutan: Stakeholders' perspectives.	Reeta Rai	AURG, RUB	Bhutan	80,000	SCE
127	Effectiveness of Group Work Assignment: Perceptions of Students and Academics of the Royal University of Bhutan	Karma Uthra	AURG, RUB	Bhutan	162,444	SCE
128	Teaching through Place-based Education: An investigation of the implementation of place-based education and its relationship with Educating for GNH at the Samtse College of Education.	Nandu Giri	AURG, RUB	Bhutan	131,797	SCE

129	Opportunities and Challenges of Online Teaching: An Exploratory Study of the Implementation of Online Teaching in the Colleges of the Royal University of Bhutan	Kinley Seden	AURG, RUB	Bhutan	150,000	SCE
130	Effectiveness of the Virtual Learning Environment (VLE) for online teaching, learning, and assessment: Perspectives of Academics and Students of the Royal University of Bhutan	Ugyen Pem	Research Endowment Fund	Bhutan	200,000	SCE
131	Pay Raise for Teachers in Bhutan: Impacts on Teachers' Morale, Motivation and Professional Practices	Tashi Gyeltshen	Research Endowment Fund	Bhutan	175,000	SCE
132	རྫོང་ཁའི་བརྗོད་མཆོངས་ཤིན་ཏུ་ཁྱིམ་བཅད་དེ་འབྲི་ཚུ་ལ་དཔྱད་པ།	Sonam Zangpo	ACRG, Sherubtse College	Bhutan	131,908	Sherubtse College
133	Cross cultural study on practice of menstrual taboo and related social issues among residence of Samdrup Jongkhar district.	Anju Chhetri	ACRG, Sherubtse College Bhutan	Bhutan	196,959	Sherubtse College
134	བཟུ་ཤེས་སྒྲུང་རྩོང་ཁག་ནང་གི་སོ་བཟུགས་ཐོབ་རམ་ ། ལ་ལས་ ། ཉ་ལའ་ སོ་བཟུགས་ཚུགས་ རྩོང་ཁག་མང་ ཆོག་ རྩོང་ཁག་ vocabulary ཡང་དྲག་ག་ དེ་སྟེ་ བཟང་དོ་ཡོད་པ་ཅིན་ནུ་ལ་སོང་ བརྟག་ཞིག།	Kelzang Namgay	ACRG, Sherubtse College Bhutan	Bhutan	110,061	Sherubtse College
135	Dungsam Jadrunpas and their roles in shaping the socio-political geography of Bhutan	Sonam Chopel	ACRG, Sherubtse College Bhutan	Bhutan	175,936	Sherubtse College

136	བཟུ་ཤིས་སྐུང་ཚོང་ལག་ལམ་སྤེལ་ཡུལ་སྤྱིའི་ཁྱིམ་གསར་སྐབ་ཀྱི་དགའ་སྟོན་རྟོག་འབྲེལ་བ་ལུ་ཐང་ལ།	Sonam Zangpo	ACRG, Sherubtse College Bhutan	Bhutan	81,459	Sherubtse College
137	Koi-Rug as Source of Livelihood: A Case Study on Slaughtering of Koi-Rug at Communities of Merak and Sakteng, Trashigang	Dorji Phuntsho	ACRG, Sherubtse College Bhutan	Bhutan		Sherubtse College
138	ཤེས་རབ་ལུ་མཐོ་རིམ་སློབ་ཁྲིམས་དང་སྐྱེ་ཁུངས་ཀྱི་མཐོ་རིམ་སློབ་ཁྲིམས་ཀྱི་སློབ་ཕྲུག་ཚུ་ལུ་ཁྱེ་རྒྱལ་ཁྱེན་ཆས་ཀྱིས་འབྲུག་པའི་རྒྱལ་ཡོངས་ཁྱེན་ཆས་ལུ་གཞོན་པ་ཡོང་མེད་བརྟག་ཞིབ།	Kelzang Namgay	ACRG, Sherubtse College Bhutan	Bhutan		Sherubtse College
139	The Study of Myths and History surrounding Nye Dechenphodrang in Trashi Yangtse Dzongkhag	Wangmo	ACRG, Sherubtse College Bhutan	Bhutan		Sherubtse College
140	An Oral Narratives of Mound Burials in Gangzur Gewog, Lhuentse	Lobzang Dorji	ACRG, Sherubtse College Bhutan	Bhutan		Sherubtse College
141	Sacred Groves and Its Significance in Environmental Protection in Bhutan – A Case of Ritsangdung Chiwog, Kanglung Gewog, Trashigang	Paljor Galey	ACRG, Sherubtse College Bhutan	Bhutan		Sherubtse College
142	Assessment of climate change, vulnerability, and its impact on agricultural land use in Bhutan	Deki Choden	PEER	USA		Sherubtse College

143	Statistical Analysis of Agricultural Land Fragmentation and its Impact on Productivity in Kanglung Gewog	Dechen Wangdi	ACRG, Sherubtse College Bhutan	Bhutan		Sherubtse College
144	Management practices and environmental awareness on electronic waste in Trashigang Dzongkhag	Deki Choden	ACRG, Sherubtse College Bhutan	Bhutan	169,156	Sherubtse College
145	Social survey on understanding cryosphere related hazard and community resilience in Trongsa, Bhutan	Deki Choden	University of Bristol	United Kingdom	588,735	Sherubtse College
146	Validation of Wagner's Law in context to Bhutanese Economy	Rinzin Dema	ACRG, Sherubtse College	Bhutan	107,725	Sherubtse College
147	Identification of prominent factors determining selection of college and its correlation with academic performances in Sherubtse College	Dorji Gyeltshen Nesor	ACRG, Sherubtse College	Bhutan	106,000	Sherubtse College
148	Analysis of Productivity and Technical Efficiency: A Case Study of Rice Production in Radhi Gewog, Trashigang Dzongkhag	Karma Yoezer	ACRG, Sherubtse College	Bhutan		Sherubtse College
149	The State of Students' Mental Health: A Case study of Sherubtse College Students	Yezer	ACRG, Sherubtse College	Bhutan		Sherubtse College
150	Factors determining the academic performance of Economics Students at Sherubtse College - an empirical econometric estimation	Ugyen Lhundup	ACRG, Sherubtse College	Bhutan		Sherubtse College

151	Voting behaviour, women's participation and representation in Local Elections in Trashigang Dzongkhag	Tashi Jamtsho	ACRG, Sherubtse College	Bhutan	142,000	Sherubtse College
152	Statistical Analysis of Consumer Price Index (CPI) in Bhutan	Bishal Gurung	ACRG, Sherubtse College	Bhutan	120,000	Sherubtse College
153	The economic and environmental Impact of installation of Family sized Biogas: an evidence from Samkhar gewog, Trashigang, Bhutan	Rinzin Dema	ACRG, Sherubtse College		130,000	Sherubtse College
154	Impact of rural-urban migration on food security: a case study in Bartsham gewog, Trashigang	Yeshey Wangmo	ACRG, Sherubtse College		110,000	Sherubtse College
155	GCRF South Asian Nitrogen Hub (SANH)	Dendup Tshering	UKRI-GCRF	United Kingdom	20,608,916	Sherubtse College
156	Development of experimental equipment to study Mechanical resonance	Gopal Rizal	ACRG2020-2021 Sherubtse	Bhutan	150,000	Sherubtse College
157	Determination of heavy metal and other non-metal ions in hot springs of Bhutan	Pursu Ram Sharma	ACRG2020-2021 Sherubtse	Bhutan	149,000	Sherubtse College
158	Detection of adulterants in some common food items available in Bhutanese market	Jas Raj Subba	ACRG2020-2021 Sherubtse	Bhutan	147,456	Sherubtse College
159	Cross-Classified Multilevel Model on Student Performance with Random Effects in Colleges and Programmes in Sherubtse, GCIT & JNEC	Pema Wangdi	ACRG2020-2021 Sherubtse	Bhutan	199,450	Sherubtse College

160	Study of alien invasive plant species across the altitudinal gradient along Samdrup Jongkhar-Trashigang national highway.	Ram Chandra Bajgai	ACRG2020-2021 Sherubtse	Bhutan	199,450	Sherubtse College
161	Understanding of source water and recharge Mechanism of Mountain Springs and streams in Radhi and Phongmey Gewogs in Trashigang, Bhutan	Tshewang Dendup	PEER, US	USA		Sherubtse College
162	Distribution, mechanism, and impacts of non-native invasive plants under climate change in Bhutan	Ram Chandra Bajgai	PEER, US	USA		Sherubtse College
163	Improving invasive species management for resilient ecosystem and livelihood in the eastern himalayan landscape	Ram Chandra Bajgai	APNIS			Sherubtse College
164	Improving invasive species management for resilient ecosystem and livelihood in the eastern himalayan landscape	Ram Chandra Bajgai	SANDEE, ICIMOD			Sherubtse College
165	Rivers in Bhutan: Enhancing capacities for monitoring of biodiversity and ecosystem services	Tshering Nidup	APPEAR			Sherubtse College
166	Preliminary Study on Prevalence of Mastitis causing Methicillin Resistant Staphylococcus aureus among dairy cattle of Kanglung Gewog	Dawa Tshering Tamang	ARCG, College	Bhutan	195,594	Sherubtse College
167	Assessment of Soil-Transmitted Helminths (STH) among school children of Merak and Sakteng Gewogs	Mohan S. Rana	ARCG, College	Bhutan	199,233	Sherubtse College

168	Hazard Identification (H-I dn) of Landfills on soil and water contamination: Current Practices of Landfill Leachate Management in Eastern Bhutan.	Pema Choden	ARCG, College	Bhutan	148,330	Sherubtse College
169	Assessment of Socio-economic contribution and documentation of Wild Edible Plants in Kanglung Gewog	Ram Chandra Bajgai	ARCG, College	Bhutan	194,062	Sherubtse College
170	Development of self-sustaining solid waste management initiatives in Sherubtse College.	Karma Yangzom	ARCG, College	Bhutan	149,875	Sherubtse College
171	HAPPY project	Dendup Tshering	ERASMUS+		11,015,654	Sherubtse College
172	Environmental Impact of Energy Access: A case of Firewood, Biogas, Electricity, and Liquefied Petroleum Gas (LPG)	Dechen Wangdi	SANDEE, ICIMOD		20,000	Sherubtse College
173	Assessment of population, habitat and threats Cycas pectinata, a vulnerable taxon in Bhutan	Sonam Tobgay	The Rufford Foundation		608,936	Sherubtse College
174	Bayesian Multiple Membership Regression Model on Student Performance with Random Effects in Colleges and Programmes in Royal University of Bhutan	Dechen Wangdi, Pema Wangdi	Research Endowment Fund, RUB			Sherubtse College
175	A community education programme to curb direct pollution of amphibian breeding sites in eastern Bhutan with particular reference to threatened A. himalayanus	Tshering Nidup	The Rufford Foundation		514,176	Sherubtse College

176	Building Capacity to Improve Air Quality in South Asia: Reducing PM2.5 Through Low-Cost Sensor Network Driven Policy Decisions	Tenzin Wangchuk	Duke University		506540	Sherubtse College
177	Household income, food security in the face of climate change: A case study of small landholders in Kanglung and Kangpara Gewog:	Leki Sangay	REF, RUB	Bhutan		Sherubtse College
178	Online Teaching	Thubten Zepa Thegchog	AURG, RUB			GCIT
179	Experimental analysis of an air solar collector efficiency using water vapour	Karma Drukpa	AURG, RUB			JNEC
180	Examining the Influence of University Teachers' Qualification and Experience on Students' Academic Achievement in Mathematics	Sonam Gyeltshen	AURG, RUB		80,000	JNEC
181	Procurement resilience in the era of climate change: A case study based in ministries and districts in Bhutan	Pema Wangchuk	AURG, RUB			JNEC
182	Geo-Hazard Risk Assessment and Stabilisation Road Slope Disasters in Bhutan. A Case Study on Landslides along Dewathang-Samdrup Jongkhar Highway, Samdrup Jongkhar.	Phurba Tamang	AURG, RUB		60,000	JNEC

6.3 Consultancy

Consultancy services is one of the activities conducted by Colleges and it is mainly awarded as a deposit work based on the areas of specialization and the confidence to network Colleges developed with external partners. As shown in *Table 13 Number of Services and Grant Secured*, GCBS has developed a niche service in areas in business and economics with the agencies such as Royal Monetary Authority, Construction Development Corporations limited, the Druk Holding and Investment, Ministry of Finance, Royal Monetary Authority, and FITI. In the FY 2020-2021, GCBS has completed 8 consultancy work and they have another 10 ongoing work. GCBS received a total sum of Nu.13 Million in this financial year.

Sherubtse College secured 4 consultancy services which amount to Nu.1.2 Million. Sherubtse College in partnership with Waseda University has submitted consultancy services in the area of perception and assessment studies such as Household Survey and Risk Perception of Covid- 19 in Bhutan. CST offered material testing services to a construction firm at the cost of Nu.0.2 Million.

Details of the consultancy services are presented in Table 14.

Table 13 Number of Services and Grant Secured

College	Amount (Million)	Number of projects	Completed	Ongoing
GCBS	13.000	18	8	10
CST	0.200	1	1	0
Sherubtse College	1.200	4	4	0

Table 14 List of Consultancy Services offered by the colleges to various Agencies during 2020-2021

Sl. No.	Project Title	Agency Detail		Remarks	Project Completed (Yes/No/Ongoing)	College
		Agency Name/ Institution	Amt (Nu)			
1	Civil engineering Material test	Construction firm in Bhutan	200,000		Yes	CST
2	Training Need Assessment	FITI	120,00		Yes	GCBS
3	Employee Satisfaction Survey and HR Master Plan Development	CDCL	219,217		Yes	GCBS
4	Customer Satisfaction Survey, DHI 2020	DHI	1,030,817	Final Tranche	Yes	GCBS
5	Impact Assessment: Fiscal Incentives of Bhutan (2018-2020)	Ministry of Finance	1,027,682	Final Tranche	Yes	GCBS
6	Financial Inclusion and Fintech module pilot implementation	Financial Inclusion Secretariat, RMA	2,500,000		Ongoing	GCBS
7	Instrument Development for Financial Capability and Pilot Survey	Financial Inclusion Secretariat, RMA	700,000		Ongoing	GCBS
8	Instrument Development for Financial Consumer Protection and Pilot Survey	Financial Inclusion Secretariat, RMA	400,000		Ongoing	GCBS
9	Financial Knowledge Product Development	Financial Inclusion Secretariat, RMA	100,000		Ongoing	GCBS

10	Customer Satisfaction Survey, DHI 2021	DHI	517,074	Mobilization advance	Ongoing	GCBS
11	Training Need Assessment	FITI	120,00		Yes	GCBS
12	Employee Satisfaction Survey and HR Master Plan Development	CDCL	219,217	Final Tranche	Yes	GCBS
13	Customer Satisfaction Survey, DHI 2020	DHI	1,030,817	Final Tranche	Yes	GCBS
14	Impact Assessment: Fiscal Incentives of Bhutan (2018-2020)	Ministry of Finance	1,027,682	Final Tranche	Yes	GCBS
15	Financial Inclusion and Fintech module pilot implementation	Financial Inclusion Secretariat, RMA	2,500,000		Ongoing	GCBS
16	Instrument Development for Financial Capability and Pilot Survey	Financial Inclusion Secretariat, RMA	700,000		Ongoing	GCBS
17	Instrument Development for Financial Consumer Protection and Pilot Survey	Financial Inclusion Secretariat, RMA	400,000		Ongoing	GCBS
18	Financial Knowledge Product Development	Financial Inclusion Secretariat, RMA	100,000		Ongoing	GCBS
19	Customer Satisfaction Survey, DHI 2021	DHI	517,074	Mobilization advance	Ongoing	GCBS
20	Household Survey	Waseda University	500,000		Completed	Sherubtse College

21	water quality assessment of streams/springs at Khothakpa Gypsum Mine, Pemagatshel and Dzongthung Stone Quarry, Bartsham, Trashigang.	Offered consultancy service to the State Mining Corporation Limited (SMCL)	7,860		Yes	Sherubtse College
22	Risk Perception of Covid- 19 in Bhutan	Professor, Waseda University	238,669		Yes	Sherubtse College
23	House Hold Survey	Waseda University	497,228		Yes	Sherubtse College

6.4 Joint Projects

A total of 25 joint projects are ongoing in Colleges of RUB. CNR and ICIMOD have 5 on going joint projects. The lists of joint projects are listed in Table 15.

Table 15 Lists of joint projects

College	Number of Joint	List
CLCS	1	A joint research project titled HimalConnect with University of Oslo,
CNR	6	5 ICIMOD, Nepal (joint projects) 1 RSPN
CST	3	Lund University, Sweden(2 joint projects) TEIN Cooperation Center, EU Department of Culture, MoHCA
GCBS	2	1. FAB project with 22 institutions in Asia and Europe. 2. Higher education: International capacity building projects among 6 countries.
GCIT	0	No Joint research projects carried out
JNEC	3	1. One AURG Project 2. One REF Project 3. Two Erasmus+ Projects
PCE	4	1. Erasmus Plus Wellbeing Centre Project; 2. MoE-Review of ICT curriculum & 3. IRDC: Edu Innovation for out of school children; 4. Toyota Foundation
SCE	3	1. IRDC 2. APPEAR -University of Vienna; and 3. Joint research with JNEC.
Sherubtse College	3	1. GCRF South Asian Nitrogen Hub 2. Happy Project 3. Erasmus Plus mobility for Higher Education

6.5 Publications

6.5.1 Publication of Journals

During this fiscal year, RUB published a total of 12 journals and 14 volumes of journals. Eight Colleges have established journal(s) in their areas of specialization. CLCS launched a new journal titled *International Journal for Bhutan and Himalayan Research* which aims to publish research work on history and culture studies. It will be an annual publication of the College.

PCE publishes 4 different journals as listed in Table 16. Two volumes of *Rabsel, Vol XXII Issue II and Vol XXIII Issues I* have been successfully published. The biannual journal titled *Bhutan Journal of Research and Development* (BJRD) managed by DRER has reached volume number 10 and published 2 issues Vol 9 No. 2 and Vol 10 No 1 this fiscal year. Sherubtse College published the 14th volume of *Sherub Doenme, Research Journal of Sherubtse College*.

Table 16 Journals published by the Colleges during 2020-2021

Sl. No.	Name of the journal	Vol. No. & Issue No	website links	College
1	International Journal for Bhutan and Himalayan Research	Inaugural Issue	Hard copy, Link not available	CLCS
2	Bhutan Journal of Natural Resources and Development (BJNRD)	Volume 8 Issue No. 1	www.bjnrd.org	CNR
3	Zorig Melong - A Technical Journal	Volume 5 Issue No.1	http://scientec.cst.edu.bt/zm_issue1vol5/	CST
4	Bhutan Journal of Research and Development (BJRD)	Vol.9 No. 2	https://bjrd.rub.edu.bt	DRER
5		Volume10 Issue No. 1	https://bjrd.rub.edu.bt	
6	Bhutan Journal of Business and Management	Volume 4 Issue 1	https://bit.ly/2XxeX4d	GCBS

7	Journal of Applied Engineering	Volume 1 Issue 1	ISSN (Print): 2707-4978, June 2021.	JNEC
8	Technology & Management	Volume 1 Issue 1	ISSN (Print): 2707-4978, June 2021. Current copy editing/ language check for publication	JNEC
9	Rabsel	Volume XXII Issue No.2	https://www.pce.edu.bt/index.php/publications/	PCE
10		Volume XXIII Issue No.2	https://www.pce.edu.bt/index.php/publications/	PCE
11	Journal for Educational Action Research	Volume IV Issue No.1	https://www.pce.edu.bt/index.php/publications/	PCE
12	Journal for International and Comparative Education	Volume X, Issue No.1	https://eric.ed.gov/?id=EJ1294347	PCE
13	Educational Innovation and Practice (EIP)	Volume 4 Issue No.1	https://www.sce.edu.bt/wp-content/uploads/2020/11/EIP-Vol-4-Issue-1.pdf	SCE
14	Sherub Doenme: The Research Journal of Sherubtse College	Volume 14	http://journal.sherubtse.edu.bt/index.php/sd	Sherubtse College

6.5.2 Papers Published in Journals

The quality of a university can be marked by the number of research publications produced by academics and staff. This fiscal year, a total of 235 were published in various peer-reviewed as well non-peer-reviewed journals. A total of 74 articles were published in a journal printed by RUB, while 161 articles were published in various types and standard journal publications. This Financial year 4 students of CLCS published their historical research work in the recently developed journal in CLCS, titled International Journal for Bhutan and Himalayan Research.

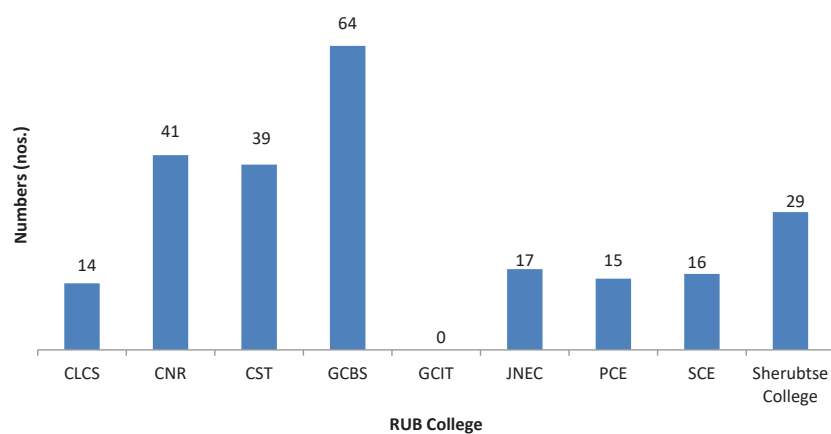


Figure 10 Number of articles published by RUB researchers

Figure 10 shows that this fiscal year GCBS has the maximum number of publications while GCIT were unable to publish any work. A notable research finding by a CNR was the publication of 3 types of Bats known to science but identified for first time in Bhutan.

Table 17 Number of journal paper published

Sl#	Journal Papers Title	Author(s)	Publisher	Year	Website link	College
1	Exploring National Identity Literature in Bhutanese National English curriculum	Tshering Om Tamang	tandfonline	2020	Link Not available	CLCS
2	Challenges to the Development of Dzongkha Literature: A Comparison of Rnam thar and Sung	Sonam Nyenda	Trees	2020	Link Not available	CLCS
3	Finding research topic and its effect on research learners' motivation: An action research	Jigme Dorji	IJSEI	2020	https://www.journalajess.com/index.php/AJESS/article/view/30323	CLCS
4	Exploring job crafting: Identifying the ways of CLCS adjust to their jobs	Jigme Dorji	International Journal of Oriental Insects	2020	https://www.journalarjass.com/index.php/ARJASS/article/view/30193	CLCS
5	Teacher Attribution: The former teachers' perspectives in the Bhutanese context	Jigme Dorji	International Journal of Applied Geospatial Research	2020	https://www.journalajess.com/index.php/AJESS/article/view/30299	CLCS
6	Rubber Slippers and Environment Effect in KCB School in Bhutan	Jigme Dorji	BJNRD	2021	https://www.journalsajss.com/index.php/SAJSSE/article/view/30228	CLCS
7	The Study of Ethnobotanical Uses by Local Healers in Taktse Chiwog from Central Bhutan	Gangaram Bhattacharai	BJNRD	2020	https://www.journalaprij.com/index.php/APRJ/article/view/30135	CLCS

8	Covid-19 Pandemic and Environment Pollution: A Blessing in Disguise for Southern-Asian	Gangaram Bhattarai	BJNRD	2021	https://www.researchgate.net/publication/349884455_COVID-19_Pandemic_and_Environment_Pollution_A_Blessing_in_Disguise_for_Southern-Asian	CLCS
9	Untold Tale of Bjoka Khoche	Pema Choden	SSRN	2020		CLCS
10	The Legend of Pemagatshel's Chungkhar Nagtshang	Chencho Dorji	International Journal for Bhutan and Himalayan Research	2020		CLCS
11	Dharpai Nungney in Dhur Community	Dorji	International Journal for Bhutan and Himalayan Research	2021		CLCS
12	Historical Account of Mangleng Nagtshang in Trashiyangtse	Ugyen Druktho	International Journal for Bhutan and Himalayan Research	2021		CLCS
13	The emergence of Nagtsang in Pemagatshel	Phuntsho Wangdi	International Journal for Bhutan and Himalayan Research	2021		CLCS
14	འཕྲུལ་ལྷན་པ་ལ་དཔྱད་པ་ཀློན་གྱི་རྒྱུ་རྐྱེས་	Yeshe Jamtsho	International Journal for Bhutan and Himalayan Research	2021		CLCS

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16	Three-dimensional quantification of tree architecture from mobile laser scanning and geometry analysis	Dorji, Y., Schuldt, B., Neudam, L., Dorji, R., Mid-dleby, K., Isasa, E., ... & Seidel, D.	Khon Kaen Agr. J.	2021	https://link.springer.com/article/10.1007/s00468-021-02124-9	CNR
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19	Spatial Surveillance of Invasion by Alien Species in a Heterogeneous Ecological Landscape	Thinley, U., Bantermg, P., Katawatrin, R. and Gonkham-dee, S.	International Journal of Environment and Climate Change	2020	https://www.igi-global.com/article/spatial-surveillance-of-invasion-by-alien-species-in-a-heterogeneous-ecological-landscape/246006	CNR
20	Effect of Blanching Duration and Drying Methods on the Proximate Composition of Green Chillies (<i>Capsicum annum</i> L.)	Gurung, T., Wangchuk, K. and Sitaula, B. K.	Journal for Nature Conservation.	2020	http://www.bjnrd.org/index.php/bjnrd/article/view/61	CNR

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22	Ecology of Sandalwood (<i>Santalum album</i> L.) at Lingmethang, Eastern Bhutan	Thinley, P., Jambay, Gurung, D. B., Rabgay, T., Penjor, Kumar, M., Wangchuk, K., Pradhan, M., Sitaula, B. K. and Raut, N.	BJNRD	2020	http://www.bjnrd.org/index.php/bjnrd/article/view/55	CNR
23	Business to Business Marketing in Bhutan: A Case Study from Balam Gewog under Mongar Dzongkhag	Pema, K., Dendup, T. and Chhetri, R.	BJNRD	2020	http://www.bjnrd.org/index.php/bjnrd/article/view/57	CNR
24	Mineral Composition and Behaviour of Mammals at Natural Saltlicks in Jomotsangkha Wildlife Sanctuary, Bhutan	Thinley, J., Dorji, U., Tshering, U., Nepal, A., Chaidra, L., Chaten,.; Rai, K., Tobgay, S., Tshering, B., Dorji, T., Thinley, P., Rabgay, T., Yongdrup, P. and Wangchuk, Y.	BJNRD	2020	http://www.bjnrd.org/index.php/bjnrd/article/view/56	CNR

25	Assessment of Anthelmintic Resistance of <i>Fasciola</i> spp. against Flunil-L and Fasinas	Dolma, S., Tenzin, J., Dorjee, and Jambay	BJNRD	2020	http://www.bjnrd.org/index.php/bjnrd/article/view/58	CNR
26	<i>Rhaphiolepis bengalensis</i> (Roxb.) B.B.Liu & J.Wen: A New Record of Plant to Bhutan.	Gurung, D. B., Tobgay, P., Dendup, T., Subba, S., Blon, W., Phuentsho, Dorji, R. and Dorji, K.	Journal of Threatened Taxa	2020	http://www.bjnrd.org/index.php/bjnrd/article/view/64	CNR
27	Ethnobotanical Practices among the People of Dagana District, Bhutan.	Sherab, K., Suberi, B., Chapagai, P. P., Penjor, Jurmey, K., Wangdra, K., and Neopaney, M. K.	Journal of the Bombay Natural History Society	2020	https://journalapri.com/index.php/APRJ/article/view/30158	CNR
28	Effect of Cropping and Management Techniques on Chilli (<i>Capsicum annuum</i> L.) Production under Rain-Fed Farming.	Zangmo, Wattanachaiyingcharoen, D., Pansak, W. and Gurung, T.	Sustainability	2020	https://www.indianjournals.com/ijor.aspx?target=ijor:ijar2&volume=54&issue=3&article=011	CNR
29	Genetic diversity of chili pepper (<i>Capsicum</i> sp) genotypes grown in Bhutan based on morphological characters.	Gurung, T., Sitaula, B. K., Penjor, T. and Tshomo, D.	Journal of Community Development Research (Humanities and Social Sciences)	2020	https://sci-hub.ru/http://sabaojournal.org/wp-content/uploads/2021/01/SABRAO-J-BREED-Genet-524-446-464-GURUNG.pdf	CNR

30	Valuation of soil ecosystem services of organic farming agroecosystem as an approach to natural resource management at Gasa, Bhutan.	Wangmo, S. and Iwai, C. B.	KhonKaen Agriculture Journal	2020	https://ag2.kku.ac.th/kaj/PDF.cfm?filename=22_145%2063_48_3%20.pd-f&id=4213&keeptrack=2	CNR
31	Herders and livestock professionals' experiences and perceptions on developments and challenges in yak farming in Bhutan	Dorji, N. Derks, M., Dorji, P., Koerkamp, P. W. G. G. and Bokkers, E. A. M.	Genetics and Molecular Research	2020	https://www.publish.csiro.au/an/an19090	CNR
32	Freshwater conservation planning in the context of nature needs half and protected area dynamism in Bhutan	Dorji, T., Linke, S., & Sheldon, F.	Journal of Threatened Taxa	2020	https://sci-hub.ru/https://www.sciencedirect.com/science/article/pii/S0006320720308430?casa_token=VO3d1Pu0H_kAAAAA:sTolxGr3YJYw-Z7f3hrGbSS36w7DVXVS-J9zWoDQBtOgm0byN8np8tg-b0QQOxz	CNR
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52	Effect of Blanching Duration and Drying Methods on the Proximate Composition of Green Chillies (Capsicum annum L.)	Tulsi Gurung, Karma Wangchuk, Bishal K. Sitaula	BJNRD, (7) 2	2021	Vol. 7 No. 2 (2020) Bhutan Journal of Natural Resources and Development (bjnrd.org)	CNR

53	Business to Business Marketing in Bhutan: A Case Study from Balam Gewog under Mongar Dzongkhag	Kinley Pema, Tashi Dendup, Rekha Chhetri	BJNRD, (7) 2	2021	Vol. 7 No. 2 (2020) Bhutan Journal of Natural Resources and Development (bjnr.org)	CNR
54	The Future of Yak Farming from the Perspective of Yak Herders and Livestock Professionals.	Nedup Dorji, Derks, M., Koerkamp, P. W.G.G. and Bokkers, E.A. M.	Sustainability, 12, 4217;	2020	http://doi:10.3390/su12104217 .	CNR
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57	Biochemical Methane Potential Assessment by Anaerobic Digestion of locally available Grasses of Phuentsholing, Bhutan.	Yeshe Choden Samten Zangmo Saahin Tamang Thinley Gyeltshe Karma Phuntshok Sanjita Limboo Tenzin Choden Gyeltshe	Journal of Engineering Research and Reports 20(5): 135-144, 2021; Article no. JERR.67829 ISSN: 2582-2926	2021	https://www.journaljerr.com/index.php/JERR/article/view/17320	CST
58	Comprehension of Conventional Methods for Ultimate Bearing Capacity of Shallow Foundation by PLT and SPT in Southern Bhutan.	Karma Tempa Nimesh Chhetri	Civil Engineering and Architecture 9(2), 375–385.	2021	https://www.hrpub.org/journals/jour_archive.php?id=48&id=1846	CST
59	Construction Constraints imposed by Traditional Bhutanese Architecture on Building Construction, GNH Journal of Construction Technology and Management 2020	Sangey Pasang Rinchen Dema Sabina Nepal Pema Yangzom Migma Dolma Tamang Monika Thapa Rigden Yoezer Tenzin	GNH Journal of Construction Technology and Management		http://www.cdb.gov.bt/	CST
60	Deep BLSTM-GRU Model for Monthly Rainfall Prediction: A Case Study of Simtokha, Bhutan	manoj Chhetri	Multidisciplinary Digital Publishing Institute(MDPI)	Sep-tem-ber 2020	https://www.mdpi.com/2072-4292/12/19/3174/htm	CST

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62	ECOLOGICAL HEALTH ASSESSMENT OF RENUKA LAKE, HIMACHAL PRADESH, INDIA	Yeshi Choden M.P Sharma, Gaurav Pandey, Shailesh Kumar Gupta, Karma Dechen Dema.	Nature Environment and Pollution Technology.		https://www.nepjournal.com/	CST
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71	Intrusion Detection System in Cloud Computing: A Literature Review	Kezang Dema Naghme Moradpoor Thinley Jamtsho	Network and Complex Systems	2021	https://ijiste.org/Journals/index.php/NCS	CST
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82	Household Energy Use—Clean and Energy Efficient Cooking Solution – a case study of Chhukha Dzongkhag	Roshan Chhetri	International Journal of Scientific Research and Engineering Development— Volume 2 Issue 6		http://www.ijrsred.com/volume2/issue6/IJSRED-V2I6P39.pdf	CST
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90	Construction Constraints imposed by Traditional Bhutanese Architecture on Building Construction	Sangey Pasang Rinchen Dema Sabina Nepal Pema Yangzom Migma Dolma Tamang Monika Thapa Rigden Yoezer Tenzin	GNH Journal of Construction Technology and Management	2020	http://www.cdb.gov.bt/	CST
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184	Importance of Students' Participation in Improving English Language Proficiency.	Ugyen Wangchuk Tashi Zam	JEAR, CERD	2020	https://www.pce.edu.bt/index.php/publications/	PCE
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204	Impact of classroom well-being on student learning: Bhutanese students' perceptions	Kinley Seden Kinzang Dorji Sonam Wangmo Wangmo	Journal of International society for Teacher Education	2021	Vol 24, Issue 2	SCE
205	Parental Involvement in Students' Academic Performance: A Study Based at Pelrithang Middle Secondary School, Gelephu, Bhutan	Anju Gurung Kinley Kinzang Dorji Arjun Nepal	Journal of community development research	2021	http://www.journal.nu.ac.th/JCDDR/article/view/Vol-14-No-1-2021-71-80	SCE
206	Situating the Efficacy of Certificate Course in Social Work: A Case of First-Ever Course in Bhutan	Ramesh Kumar Chettri Dorji S Tshering Dorji	<i>Sage Journals; Research on Social Work Practice.</i>	2021	https://doi.org/10.1177/10497315211011249	SCE
207	Dungkhar Ugyen Chhoeling Goemba: A Temple that was built with Gifted Stones	Dorji Phuentsho	Bhutan Journal of Research & Development	2020		Sherubtse College
208	A Study on Transformation of Local Government in Kanglung Gewog	Paljor Galay Lobzang Dorji Akinobu Kawai	The Journal of Open University of Japan	2020		Sherubtse College

209	Phytoremediation of soil co-contaminated with zinc and crude oil using <i>Ocimum gratissimum</i> (L.) in association with <i>Pseudomonas putida</i> MU02	Deki Choden	International Journal of Phytoremediation	2021	https://www.tandfonline.com/doi/full/10.1080/15226514.2020.1803205	Sherubtse College
210	Educators and Education at a Crossroad in Bhutan	Yezer	Contemporary Education and Teaching Research	2020		Sherubtse College
211	Breeding Ecology of <i>Amolops himalayanus</i> (Amphibia: Anura: Ranidae) in Bodidrang Stream, Trashigang District, Bhutan.	Tshering Nidup	Asian Journal of Biology	2020	https://www.journalajob.com/index.php/AJOB/article/view/30100/56479	Sherubtse College
212	Fly pollination of an orchid species, <i>Bulbophyllum obrienianum</i>	Tshering Nidup Karma Wangchuck		2020		Sherubtse College
213	Widespread polytypic species or complexes of local species? Revising bumblebees of the subgenus <i>Melanobombus</i> world-wide (Hymenoptera, Apidae, Bombus).	Tshering Nidup	European Journal of Taxonomy	2020	https://europeanjournaloftaxonomy.eu/index.php/ejt/article/view/1107/2849	Sherubtse College
214	Investigation of Structural Properties of a Ternary Semiconductor Compound SrxCd1-xO ($x=0.00, 0.25, 0.50, 0.75$ and 1.00)	Gopal Rizal	Journals and book : Science Direct	2020	https://www.sciencedirect.com/science/article/pii/S2214785320325396	Sherubtse College

215	Structural And Electronic Properties Of III-Nitride Semiconductor Alloys: A First Principle Study	Gopal Rizal	European Journal of Molecular & Clinical Medicine	2020	https://ejmcm.com/pdf_5184_7d9b62c8b-22368818108c941a05903c0.html https://ejmcm.com/article_5184.html	Sherubtse College
216	Theoretical investigation of structural properties of ternary alloy CuBr _{1-x} through first principle method	Gopal Rizal	Journal of Physics: Conference Series	2020	https://iopscience.iop.org/article/10.1088/1742-6596/1531/1/012046	Sherubtse College
217	Ab initio study of structural, electronic and optical properties of Mg _x Cd _{1-x} X (X = S, Se, Te) alloys	Gopal Rizal	Elsevier	2021	https://www.sciencedirect.com/science/article/pii/S2214785321042061	Sherubtse College
218	Effect of Protected Regime and Organic Amendments on Physiology and Yield of Three Green Verdant Vegetables	Biumal Chitri Dechen Wangdi	Indian Journal	2020	https://www.indianjournals.com/ijor.aspx?target=ijor:bto&volume=10&issue=1&article=016	Sherubtse College
219	New record of Ctenoplectra cornuta Gribodo, 1891 (Apidae: Ctenoplectrini) in Bhutan	Tshering Nidup Sonam Tobgay Karma Wangchuk Wim Klein Phurpa Dorji	Sherub Doenme	2021	http://journal.sherubtse.edu.bt/index.php/sd/article/view/12	Sherubtse College

220	Efficiency of natural wetland in wastewater treatment: A case study of Singye Karm Nature Reserve wetland at Sherubtse College, Kanglung, Bhutan	Tshewang Dendup Dendup Tshering Punam Mafchan Indra Maya Ghalley Pema Wangmo Tapan Sunwar	Sherub Doenme	2021	http://journal.sherubtse.edu.bt/index.php/sd/article/view/14	Sherubtse College
221	Assessment of Municipal Solid Waste Generation and its Management in Trashigang Municipality, Bhutan	Dendup Tshering Sonam Dorji Dorji Norbu Lungten Jamtsho	Sherub Doenme	2021	http://journal.sherubtse.edu.bt/index.php/sd/article/view/15	Sherubtse College
222	Assessment of Physico-Chemical Parameters of Drinking Water in Sherubtse College, Kanglung	Dendup Tshering Jamyang Dolkar Tshering Wangmo Karna Choki Karna Wangmo Parshu Ram Gurung	Sherub Doenme	2021	http://journal.sherubtse.edu.bt/index.php/sd/article/view/17	Sherubtse College

223	Nymphs of Odonata (Insecta) from Eastern Bhutan with identification keys to nymphs of the Odonata families known from Bhutan	Tshering Nidup Dawa Tshering Tamang Sonam Tobgay Sonam Wangmo Karma Wangchuck Pema Rinzin Tandin Dorji	Sherub Doenme	2021	http://journal.sherubtse.edu.bt/index.php/sd/article/view/19	Sherubtse College
224	A Preliminary Study of Medicinal Plants in Pemathang (Samdrup Jongkhar) and Dekiling (Gelephu) Bhutan	Karma Yangzom Bhagat Pokhrel Tshering Yangki Uttam Ghalley Deki Lhazom	Sherub Doenme	2021	http://journal.sherubtse.edu.bt/index.php/sd/article/view/21	Sherubtse College
225	Scientific Productivity and Citation Analysis of the Bhutan Journal of Research and Development, 2012-2019	Lingchen Dorji	Journal of Bhutan Studies	2021	http://himalaya.socanth.cam.ac.uk/collections/journals/jbs/pdf/JBS_41_03.pdf	Sherubtse College
226	Water-Based Therapies of Bhutan: Current Practices and the Recorded Clinical Evidence of Balneotherapy	Karma Yeshe	Water, MDPI	2020	https://www.mdpi.com/2073-4441/13/1/9	Sherubtse College
227	New record of Ctenoplectra cornuta Gribodo, 1891 (Apidae: Ctenoplectrini) in Bhutan	Tshering Nidup Sonam Tobgay Karma Wangchuck	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College

228	Efficiency of natural wetland in wastewater treatment: A case study of Singye Karm Nature	Tshewang Dendup Dendup Tshering Punam Mafchan	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College
229	Assessment of municipal solid waste generation and its management in Trashigang municipality, Bhutan	Dendup Tshering	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College
230	A preliminary study of medicinal plants in Pemathang (Samdrup Jongkhar) and Dekiling (Gelephu) Bhutan	Karma Yangzom	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College
231	A study on trilateral relationships of China-India and Bhutan	Lobzang Dorji Peljor Galay Sonam Wangdi Sonam Chophel Tashi Chophel Tashi Jamtsho	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College
232	Assessment of physico-chemical parameters of drinking water in Sherubtse College, Kanglung	Dendup Tshering Jamyang Dolkar	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College

233	A Study on Impact of Foreign Direct Investment (FDI) on poverty reduction in Bhutan	Dechen Wangdi Pema Wangdi	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College
234	Nymphs of Odonata (Insecta) from eastern Bhutan with identification keys to nymphs of the Odonata families known from Bhutan	Tshering Nidup Dawa Tshering Tamang Sonam Tobgay Sonam Wangmo Karma Wangchuck	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College
235	Ethnobotanical study on native tea plants of Bjena, Wangdue Phodrang	Ram Chandra Bajgai	Sherubtse College	2021	http://journal.sherubtse.edu.bt/index.php/sd/issue/view/2	Sherubtse College

6.5.3 Paper Published in Conference and Seminar Reports

A total of 17 conference and seminar papers were published this fiscal year. CST published the maximum number of conference papers in the areas of computing, disaster management, and engineering. SCE published 2 papers extracted from the Ph.D. thesis completed by SCE academics in a conference theme titled Ph.D. Thesis Talk. Coinciding with the World Metrological Day 2021 a team of faculty from Sherubtse College presented a research paper on *Glacier Melt Contributions to the Paa Chhu*. Table 18 shows detailed information of Conference and Seminar reports published by the Colleges for the FY 2020-2021.

Table 18 *Conference and Seminar paper Published*

Conference /Seminar Paper				
Sl#	Title	Conference / Seminar Title	National/ International	College
1	Preliminary study on Smart farming literacy: A case study of Barp Gewog (Block), Punakha, Bhutan		International Conference	CNR
2	Student Meet	Natural Resources and Environmental Management for Sustainable Development	National	CNR
3	Static Non-Linear Analysis of Bhutanese Vernacular Rammed Earth Structure.		International Conference	CST
4	Bhutanese Sign Language Alphabets Recognition Using Convolutional Neural Network		International Conference	CST
5	Comparison of Traditional and Online Education in Bhutan,		International Conference	CST

6	Design and development of low cost electric fence energizer.		International Conference	CST
7	Effectiveness of online teaching and learning during Covid19 Pandemic: A Case study at CST.	South Asian Appropriate Technology Innovations in Energy. Sukatha 2020, December 2020.	International Conference	CST
8	Exploration of Groundwater Potential Zones: A Case Study In Phuentsholing.		International Conference	CST
9	Landslide Susceptibility Assessment with Machine learning: A Comparison between Logistic Regression and Random Forest Algorithm		International Conference	CST
10	Landslide susceptibility mapping by the multi-criteria approach of Frequency ratio, Pairwise comparison-AHP and Logistic Regression: A case study in Phuentsholing, Bhutan..		International Conference	CST
11	The exchange programme between new and different partners, Royal University of Bhutan and Uppsala University		International Conference	CST

12	Bhutan Himalayan Climate Studies Science Dialogue Series I: Bhutan as a Biodiversity Wonder in the Himalayas		National	DRER
13	An Investigation of Attitudes and Experiences of Implementing Inclusive Education in Bhutan: Perspectives of Teachers, Principals, and Past Students with Visual Impairment	PhD Thesis Talk	National	SCE
14	Surface water pollution due to vehicle washing activities.	Resource Management and Biodiversity Conservation to Achieve Sustainable Development Goals	International Conference	SCE
15	The Nature of Academic Leadership at the Colleges of Royal University of Bhutan	PhD Thesis Talk	National	SCE
16	Hydrograph Separation Using Geochemical and Isotopic Chemistry to Evaluate Glacier Melt Contributions to the Paa Chhu (River), Bhutan: Technical Report.	World Meteorological Day 2021	National	Sherubtse College
17	Mining the social Media usage Behavior of political Parties, politicians, General Public and Its influence on Bhutan's Democracy	Annual College Research Meet	National	Sherubtse College

6.5.4 Books and Book Chapters publication

This fiscal year RUB published a total of 13 books and 27 book chapters as listed in Tables 19 and 20. GCBS assisted Royal Education Council in developing textbooks on business-related subjects for Class-XI and Class-X curriculum. As part of the Erasmus+ project *Enhancing Mental Health, Counseling and Wellbeing Support for University students in Bhutan*, a team of faculty from SCE, PCE, Portugal and UK published 2 books title *Happiness and Wellbeing Centre framework* and *Happiness and Wellbeing Centre Training Manual (Coursepack)*.

DRER published a book titled *Reaching New Height through Policy Research and Practice* which comprises of research findings of 4 projects funded by Research Endowment Fund 2020. A team of faculty from CNR contributed a book chapter titled *Political Ecology of Environmental Conservation: A Case of the Bhutan Himalaya*, in a book titled *Sustainable Natural Resource Management in the Himalayan Region: Livelihood and Climate Change* published by Nova publishers.

The details of books and book chapters published are presented in Table 19 and 20.

Table 19 Books Published

Sl#	Books				
	Book Title	Author(s)	Publisher	Year	College
1	ལྷ་སྐྱེའི་བརྗེ་རྒྱུ་མཁོ་བཤེས་པའི་ལོ་རྒྱུས་ལ་བཟུང་གསལ་ཞུ་བའི་ལོ་མཆོག།	Kelzang Dorji	BHRC	2021	CLCS
2	Historical Background of Naktschang in Bhutan	Student, CLCS	Hard copy	2020	CLCS
3	Business and Entrepreneurship Text, Class-XI	Tenzin Rabgay, Kinley Yangdon	Royal Education Council	2020	GCBS
4	Economics Text for Class-10	Rinchen Dorji	Royal Education Council	2020	GCBS
5	Happiness and Wellbeing Centre framework	Dorji Thinley Rinchen Dorji, Sangay Dorji, Khandu Dorji, Karma Nidup, Pema Latsho, Dechen Wangda, Dechen Wangmo, Karma Gayphel Eva, VUB Belgium Katrien, VUB Belgium Francisco, Portugal Matthew Schuelka, UK Mollie, UK Matthew, UK	Happiness and Wellbeing Project	2020	PCE & SCE
6	Implications of Promoting Class X Student to Class XI Without a Cut-off Point in Bhutanese Schools: Stakeholders' Perspectives	Yangdon, Karma Utha, Choeda, Sonam Daker and Chenga Dorji	RUB, DRER	2020	SCE

7	Technical Report: Hydrograph Separation Using Geochemical and Isotopic Chemistry to Evaluate Glacier Melt Contributions to the Paa Chhu (River), Bhutan	Tshewang Dendup, Dechen Wangdi, Dendup Tshering, Phuntsho Tshering, Tshering Tashi, Tshering Duba	National Center for Hydrology and Meteorology (NCHM)	2021	Sherubtse College
8	Reaching New Height Through Policy Research and Practice	Faculty, YCC		2020	Sherubtse College
9	Virtual International Conference abstract published	Faculty, YCC		2021	Sherubtse College
10	Bhutan Himalayan Climate Studies Science Dialogue Series I: Bhutan as a Biodiversity Wonder in the Himalayas	Proceeding of the National Conference Bhutan Himalayan Climate Studies Science Dialogue Series I	IGNHaS, DRER	2021	DRER, OVC
11	Reaching New Heights through Research and Policy Practices	Research Endowment Fund Awardee's research papers	IGNHaS, DRER	2020	DRER, OVC
12	Guidelines for international staff and students visiting the Royal University of Bhutan	External Relation Division, DRER	External Relation Division, DRER	2021	DRER, OVC
13	State of Research and Institutional Linkages 2019-2020	DRER	IGNHaS, DRER	2021	DRER, OVC

Table 20 Title of Book Chapters published

Book Chapters					
Sl#	Book Chapter Title	Book Title	Author(s)	Publisher	College
1	Watershed Conservation for Ecosystem Services and its Implication for Green Growth Policies in the Context of Global Environmental Change: A Case of Bhutan.		Katel, O., Gurung, D. B., Harada, K. and Schmidt-Vogt, D.	Springer publications.	CNR
2	Political Ecology of Environmental Conservation: A Case of the Bhutan Himalaya. In Book: Sustainable Natural Resource Management in the Himalayan Region: Livelihood and Climate Change.		Katel, O. and Schmidt-Vogt, D.	Nova Publishers.	CNR
3	Knowledge and Public Perception toward Conservation of Bats in Bhutan.		Tshering, S.	Nova Publishers	CNR
4	Assessment of Water Resources with Reference to Mountain Aquifers and Spring Hydrology in Bhutan. Sustainable Natural Resource Management in the Himalayan Region: Livelihood and Climate Change		Jambay	Nova Publishers	CNR
5	Water Resource Management in Bhutan. Sustainable Natural Resource Management in the Himalayan Region: Livelihood and Climate Change		Dorji, U	Nova Publishers	CNR
6	Vulnerability of Local Communities to Climate-Related Disasters in the Himalayan Region. Sustainable Natural Resource Management in the Himalayan Region: Livelihood and Climate Change.		Dahal, Y.	Nova Publishers	CNR

7	Sustainable Land Management Practices in Bhutan. Sustainable Natural Resource Management in the Himalayan Region: Livelihood and Climate Change.		Gurung T.	Nova Publishers.	CNR
8	Estimation of Carbon Stocks in Bhutanese Forests. Sustainable Natural Resource Management in the Himalayan Region: Livelihood and Climate Change.		Suberi, B.	Nova Publishers	CNR
9	The impact of class participation on the performance of students		Lhamo, P., & Pradhan, M		CNR
10	Bridging Gender Gap in Bhutan: Civil Society Response.		Rinzin, P.	Palgrave MacMillan	CNR
11	Evaluation of In-situ Thermal Performance of School Buildings in Cold Climate of Bhutan and Possible Intervention to Improve Thermal Performance. Practice, Thimphu, iGHNaS	Reaching new heights through policy research and practice.	Tshewang Lhendup, Roshan Chhetri, Cheku Dorji2 and Namgay Tenzin2 (2020).	Institute of Gross National Happiness Studies (iGNHaS)	CST
12	Analysis of Heating and Cooling Demand of School Building.	Springer Proceedings in Energy	Tshewang Lhendup	Springer	CST
13	Evaluation of In-situ Thermal Performance of School Buildings in Cold Climate of Bhutan and Possible Intervention to Improve Thermal Performance	Reaching New Heights through policy research and practice	Tshewang Lhendup	Institute for GNH Studies	CST

14	Normalized Difference Vegetation Index analysis of Forest Cover Change Detection in Paro Dzongkhag, Bhutan,	Computers in Earth and Environmental Sciences, Elsevier, Artificial Intelligence and Advanced Technologies in Hazards and Risk Management	Sangey Pasang	Science Direct	CST
15	Landslide Susceptibility Mapping along the Thimphu-Phuentsholing Highway using Machine Learning	Computers in Earth and Environmental Sciences, Elsevier, Artificial Intelligence and Advanced Technologies in Hazards and Risk Management	Sangey Pasang	Science Direct	CST
16	"From Tship Chim to Pa Chim: Seismic Vulnerability and Strengthening of Bhutanese Vernacular building"	Masonry Construction in Active Seismic Regions (pp.253-288) Edition: 1, Chapter: 10	s	Elsevier	CST
17	The Impact of Knowledge Management on Organizational Performance: A Case of RUB Colleges	Reaching New Heights Through Policy Research and Practice	Tshering Lhamo, Kinley Yangdon, Kinley Wangchuk and Thinley Choden	iGHNaS	GCBS

18	Brand Preference of Soft Drinks in Coimbatore District	The "New Normal" in Management, Social Sciences, & Economic Development	P. Ramakrishnan		GCBS
19	Encouraging classroom participation: The effectiveness of students' preferred styles	Bhutan: Ways of Learning and Teaching	Khem Prasad Gautam and Kinga Wangpo	Creative Commons Non-Commercial, ShareAlike (CC BY-NC-SA)	GCBS
20	The Impact of Knowledge Management on Organizational Performance: A Case of RUB Colleges	Reaching New Heights Through Policy Research and Practice	Tshering Lhamo, Kinley Yangdon, Kinley Wangchuk and Thinley Choden	iGHNaS	GCBS
21	Brand Preference of Soft Drinks in Coimbatore District	The "New Normal" in Management, Social Sciences, & Economic Development	P. Ramakrishnan		GCBS
22	Encouraging classroom participation: The effectiveness of students' preferred styles	Bhutan: Ways of Learning and Teaching	Khem Prasad Gautam and Kinga Wangpo	Creative Commons Non-Commercial, ShareAlike (CC BY-NC-SA)	GCBS
23	Energy, Environment And Sustainability Nexus For Holistic Economic Development	Joy of Engineering and Management	Hemlal Bhattarai	Rock Pigeon Publication	GCBS

24	Role of Organic Farming for Sustainable Food Production in the Nearest Future	Vermicompost Technology and Sustainable Farming	Hemlal Bhattarai	NC Autonomous College, Jaipur, India	JNEC
25	Social Work in Bhutan: Challenging Orthodoxies with a New Social Work Course	Proceeding of the International Conference on Emerging Social Work Practices and Education	Ganeshman Gurung & Cathy Humphreys	SCE, RUB	JNEC
26	Dynamics of Power Relationship and Decision-Making Process in Employed Married Couples in Bhutan	Proceeding of the International Conference on Emerging Social Work Practices and Education	Tshering Dorji & Jacob Isary	SCE, RUB	SCE
27	Participants' Perceptions of the Effectiveness of the Certificate Course in Social Work Training – SCE Approach	Proceeding of the International Conference on Emerging Social Work Practices and Education	Ramesh Kumar Chhetri	SCE, RUB	SCE

7 Establishment of External Relations

7.1 Institutional Collaborations through Memorandum of Understanding

Entering into a Memorandum of Understanding (MoU) with an external partner strengthens its offer of academic and research services as it engages with its partner and there is the cross fertilization of ideas. Therefore, it is meaningful to have linkages with universities, institutions and organizations in a mutually beneficial and reciprocal system that looks at enhancing education and its instruments. In 2020-2021, the Royal University of Bhutan sought approval on eight Memorandum of Understandings for the following areas of collaboration as follows:

Table 21 New MoUs signed with external institutions in 2020-2021

Sl.	University	Focus of collaboration
1	Heriot-Watt University, UK	For CST, in engineering and physical sciences
2	Palacky University, Czech Republic	For RUB colleges, on Erasmus projects, student and staff exchange
3	Narusean University, Thailand	For CST, in engineering related cooperation
4	Sustainability Laboratory, US	For CNR, in sustainable systems
5	National Digital Library of India, India	For RUB colleges, on library set up

Table 22 MoUs renewed with external institutions in 2020-2021

Sl.	University	Focus of collaboration
1	Lund University, Sweden	For CST, in Erasmus cooperation
2	South Asian University, New Delhi, India	For RUB colleges, on capacity building, joint conferences, student and staff exchange
3	University College Leuven-Limburg, Belgium	For RUB colleges, in student and staff exchanges
4	University of Technology, Sydney, Australia	For RUB, in projects, climate change programmes

A review of the MoUs signed and renewed in 2020-2021 show that CST has been proactive in engaging with external partners through formal negotiations. Four, out of the nine cooperation with European partners is due to the increasing nature of our engagement with the European universities on different Erasmus projects. The engagement under Erasmus has helped RUB in the following ways: 1. avail study abroad opportunities for Bhutanese in European universities, 2. assisted Bhutanese faculty to teach in the European universities, and 3. engage in writing and applying for funding for projects and partnerships.

7.2 Institutional Linkages Through Other Means

Many of the linkages and activities initiated with external institutions are also carried out without a Memorandum of Understanding. Even during the pandemic, the colleges of RUB have carried out a number of international initiatives with external institutions around the world to enhance teaching-learning and research.

The following are a list of external linkages activities carried out between RUB colleges and external agencies:

Table 23 List of external linkages activities carried out between RUB colleges and external agencies

SI	Institution/ Country	Purpose/College	College
1	Universitat Politècnica de València, Spain	Erasmus mobility until 2022	CST
2	Palacky University, Czech Republic	Erasmus Key Action 1 from September 2020 to 31 July 2023 -2023. 2) Renewed Erasmus Agreement due to covid pandemic to 31 July 2021	RUB colleges
3	TEIN Cooperation Centre, South Korea	Erasmus-Ais@Connect TEIN e-learning project with CST	CST
4	National University of Management, Cambodia	Erasmus with GCBS- 'Master's programme in Family Business Management'	GCBS

5	Tata Institute of Social Sciences (TISS)	IRDC project for SCE	SCE
6	Ibrahim Badamasi Babangida University of Nigeria	IRDC project for SCE	SCE
7	The Open University of Tanzania	IRDC project for SCE	SCE
8	UNESCO, New Delhi	IRDC project for SCE	SCE
9	University of Sydney, Australia,	BHS website development and content creation and Bhutan Himalayan Climate Studies Dialogue on the theme 'Bhutan as a Biodiversity Wonder in the Himalayas'	DRER
10	Macquarie University, Australia,	Bhutan Himalayan Climate Studies Dialogue on the theme 'Bhutan as a Biodiversity Wonder in the Himalayas'	DRER
11	James Cook University, Australia	Bhutan Himalayan Climate Studies Dialogue on the theme 'Bhutan as a Biodiversity Wonder in the Himalayas'	DRER
12	University of Technology, Sydney, Australia	Renew partnership on Transdisciplinary Research and TD Phd in Climate Change	DRER
13	UCLL, Belgium	Mobility partnerships	RUB colleges
14	DAAD Office, New Delhi	Partnership in 'Comprehensive Internationalisation-Developing International Strategies for Academic Institutions of South Asia	DRER
15	ICIMOD, Nepal	To update RUB profile on HUC website	DRER and CST

16	Vrije University Amsterdam, Netherlands (lead programme country)	Qualitative Research in Higher Education Teaching APProaches for sustainabilitY and well-being in Bhutan. Erasmus+ KA2 project 'HAPPY'	RUB colleges
17	Leiden University, Netherlands	Qualitative Research in Higher Education Teaching APProaches for sustainabilitY and well-being in Bhutan	RUB colleges
18	University of Ljubljana, Slovenia	Qualitative Research in Higher Education Teaching APProaches for sustainability and well-being in Bhutan	RUB colleges
19	Global Center of Spatial Methods for Urban Sustainability (*GCSMUS), Germany,	seeking contribution from RUB on one of the 17 topics to get RUB's perspective	RUB colleges
20	USAK University, Turkey	GCBS-Erasmus Mobility	GCBS
21	Constantine University in Nitra, Slovakia	Sherubtse - Erasmus	Sherubtse College
22	Ovidius University, Romania	Sherubtse- Erasmus	Sherubtse College
23	University of Vienna, Austria	Erasmus 'APPEAR' Project	SCE & PCE
24	Bangladesh (as lead), Bhutan, Nepal, Timor Leste, and Vietnam	SCE-The Impact of Gender and Inclusive Pedagogies on Student Participation and Learning Achievement and the Secondary School during the Pandemic and Beyond.	SCE
25	University of Tuscia (UNITUS), Italy	JNEC and CNR's Erasmus mobility	JNEC & CNR
26	Ho Chi Minh City University of Technology (HCMUT), Vietnam	To sign Education Programme Contract	CST
27	University of Alicante, Spain	ENCORE project	GCBS
28	Haaga-Helia University, Helsinki, Finland	ENCORE project	GCBS

29	Tribhuvan University, Nepal	ENCORE project	GCBS
30	Souphanouvong University, Laos	ENCORE project	GCBS
31	National University of Laos	ENCORE project	GCBS
32	Global College International, Nepal	ENCORE project	GCBS



Figure 11 International Relations with Asian and Australian Universities/ Institution during 2020-2021

8 Diversification of Revenue Streams

In 2020-2021, with the borders of Bhutan sealed to international travellers, the University has not been able to facilitate the study abroad programmes and generate revenue through provision of such services. As study abroad programmes is one of the many avenues through which the University can generate some revenue through its offer of services, and in its absence, and with the on-going pandemic with a lot of uncertainties for the tertiary education, the University will have to intensify its efforts to find alternative revenue streams.

9 Ensuring Quality Services

9.1 Ensure Quality of Administrative Service

9.1.1 RDC Meetings

The Research Degree Committee Meeting was conducted as per the Governance manual. The HDR division in the capacity of the RDC Secretariat convened three RDC meetings during the FY2020-2021. The meeting convened were the 4th RDC, 5th RDC, and 6th RDC meetings during which series of agendas related to the administration and monitoring of the higher degree research degrees in the University were discussed.

Some of the notable agendas from the meeting are the launching of a Ph.D. in Climate Studies, a Ph.D. in Anthropology, and an MSc in Conservation Biology. Besides it, the meeting also reviewed the existing MSc NRM programme.

9.1.2 Research and Innovation Committee (RIC) meeting conducted

The DRER is Secretariat to the standing committee of the Academic Board through the Research and Innovation Committee (RIC). The Secretariat was able to convene four rounds of RIC meetings. Some of the major decisions taken for endorsement by the AB Meeting as apprised through each RIC Meeting are reflected in Table 24.

Table 24 RIC meeting scheduled during 2020-2021

Sl.	RIC Meeting	Date	Endorsement
1	31 st RIC meeting	2 nd October 2020	Approved the establishment of Centre for Innovation in Educational Practice and Research (CIEPR) at Samtse College of Education
2	32 nd RIC meeting	25 th December 2020	Approved the renewal of: • MoU of RUB with South Asian University, Delhi, India • MoU of RUB with University of Technology Sydney, Australia • MoU of RUB with University Colleges Leuven-Limburg (UCLL), Belgium

3	33 rd RIC meeting	23 rd March 2021	Reviewed and provided recommendations to enhance the website of <i>Bhutan Himalayan Climate Studies</i>
4	34 th RIC meeting	8 th June 2021	Reviewed and approved 15 Research Centres with recommendations

9.1.3 ACDRIL Meeting

The Annual Conference for Dean of Research and Industrial Linkages (ACDRIL) was established to share best practices of research and development activities that are carried out by each college. It also builds the management capacity of research staff in facilitating research and international collaboration activities in accordance with existing government rules and regulations. The 7th ACDRIL was convened online using BigBlueButton on 21st December 2020. Nineteen participants from the DRER, DRIL, and Assistant Research Officers from colleges attended the daylong conference organized by the DRER. Various research agendas ranging from follow up activities; challenges of COVID-19 in managing and implementing research activities such as international collaborations; study abroad programmes; conducting field studies; university-wide sponsored research to college-sponsored research fund; and, protocols for project collaborations as per government directives; were discussed and recommended to relevant committees. The ACDRIL is a useful platform for research managers to come together to clarify issues on regulations, structure, and implementation of research and the internationalization of RUB.

9.2 Development of SOP and TAT

In order to offer our services in a more competent manner, the divisions with the University have to develop standard operating procedures (SOP) and turn-around-time (TAT) for research and external relations for implementation. Likewise, the DRER is mandated to improve its services through the Strategic Plan of the department with regular review of its existing guidelines and regulations to enhance both research and external services.

The Research and Development Division aims to be as conducive as possible for all researchers to carry out their activities. The division administers and implements policies and plans for conducting and developing research activities within RUB faculties.

Reviewed report of Research Degree Framework 2015 at the beginning of the year 2020 was formally endorsed by the Research Degree Committee in October 2020 and the University Strategic Response Committee (USRC) in November 2020 which was enforced both for review and validation of the higher degree research (HDR) programmes.

9.3 Utilization of University-wide Sponsored Research

Table 25 Number of AURG applications received and awarded in different categories

Sl.	Research Categories	Nos. of Application Received	Nos. of Grant Awarded
1	Beginning Researchers	29	17
2	Mid-Career Researcher	18	8
3	Advanced Career Researcher	9	3
4	Learning Teaching and Assessment	5	3
	Total	61	31

Of the 61 proposals received, 31 were selected in various categories as presented in *Table 26 AURG awards for FY 2020-2021*

Category: Beginning Faculty Researcher

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11	CLCS	Sexism in Dzongkha Language: an Explorative Study on Inherent Linguistic Bias against Women; Exploring Cultural Nuances and Gender Bias	Tshering Yangki
12	GCBS	Contribution of Self-Compassion to Positive Mental Health of Undergraduate Students of Royal University of Bhutan	Sonam Dema
13	GCBS	The Influence of Peer Assessment on Students' Group Performance and Cohesiveness	Khem Prasad Gautam
14	CST	3D visualization of heritage site using high resolution drone image in Bhutan	Sonam Chuki
15	CNR	Production Efficiency of Winter Chili Value Chain in Sarpang District	Tashi Dorji
16	CST	Identification of appropriate Drone technology and application areas for Agri-culture automation in Bhutan	Manoj Chhetri
17	GCBS	Reflective Practices in Teaching: A study on faculties of RUB Colleges.	Kinga Wangpo
18	CST	Evaluation of cause of geological hazards and possible mitigating solutions for the Damchu-bypass landslide area.	Tshering Dendup
Category: Mid-Career Researcher			
SI	College	Title	Lead Investigator
1	CLCS	ཕྱི་ཁྱིམ་འཛིགས་མེད་རྒྱུ་ལྟུང་གི་མཐོན་གཞིར་འོན་ཀྱང་གི་མ་གྲིས་ཀྱི་དྲུག་ལམ་ལྟུག་ཅུ་པ་ལུ་ཡོད་མི་འདི་མཉམ་དགོང་ལི་རྒྱུ་ལྟུང་ཞིབ་འཇུག།	འག་དབང་རྒྱ་མཚོ།
2	CST	Urban temperature variability and Heat Island assessment: A Case Study in Phuentsholing	Sangey Pasang
3	SCE	Opportunities and challenges of STEM education in Bhutan: Stakeholders' perspectives.	Reeta Rai
4	CST	Vulnerability assessment of network with pen testing	Kezang Dema
5	PCE	Exploring science teachers' efficacy beliefs and practices in implementing STEM education in Bhutan.	Som Gurung

6	GCBS	Students Perception of Teacher Talk Time and its Impact on their Academic Achievement	Phub Dorji
7	JNEC	Examining the Influence of University Teachers' Qualification and Experience on Students' Academic Achievement in Mathematics	Sonam Gyeltshen
8	CST	Cost Benefit Analysis of the Use of Solar Water heating System in Students Mess Among Member Colleges of Royal University of Bhutan.	Gom Dorji
Category: Advance Career Researcher			
SI	College	Title	Lead Investigator
1	SCE	Student's perception of the relationship between the teacher's interpersonal behaviour and their motivation for learning in the Higher Secondary Schools of Bhutan.	Ramesh Kumar Chettri
2	SCE	Opportunities and Challenges of Online Teaching: An Exploratory Study of the Implementation of Online Teaching in the Colleges of the Royal University of Bhutan	Kinley Seden
3	GCBS	A Digital Banking Pathway to Financial Inclusion: Evidence from Selected Dzongkhags in Bhutan	Purna Prasad Sharma
4	CLCS	ཤེས་སྒྲིག་པ་དང་གློ་བུ་ལྷན་པའི་སྒྲིག་འཛུགས་ལྷན་ཁག་གི་ལས་འགན་ལུ་སྒྲིག་གི་བློ་བྱ་	པོ་ལྷ་མཚོ་ལྷ་མོ།
5	CST	Exploration of Groundwater potential zones for irrigation water source in Gelephu area (Pelrithang) using seismic refraction Tomography (SRT) and Geographical Information System	Leki Dorji
6	CST	Performance Analysis of Low Voltage (LV) Distribution System and Possible Interventions to Reduce Power Loss and Improve Reliability	Roshan Chhetri
7	GCBS	A Study on the Challenges of Insurance Sectors: A Case of Insurance Companies (RICBL and BIL) in Bhutan	Elangbam Haridev Singh

8	PCE	Student teachers' Perceptions on online teaching and learning	Rinchen Tshewang
9	CST	Design of off-grid photovoltaic energy supply for remote villages and monasteries focusing on user awareness and acceptance	Martin Elborg
Category: Learning Teaching and Assessment			
Sl.	College	Title	Lead Researcher
1	SCE	Effectiveness of Group Work Assignment: Perceptions of Students and Academics of the Royal University of Bhutan	Karma Utha
2	SCE	Teaching through Place-based Education: An investigation of the implementation of place-based education and its relationship with Educating for GNH at the Samtse College of Education.	Nandu Giri
3	OVC	Effectiveness of Blended Learning at Royal University of Bhutan	Sonam Penjor

9.3.1 Publication of Annual Report

In addition to the annual progress report submitted to the Department of Planning and Resources for the annual publication of the RUB Annual Report, the DRER also publishes a comprehensive annual report of research and external relations activities of the University after compiling reports from all the colleges. While this initiative has been launched for the last five years, in each year, the publication of DRER annual report titled “State of Research and Institutional Linkages”, has improved significantly in terms of its content, structure, and validity of data.

9.3.2 Operation of the Research Endowment Fund

Receiving dedicated funding for research from the government is a challenge for the University. However, the Government created a Research Endowment Fund (REF) for which the University is the interim secretariat. The REF has benefited RUB in supporting topical research concerns of the country. As shown in Table 27, during this fiscal year, a total of Nu. 0.965 Million was spent to award 7 projects.

REF shall be released to award recipients in three installments as 60 % of total fund on acceptance of award letter 30 % of total fund on submission of mid-term progress report 10% of total fund on submission of completion progress report. REF will award a minimum of Nu. 150,000 per project to a maximum of Nu. 300,000 per project. REF will support a minimum of three projects to a maximum of five projects per annum

Table 27 List of Projects supported by Research Endowment Fund during 2020-2021

Sl. No	Project title	Award amount (Nu)
1	སློབ་ཕྱག་ཚུ་ལུ་ གཡུལ་གྱི་དག་གཞིམ་ལས་བརྟེན་ནི་ རྫོང་ཁའི་རྫོང་ རྫོང་ལུ་ བྱད་པར་བརྟེན་གྱི་བཤུ་	100,000.00/-
2	Play as a Teaching Strategy for Early Learning and Development in Bhutanese Primary Schools	115,000.00/-

3	Bayesian Multiple Membership Multiple Classification Logistic Regression Model on Student Performance with Random Effects in Colleges and Programmes in Royal University of Bhutan	115,000.00/-
4	Effectiveness of online teaching and learning on students' academic performance (COVID 19 pandemic): A Case Study from RUB perspective	130,000.00/-
5	Transforming STEM Education to IoT STEM AI: Reaching Emerging Technologies to Grass-roots	130,000.00/-
6	Effectiveness of the Virtual Learning Environment (VLE) for online teaching, learning, and assessment: Perspectives of Academics and Students of the Royal University of Bhutan	200,000.00/-
7	Pay Raise for Teachers in Bhutan: Impacts on Teachers' Morale, Motivation and Professional Practices	175,000.00/-
Total Fund utilized		Nu.965,000.00/-

10 Community Services

10.1 Technical committee and memberships to external agencies

The DRER continues to sit on many decision making bodies of the University during the Academic Board (AB); Academic Planning and Resource Committee (APRC); Programme Quality Committee (PQC); University Human Resource Committee (UHRC); Academic Selection Committee (ASC); University Executive Forums (UEF) besides two other University committees facilitated by the DRER, namely, the Research and Innovation Committee (RIC) and Research Degree Committee (RDC).

In order to enhance collaborations and coordination across colleges, DRER initiated to institute three technical advisory bodies in the university namely Advisory Committee for Food Security, Youth Engagement, and Water Infrastructures and Technology. These committees comprise faculty experienced in reviewing government policies and guidelines. The committee acts as an advisory team to provide advice by discussing,

debating, and deducing solutions within and across peer groups. Each group is expected to produce policy briefs that can be presented to the executives in the bureaucracy, legislative bodies in the parliament, non-academics public and media fraternities.

This fiscal year a minimum of three rounds of advisory committee meetings were convened in reviewing the existing policies, regulations, and guidelines, and policy briefs are being drafted by the committees.

10.2 Review of Policy documents, reports, and guidelines

Notable research works of the University in impacting actual policy and practices are:

- Reviewed and commented on the proposal document to develop a blueprint for the establishment of the Bhutan Water Agency in Bhutan
- Reviewed 8 research protocols as a technical member of Research Ethics Board of Health, Ministry of Health
- RUB has to implement partner to the National Adaptation Readiness Plan project led by National Environment Commission Secretariat, a document titled 'A roadmap and strategy for strengthening climate change research in Bhutan 2021-2020' was published in October 2020

11 Way forward

Despite the numerous challenges of conducting research activities in the University, RUB continues to tackle issues head-on. The Office of the Registrar noted the struggle of academics to balance the workload of teaching and research. Reviews are ongoing to synchronize the various policies such as Zhib'tshol: RUB Research Policies 2014 with RUB Human Resources Rules and Regulations 2017. University is also addressing the need for recognition of time and effort taken by the academics to manage Research Centres, international collaboration, mobility, publish quality journals, apply and implement research grants, and so on.

The DRER as the central agency to promote research and external relations in RUB strives to fulfill its mandate to create a conducive environment to conduct research. The State of Research and Institutional Linkages report will be published annually to recognize and report all good work done. The next report will be based on the revised research strategic plan. The Department also plans to develop an online research repository system of research data and information to make it accessible for all and it will also make the monitoring and reporting system easier and quicker. DRER has improved the university-wide research grant guidelines by increasing the research award number as well as research grant amount.

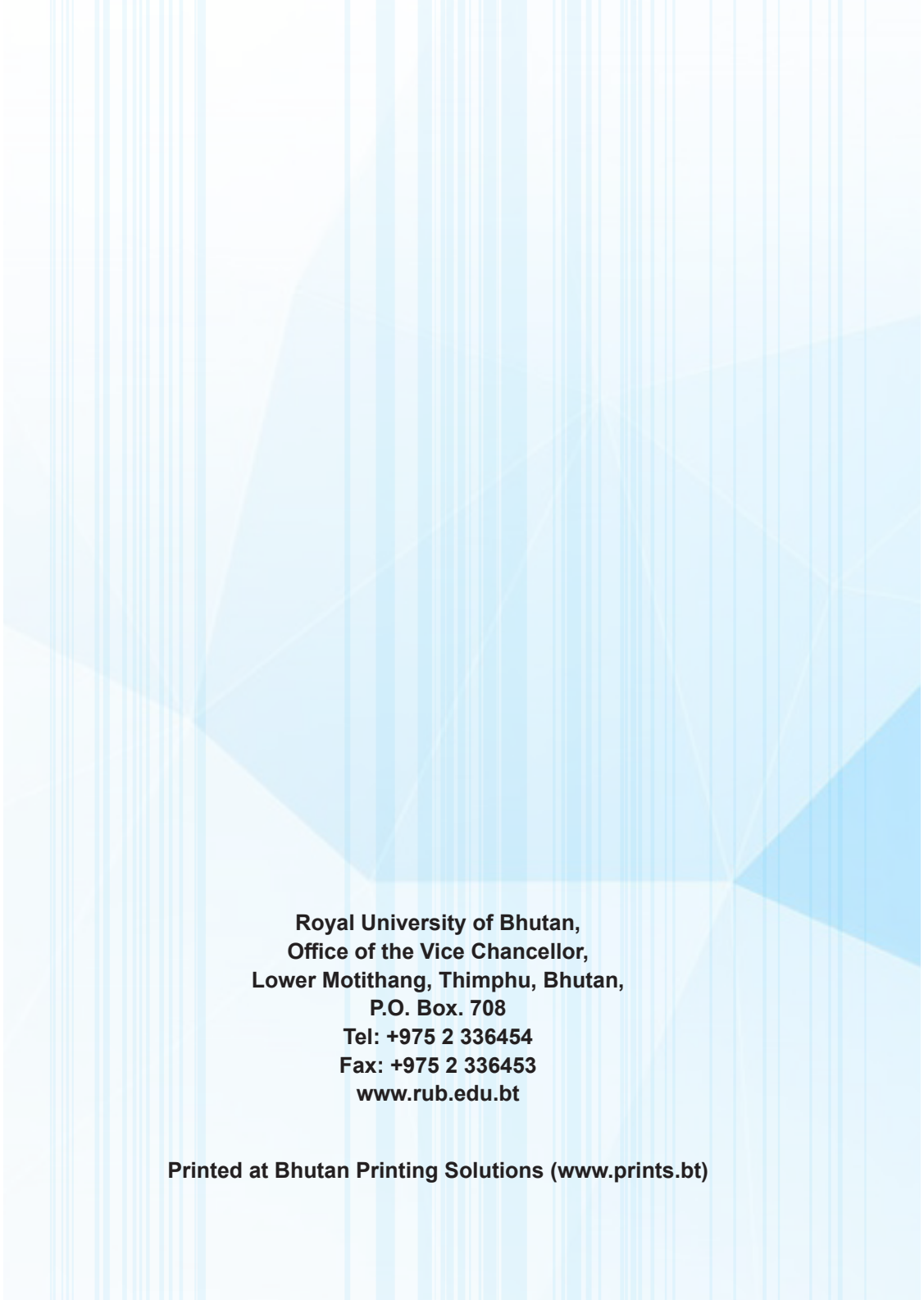
The DRER, honouring the University's philosophy and vision to be 'an internationally recognized University steeped in GNH values,' and as a department mandated to enhance research and linkages, will have to ensure to integrate global teaching-learning and research in our curriculum and institution, and network with international partners to enhance these experiences.

As the future direction of the University is and has always been, the preparation of competent students relevant to the markets in the country and beyond, the Department as the coordinating agency and structure within the University has to provide leadership and adherence to the vision of internationalization.

The Department will have to work closely with agencies within the country mandated to look after international partnerships and foreign policies; promote and brand the University's internalization efforts through research, study abroad programmes, international conferences and seminars; and, promote and publicize initiatives that foster new ideas.

With the complexities posed by the COVID-19 pandemic, its repercussions have put internalization mobilities within the University to a complete halt. There have to be concerted efforts to address these issues, and discussions to ensure the internationalization efforts of the University are supported by Government policies and regulations, even beyond the pandemic.

“Reaching New Heights”



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