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Integrating education with consumer behaviour relevant to energy efficiency and climate change at the Universities of Russia, Sri Lanka and Bangladesh (BECK)

Partner report on current state of higher education and its relationship with consumers' behaviour on energy efficiency and climate change

ALL PARTNERS' REPORT

Co-funded by the
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1 INTRODUCTION

The purpose of this series of country reports is to obtain general philosophical, pedagogical and practical understanding on the status of higher education and its impact on consumer behaviour relevant to energy efficiency and climate change in BECK partner and European partner countries. It will also provide a basis for understanding and evaluating the capabilities of partner institutions on integrated education for energy efficiency and climate change. The results of these reports will inform a capacity building framework, which will form the basis for development of modules on energy efficiency and climate change during the BECK project.

The reporting approach is based on the Capacity Needs Assessment Methodology (CAPNAM) proposed by the United Nations (2013).

The report includes chapters on the following:

- Methodology. This section describes the methodological approach used to collect and analyse the data that informs the findings presented in this report.
- Context. Provides an overview of the regulatory, socio-political, and cultural factors that shape policy on the consumer behaviour relevant to energy efficiency and climate change in the country in general, and education in particular.
- Scope and coverage of education policies on consumer behaviour relevant to energy efficiency and climate change by the Higher Education Institution (HEI). Examines the illustrative policy and planning issues relevant to integrated education on consumer behaviour relevant to energy efficiency and climate change.
- Description of capacity types. Evaluates the existing state of capacities of HEI in the field of integrated education on consumer behaviour relevant to energy efficiency and climate change. As defined by the CAPNAM analytical framework, the four types of categories are institutional, organizational, individual, and the knowledge base.

2 Methodology

Please describe the methodological approach used to collect and analyse the data that informs the findings presented in this report. For example, this may include focus groups, interviews, document reviews and literature reviews.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Different methodological approaches were used to collect and analyze data for this report. However, the main data was obtained from surveys conducted (institution level) and analysis of regulatory documents and literature (country level). The method used is based on identefication of existing key capacities and additional capacities to be developed to reach objectives. By means of desired capacities analysis against existing capacities an understanding of capacity assets and needs was ahcieved. This was used as input for formulating a capacity development response that addressed institutional capacities that could be strengthened and existing capacities that are already strong and can be optimized. 1. The data about the institution capacities was obtained by means of a full-scale survey. No less then 95 % of academic staff and students took part in the survey. The data obtained by means of the survey is mainly included in the chapter 5 of this report. The method used to develop the questionarie was based on several fundamental principles: 1)Only the most important questions are included 2)Questions are of maximum shortness and simplicity 3)Questions are asked in a direct way 4)Only one question is asked at a time 5)No leading or biased questions are included 6)Response scales are used whenever possible 7)Minimum grids or matrices are used for responses 8)Yes/no questions are rephrased if possible 2. Regulatory documents and literature analysis was conducted to reveal current state and modern trends in consumer behavior relevant to energy efficiency and climate change in Russian Federation. All documents were analyzed based on standard 5-step methodology: review of the objective, organization of the information, decidsion	•Workshops and focus groups were organized in frames of the ASCENT project meeting (14-01-2019) in Colombo, attended by 18 participants, and the BECK kick-off meeting (28-02-2019 – 01-03-2019) in Colombo, attended by 38 participants. Needs, gaps and possibilities for common curricula development identified. •An extensive literature review was conducted to gather information on education system, education policies, educationalgaps and needs, staff trainings, curriculum development which are the required/ identified informations based on the Capacity Needs Assessment Methodology (CAPNAM) proposed by the United Nations (2013) in levels of country, organizational and individual. •Based on the requirements for the report, many web sites were referred including websites which are belonged to government ministries, different universities, University grant commission, non-government organizations etc. •Interviews and rounded table disscussions were conducted in the institutional level according to requirements of informations for the report and academic staff (including professors, senior lectures, lectures), nonacademic staffs (including deputy registers, senior assistant registers academics/examination, scientific assistants, industrial placement officers, derectors of units),technical staff (including research assistants, demonstrators, technical staff) and students were interevied through the process. •The collected informations were used to develop the report by the reporting committee with the consultants who are engaged with the project.

	how to analyze information, analysis of the information, integration of the information. The core documents used are given in the text of this report as references	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
This report is based on the results of the research conducted by the Faculty of Economics. The sources of data collected included series of expert interview with university management team and representatives of the Ministry of Higher Education and Science of the Russian Federation. Desk-research was based on the regulatory documentation including the Law on the Higher Education, Federal Standards of Higher Education, Strategy for Energy Saving in Russian Federation, National Project Program "Ecology" and UN Development Goals.		With the intention of gathering data for the report, a number of tools were utilized by the partner institution. This included a mixed method where both primary and secondary data were gathered. As primary data, structured interviews were carried out with varied individuals such as academics, field experts and administrative personnel capturing both the academic and administrative strands of the institution. When focusing on the academic staff interviewed, this included experts in the fields of energy efficiency, consumer behavior and climatic change of the different faculties of the institution including the Faculty of Arts, Faculty of Science and the Faculty of Management. In addition, administrative personnel were interviewed from the International office of the University of Colombo, Academic and Publications branch and the Virtual Campus. The total number of interviewees was ten staff members of the institution. In addition, data was also gathered through secondary sources through documentary reviews and literature reviews of university records, statistics, funding criterion, websites related to ministries, etc.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
No	Annual Report of the year 2017 of University of Moratuwa was used to find out total students, staffs and study programmes. An online questionnaire was distributed among 415 faculty members of University of Moratuwa, Sri Lanka which, include 100 academic staff of Faculty of Architecture, 15 academic staff of Faculty of Business, 270 academic staff of Faculty of Engineering and 30 academic staff of Faculty of Information Technology. Further, the research will be extended to study the curriculum of all faculties while conducting structured interviews to find out how academic staff has integrated consumer behaviour relevant to energy efficiency and climate change in their modules.	

	In addition, a thorough literature survey will be conducted to analyse the current policies relating to energy efficiency and climate change in Sri Lankan context.

3 CONTEXT

This section provides an overview of the regulatory, socio-political, and cultural factors that shape policy on the consumer behaviour relevant to energy efficiency and climate change in the country in general, and the education in particular. Please answer following questions.

3.1 Socio-political and cultural context

What are the socio-political and cultural contexts providing the framework for educational policy planning in the field of consumer behaviour relevant to energy efficiency and climate change in the country? Are there any regulations, plans, etc.?

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Climatologists warn that if the atmosphere average temperature rises by more than 2 ° C compared to the pre-industrial level, global warming will be out of control and the economic, social, political and cultural consequences of climate change will be difficultly imaginable [1-2]. To prevent this process, natural resources consumption system should be refashioned first using new technologies to produce electricity based on renewable energy sources and energy consumption models. The Russian Federation has one of the highest potentials of renewable energy sources in the world. The country has everything necessary to increase energy efficiency and reduce the cost of clean energy production [3]. Federal Law N 261-FL, 23.11.2009 govern the relations on energy efficiency and energy saving in the Russian Federation [4]. The purpose of the Federal Law is to create legal, economic and organizational basis for promoting energy saving and energy efficiency. The behavior of consumers related to energy efficiency and climate change in more detail is considered in the following subprograms: “Energy Saving and Energy Efficiency” and “Development of Renewable Energy Sources” of the State Program of the Russian Federation “Energy Efficiency and Energy Development” [5]. However, there is no document similar to the EU Directive (2006/32 / EC) “On the efficiency of energy end-use and energy services” in Russia [6]. Considering this [6,7], we can distinguish the following socio-political and cultural provisions, which can provide a basis for planning educational policies	Sri Lanka enjoys a remarkable progress, in terms of basic education indicators, compared to many other developing countries in the world. Education is generally state-funded and it is free to all from Kindergarten up to the University education (Liyanage, 2014).In the national constitution, it states that everybody has an equal right to access all levels of education. It helps topromote democracy, moral, physical and spiritual aspects , and engage with lifelong learning. Sametime It also helps to develop deeper understanding of the environment, culture and rich religious heritages of Sri Lanka. Accordingly skills necessarytomeet thecountry’s needs ismet bytheFreeEducation(www.justlanded.com, 2019). Currently Sri Lanka has a literacy rate of 92%. This is higher thanelsewhere in South Asia. Education is regulated by the ministries devoted to National Ministry of Education for Primary and Secondaryschools and the ministry of Higher Education for Universitiy Education(www.justlanded.com, 2019). Sri Lanka is fully committed on mitigation strategies to reduce global worming, to reduce disasters and ratified the United Nations Framework Convention on Climate Change (UNFCCC) in November 1993(Silva, 2009). Over the last two decades Sri Lankamadea significant contribution towards the improvement of national policy and strengthening of legal and institutional capabilities to implementat undertakings and obligations. As an action Sri Lanka

	in the area of consumer behavior related to energy efficiency and climate change: 1)the strategy of ecological culture development among Russian Federation population to ensure the sustainable development of the country; 2)sustainable environmental management as the way to solving acute economic and socio-political problems; 3)ethics in energy efficiency issues: rejection of corruption, voluntary energy audit, public standards; 4)energy saving culture priority for sustainable development.	established a Climate Change Secretariat under the Ministry of Mahaweli Development and Environment. A national Climate Change Policy has been adopted in 2012 adopted (Ministry of Mahaweli Development and Environment, 2016). A National Adaptation Plan for Climate Impacts in Sri Lanka 2016-2025 was draftedto"mainstream climate change issues within the overall national effort towards sustainable development, to create the conditions necessary to overcome the existing major gaps(Athula Senaratne and Perera, 2017). The issues pertaining to the country's vulnerability to climate change, multifaceted issues of climate change on the society, and capacitybuilding to make prudent choices in decision making are looked after by this plan. Public awareness on conservation and sustainable use of resources to mobilize commitment and participation of all stakeholders are looked after by the plan.(Ministry of Environment & Natural Resources, 2007). The National Council for Sustainable Development was formed in 2009 under the chairmanship of the HE the President of Sri Lanka to provide leadership and guidance for sustainable development(National Council for Sustainable Development, 2009). The Council is responsible to produce an integrated policy, for overseeing and guiding the implementation.The development of education to address climate change, as an objectivefor national climate change policy to enhance knowledge on the multifaceted issues related to climate change in the society is much in line with the capacity building for decision making to address the climate change issues effectively and efficiently(Climate Change Secretariat, 2012).. Achieving inclusive and quality education for all is one of the most powerful and proven vehicles for sustainable development(United Nation Development programme, 2019). The government's "Vision 2025" provides the overall vision and the Public Investment Program. The National Budget 2018 focuses on "Blue Green Economy" envisaged to create an eco-friendly environment(United Nations, 2019).The Sustainable Development Act enacted in October 2017 helps to formulate a national sustainable development policy and strategy. The President has appointed the Sustainable Development Council to implement the Act. The governmentalso adapted aprogram onmainstreaming SDGs into institutional plans. Among SDGs, Quality Education (Ensure inclusive and equitable quality education and promote lifelong learning

		opportunities for all), Climate action, Responsible consumption and production, Industry innovation and infrastructure, sustainable cities and communitiesare directly integrated with education to address the climate change. This helps Sri Lankan youth to be actively work as sustainable development lead to assist the country progress (UNDP Communications Unit, 2016). Sri Lanka has also developed the National Action Plan for the Haritha (Green) Lanka Program. This plan is the product of the concerted effort of all relevant ministries who actively participated indevelopment programs. Achieving sustainability rests on national efforts to a large extent. Under the National Action Plan following strategies / actions are taken toaddress the climate change by intergrading it with the education system. •Identify key subject areas in the curricula of all technical education courses to integrate sustainable production and consumption practices •Incorporate identified special subject areas in relation to the environmental education for sustainable development to the current syllabuses. •Take steps to ensure all educational institutions in the general education system to adher to predefined environmental safeguard policies and ascertain a learner friendly greener environment at the school. •Integrate physical, ecological and other environmental sensitive policies and practices within the school education system. •Expand and develop relevant education and awareness programs.(National Council for Sustainable Development, 2009)
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
The educational policy in the sphere of higher education in Russia is regulated by Federal Law of Education and Federal Educational Standards. There's a special Educational Standard designed for each of the subject area of Higher Education, qualifications and levels. For this report we analyzed Federal standards for Bachelor level program. It is important that the principles of consumer behavior relevant to energy efficiency and climate change were		In the Sri Lankan context, much emphasis is placed on the need to promote Energy Efficiency and reduce detrimental Climatic Change that mainly stem from socio-political and legal arenas. Many institutions have taken steps towards this endeavor with the assistance of the Sri Lankan government. At national level, the Sri Lankan government is a signatory of many treaties such as the United Nations Framework Convention on Climatic Change (UNFCC), Kyoto

introduced on bachelor level to make sure that most part of the students were covered as not all of them would continue education on Master level. The policy in Higher education in Russia provides framework for designing educational programs and curriculum using competence based approach. Each of the educational standard requires that program covers 3 groups of competences which should be developed during the education: generic competences, subject specific and program specific competences. The group of generic competence is the same for all specializations. However, they do not include competences, which are relevant to consumer behaviour relevant to energy efficiency and climate change. At the same time if we will take a look at the UN Development Goals which Russia committed to achieve, we may see the Goal # 13 – 'Take urgent action to combat climate change and its impacts – which includes eight indicators to evaluate the achievement of this goal. Unfortunately, Rosstat (The Agency on Statistics in Russian Federation) does not develop these indicators for Russian Federation and the data is not collected. Therefore, we can state that there's insufficient attention given from the Government. The third document which partly covers the consumer behaviour relevant to energy efficiency and climate change is a Strategy of Energy Saving of Russia until 2035 This Strategy includes blocs on education, however it is more focused on professional education in the Energy sector and mainly on the corporate education.		Protocol (1993-2002) and the Paris Agreement since 2016. With the support of the Ministry of Mahaweli Development and Environment, the country has launched Environmental circulars such as the 'Blue Green Beautiful Lanka Villages' according to Circular 02/2016 in collaboration with community organizations and movements such as the SANASA and Sarvodaya movements. This aims to achieve sustainable economic development, ensure environemntal sustainability, ensure social development and equality, and individual development. There have also been initiatives to improve energy efficinecy launched by the Ministry of Power to implement nationalwide porgrammes to expand solar energy. The programme aims to sensitize the public about conscious energy usage practices and have launched many campaigns to promote the inititaive. In addition, many policies have been implemented over the years to promote Energy Efficiency. For instance, the formulation of a National Climate Change Policy (NCCP) in collaboration with UNDP by the Ministry of Environment in 2012 recognizes the need of implementing strategies for climate change mitigation, technology transfer, financing and investment mechanism, education, training and awareness, monitoring, assessment and management of impact risks due to climate change through a new policy. The importance given by the National Climatic Change Policy to education, training and awareness no doubt influences the Educational Policy Framework already exisitng in the country. Moreover, the National Climate Change Adaptation Strategy implementedin Sri Lanka from the year 2011 to 2016 also attempted to provide solutions to Climate Change by focusing on stimulating stakeholder interest and setting up of initiatives to identify Climate Change risks and adaptation measures. In the year 2016, another inititaive named the 'Blue-Green Era' was launched in order to promote Sustainable Development through sustainable consumption and production. The blue was symbolic of the enhanced innovative approaches for sustainable growth in oceanic economy comprised of coastal and marine resources while the green was symbolic of the grren economy that would lead to urban and rural development. The pilot project was developed by the Ministry of Mahaweli Development and Environment in collaboration with the UNDP with the funding og the Global Environmental Facility and the Government of Sri Lanka for a period

		of five years. The project aimed to improve the country capacity to manage environmetally sensitive areas. Developing climate literacy was a key strategy of this initiative leading to efficient usage of energy and sustainable consumtpion practices. As part of this a conference on Sri Lankan NEXT: A Blue-Green Era was launched with the aim of bridging the gap between policy and practice. These intitaives adopted by the Sri Lankan government shapes the socio-political and cultural landscape in which eductaional policies are developed.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
It is recognized that Bangladesh is highly vulnerable to climate related disasters such as floods, droughts, tropical cyclones and storm surges, which are worsened due to global climate change. Moreover, Bangladesh is highly populated. Still, consumer behaviour relevant to energy efficiency and climate change related education, training, public awareness issues have not been received the attention in the socio-political and cultural context at the national level of Bangladesh. There are some Climate Change Action Plan of 10 years (2009-2018) in Bangladesh (Bangladesh Climate Change Strategy and Action Plan 2009), which is built on six pillars such as i) Food security, social protection and health; ii) Comprehensive disaster management; iii) Infrastructure; iv) Research and knowledge management; v) Mitigation and low carbon development; vi) Capacity building and institutional. However, in the consumer behaviour relevant to energy efficiency and climate have not been implemented in the educational policy making.	Climatologists warn that if the atmosphere average temperature rises by more than 2 ° C compared to the pre-industrial level, global warming will be out of control and the economic, social, political and cultural consequences of climate change will be difficultly imaginable [1-2]. To prevent this process, natural resources consumption system should be refashioned first using new technologies to produce electricity based on renewable energy sources and energy consumption models. The Russian Federation has one of the highest potentials of renewable energy sources in the world. The country has everything necessary to increase energy efficiency and reduce the cost of clean energy production [3]. Federal Law N 261-FL, 23.11.2009 govern the relations on energy efficiency and energy saving in the Russian Federation [4]. The purpose of the Federal Law is to create legal, economic and organizational basis for promoting energy saving and energy efficiency. The behavior of consumers related to energy efficiency and climate change in more detail is considered in the following subprograms: “Energy Saving and Energy Efficiency” and “Development of Renewable Energy Sources” of the State Program of the Russian Federation “Energy Efficiency and Energy Development” [5]. However, there is no document similar to the EU Directive (2006/32 / EC) “On the efficiency of energy end-use and energy services” in Russia [6]. Considering this [6,7], we can distinguish the following socio-political and cultural provisions, which can provide a basis for planning educational policies in the area of consumer behavior related to energy efficiency and climate change: 1) the strategy of ecological culture development among Russian Federation population to ensure the sustainable development of the country; 2) sustainable environmental management as the way to solving acute economic and socio-political problems; 3) ethics in energy efficiency issues: rejection of corruption, voluntary energy audit, public standards;	

	4) energy saving culture priority for sustainable development.

3.2 Status of education

What is the current state in education on consumer behaviour relevant to energy efficiency and climate change? Is it important at your country? Please specify.

01. VGTU, Lithuania.	02.(UoH), UK	03.(TalTech), Estonia.
04.(MGSU), Russia.	05.(KSTU), Russia.	06.(UoR), Sri Lanka.
	There is a significant lack of the information and materials on consumer behavior related to energy efficiency and climate change in the Russian state educational standards in the following areas: “Electroenergy and Electrical Engineering”, levels of bachelor and master [8,9] and “Electro - and heat engineering (Level of training of highly qualified staff)” [10] . The problem of energy efficiency for Russia is extremely relevant, not only at the stage of energy consumption, but also at the stages of its production and transmission. According to the energy efficiency rating, the Russian economy is on the 132-d place from 142 countries of the world. The energy intensity of Russia GDP is twice as high as the world average [6]. At the same time, there are a number of regions and industries in Russia where energy efficiency issues are at the level of world indicators [11]. In the curricula developed in universities in Russia, including ours, based on state educational standards there are modules that provide the consumer behavior related to energy efficiency and climate change.	Education is an essential element of the global response to climate change and Climate Change Education as an entry point for promoting the principles and practice of sustainable development(WWW.UNESCO.ORG, 2014). Importance of addressing the climate change identified by all the stakeholdersengaged with education system. Itpromotes young people to understand and address the impact of global warming, and encourages changes in their attitudes and behavior changes. It also helps themto adapt climate change-related trends(WWW.UNESCO.ORG, 2015). Sri Lanka is a highly vulnerable country, the main economical domains and livelihood activities suchasagriculture, forestry energy production are directly linked to environment(Sangakkara and Nissanka, 2011).Currently Sri Lanka has been experiencing frequent climatological, meteorological, and hydrological disasters with the potential to set backagriculture, fisheries and even services such as tourism(SLCDMP, 2018). The Government has adapted some measures in these fields to promote better environmental management. First and most important of all, lies on education and public awareness. Education has two obvious effects on the fight against climate change. Firstly, it impacts citizens’ general awareness of the issue, and secondly, it determines how enabled they are to develop the necessary solutions and innovations to overcome the problem(Lionel Wijesiri, 2019). According to the global statistics, Sri Lanka has not fared well in handling the climate change. In a new global index, Sri Lanka has been ranked second among the countries most affected by extreme weather events in last 20 years since 1998. Therefore, climate change is a major issue of concern for Sri Lanka(Lionel Wijesiri, 2019). Climate change education has to be a major part of the school and university education Number of Universities are now offering subjects and courses based on Climate Change, Disaster management etc.However, at

		tertiary level education, Climate Change and DRR related issues are incorporated to science streams and there is a clear gap in including these aspects in to social sciences and humanities related streams(Sri Lanka Stakeholder SDG Platform, 2018).Sincetheseprogram aims to help people to understand the impact of global warming, and increase "climate literacy" among young people, the strengthening of the capacity to provide quality climate change education by encouraging innovative teaching approachesis much needed. Integration ofclimate change education in school and by raising awareness about climate change as well as enhancing non-formal education programs through media, networking and partnerships.
07.(UNIBO), Italy.	08.(SPbPU), Russia.	09.(ASV), Russia.
10.(MSU), Russia.	11.(PSTU), Bangladesh.	12.(UoC), Sri Lanka.
This education is included into professional competences and is form only for subject areas of education in engineering and construction. At the same time, it is not represented in humanitarian and social sciences. We can state that the role of such education is underestimated.		The significance attributed to education on consumer behavior relevant to Energy Efficiency and Climate Change is visible through National Institutions, Agencies, Policies and Strategies that have existed and continue to exist in Sri Lanka. For instance, according to Millenium Development Goals, one of the key goals for Sri Lanka was to ensure environmental sustainability through integrating principles of sustainable development into country policies and programmes and reversing the loss of environmental resources. As part of this healthy patterns of consumption of natural resources and energy efficinecy were prioritized. In addition, when focusing on the position of Sri Lanka in the adherence to the Sustainable Development Goals since 2012, there is much emphasis on responsible consumption and production, climate action and affordable and clean energy echoed through three of the seventeen goals. The establishment and function of the Climate Change Policy Network in Sri Lanka, National Climate Change Adaptation Strategy, Environmental Education Unit of the Central Environmental Authority and Climate Change Secretariat Sri Lanka under the Ministry of Mahaweli Development & Environment also operate on par to bring about a positive sustainable change to Sri Lanka. When focusing on the emphasis given to consumer behaviour relevant to Energy Efficiency and Climate Change in education, examples can be drawn from the Tertiary Educational landscape of Sri Lanka. For example, the University of Colombo offers a number of diploma, degree and postgraduate programmes such as the Post graduate diploma in Climate Change and Environmental Management (offered by the Department of Zoology; Faculty of Science),

		Environmental Sociology (offered by the Department of Sociology), Past Climate and Climatic Change and Urban Environment and Management (offered by the Department of Geography) in the Bachelor of Arts and Post graduate diploma in Environmental Management and Master of Environment Management (offered by the Faculty of Graduate Studies). The Institute of Human Resource Advancement (IHRA) attached to the University of Colombo also offers postgraduate courses in Disaster Analysis Management and Mitigation. The University of Moratuwa offers a Masters Degree/ Postgraduate Diploma in Environmental Management while the Open University of Colombo offers short courses on Enivironmental Impact Assessmentin addition to Diplomas, Degrees and Masters programmes in Environmental Sciences. The programmes offered in various educational institutions highlight the importance given to the field in Sri Lanka and the rising numbers of student enrolment reveals that the field remains one of the most preferred disciplines both in Sri Lanka and across the globe.
13.(BU), Bangladesh.	14.(UoM), Sri Lanka	
Bangladesh is one of the most climate vulnerable countries in the world and will become even more so as a result of climate change. Flood, tropical cyclones, storm surges and droughts are likely to become more frequent and severe in the coming years. However, the concept of consumer behaviuor relevant to energy efficiency and climate have not been introduced in the education sector of Bangladesh to face the upcoming climate change related disasters. Now, the concept of consumer behaviour relevant to energy efficiency and climate change in the education sector is an urgent need for the Bangladesh. As, Bangladesh has an extremely high population density with one of the worst rates of poverty in the world. Therefore, to meet the challenges of climate change related issues, it is important to introduce the concept of consumer behaviour relevant to energy efficiency and climate change to the education of Bangladesh. In addition, capacity building, training, improvement of teacher's qualification on modern study method is vital to achieve high quality education related to climate change.	Currently, there is no proper plan to integrate education on consumer behaviour relevant to energy efficiency and climate change. However, it has been identified there is such need for the countrys' education. Ministry of Power and Energy has created a 10-year plan called Sri Lanka Energy Sector Development Plan for a Knowledge-based Economy (2015-2025). Further, under the Consultative Group for International Agricultural Research (CGIAR) on Climate Change, Agriculture and Food Security (CCAFS), the International Water Management Institute (IWMI) has influenced the climate change policy in Sri Lanka and raised awareness about the implications of climate change for the country and farmers.	

3.3 Funding

Is funding sufficient for integrated education on consumer behaviour relevant to energy efficiency and climate change at your country? Please specify.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.

4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Currently energy in Russia is one of the priorities for the development of the Russian economy. The Ministry of Education and Science of the Russian Federation annually on a budgetary basis increases the enrollment of students in the following fields: "Electric Power Engineering and Electrical Engineering", bachelor and master levels, and "Electrical and heat engineering (Level of highly qualified personnel)". With the support from the regional Government and duly filled application university receives the requested budget places and the corresponding funding. This allows the university to carry out integrated education in the field of consumer behavior related to energy efficiency and climate change.	Education is generally state-funded and offered free of charge at all levels, including the university level. Sri Lanka currently devotes a comparatively small percentage of its government expenditure towards education. Sri Lanka's public expenditure on education liesbetween 2-3 % of GDP (2.8 % in 2017) (Knoema, 2018). The General education which includes basic and secondary levels absorbs the largest share of total expenditure followed by higher education, technical and vocational education.The School allocation Barely adequate to meet the recurrent expenditure such as teachers' salaries and the cost of expansion of schools to increase the new enrollment rate. The share of expenditure comes on higher education is 14% and 80% of which allocate towards recurrent expenditure with salaries for teachers(Liyanage, 2014). Since the sector suffers from severe funding limitations, the administrators are unable to meet entire capital requirements. Moreallocationis to be diverted tocurriculums development, policy making activities, administrativeservices,infrastructure development facilities, technology upgrading and incorporation,conductrelevant trainings and workshops, teaching material development and many more. To fulfill those requirements HEIs needs sufficient funds and resources. Due to above mention reasons funding is not sufficient for integrated education on consumer behavior relevant to energy efficiency and climate change at HEIs.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
There's no special financing for education. However, there are money for National Project "Ecology" But this is insufficient.		While many International Organizations (such as the United Nations) have provided various institutions with funding to promote Integrated Education on Consumer Behaviour relevant to Energy Efficiency and Climate Change, there remains a distinct gap between the funds available and the lack of climate and energy literacy among the people, as most funds cater to key institutions, polarizing the funds around a few, resulting in others experiencing lack of opportunities and infrastructure to promote integrated education.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
In Bangladesh, very few modern multi-disciplinary courses are linked to climate change and consumer	NO.	

behaviour related to energy efficiency for integrated education. The Government of Bangladesh has recently established a National Climate Change Fund, with an initial capitalization of 45 million dollar later raised to 100 million dollar, which will focus mainly on adaptation. However, funding is not sufficient for integrated modern multidisciplinary education on consumer behaviour relevant to energy efficiency and climate change	Sri Lanka is an Island with approximately 20.9 million of population and scientific evidence is creating a consensus that economic growth has placed an unsustainable burden on the physical environment in Sri Lankan context. Our aim here is to integrate education on consumer behaviour relevant to energy efficiency and climate change in a very practical manner. Thus, we were selected students in tertiary education level (Young crowd) as our prime focus here. Because we have to take long-term effective actions to mitigate these issues as an individual, group and as a Nation. Thus a proper framework was worked out as follows, • Understanding consumer behaviour • Collecting evidence for what works • Designing high impact education programmes • Targeting young people effectively (Tertiary education) • Making a new focus on evolution and achieving realistic goals This need to be continuous for a tangible period. Hence this need to be provoke for few more developments. Therefore, we need to find more funding sources.

3.4 Educational needs

What are the needs in integrated education on consumer behaviour relevant to energy efficiency and climate change (please list up to 5 major needs at country level):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)Creation of an information and educational system in the field of energy saving, which will ensure a systematic approach to the implementation of the concept of energy saving. 2)The need to introduce the course "Fundamentals of energy conservation" in all higher and secondary specialized educational institutions. 3)The introduction of energy efficiency standards, mandatory building codes and regulations, planned indicators associated with the use of highly efficient energy-saving and environmentally friendly technologies for the consumer. 4)Development of distributed energy and the use of renewable energy sources, especially for the regions of the Far North, Siberia and the Far East, which do not have centralized power supply. 5)Interconnection of energy efficiency and climate change for the energy consumer.	I. Energy budgeting and conservation strategies II. Green thinking and Energy options (Internal and External energy concentration) III. Capacity building towards energy and behavioral options IV. Create effective education platform for both students and professionals. V. Develop new University Industry collaboration platforms

7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
1.The broader coverage of students by the education on consumer behaviour relevant to energy efficiency and climate change requires to introduce a Generic competence in this sphere. 2.Teaching staff training would be important 3.Integration of relevant courses into curriculums 4.Institutional support on universities management level is required 5.Institutional support on Ministry of Higher Education level is required		1. More scientific knowledge. 2. Need of identifying research on Climate Change as a key field rather than a supplementary field. 3. Establishing a strong network among various stakeholders. 4. More involvement of Educational and Research Agencies on research that focus on the physical and socio-economic dimensions of Climate Change and Energy Efficiency.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
i) Upgraded curricula of the integrated education relevant to energy efficiency and climate change ii) Practice of modern learning, teaching tools and methodologies which are now being used in Europe. iii) Quality training, awareness and development of teacher's capacity and strength. iv) Scientific network among universities to enhance the strength of integrated education. v) Capacity building of the institutes and staffs.	Sri Lanka is county within the tropical climatic belt, however it has been experiencing extreme weather conditions for the past 10 years, with flood and drought alternately affecting farmers in particular and the population at large. In 2016, Flood affected 24 out of 25 districts in the country, causing 210 deaths, damage to almost 60,000 houses and displacing 500,000 people. While floods affected populations across the country, the damage was concentrated in the highly urbanized and industrialized Western Province of Sri Lanka and estimated at around $700 million. Only three months later, the country was in the grip of the worst agricultural drought in two decades with resultant crop failure. The recent floods and landslides very early in the monsoon season are linked to soil erosion, deforestation and increased rains and have affected 630,000 people across 15 districts, displaced more than 100,000 people and killed over 200. Sri Lanka needs to pay urgent attention to the environmental risks from the long-term impacts of climate change. The total number of people affected by floods from 2005 to 2014 was more than 4.6 million. Unfortunately, Sri Lanka lost 50 percent of its forest cover within 50 years. Currently there are several threats to the established protected areas, including increasing population density, poverty incidence, dependence on subsistence agriculture, habitat degradation, over-exploitation of biological resources and spread of alien invasive species. Some of the forest loss is attributed to the redefinition of district boundaries, land clearing for irrigation	

	schemes through the Mahaweli Development Project, and hydro-electric generation. Therefore, we need to aware future generation on the above stressing factors by giving a quality education on focusing consumer behaviour relevant to energy efficiency and climate change while moving from teacher-centred education to student-centred education.

3.5 Educational gaps

What are the gaps in integrated education on consumer behaviour relevant to energy efficiency and climate change (please list up to 5 major gaps at country level):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)Low level of population awareness that energy saving is a real means of solving a wide range of social, economic and environmental problems for the consumer. 2)The lack of qualified personnel in the policies related to energy saving and energy efficiency, climate change, renewable energy sources. 3)The lack of incentive mechanisms for consumers related to energy efficiency and climate change, the use of high-efficiency energy-saving technologies and renewable energy sources. 4)The concept of the World Energy Council (WEC) proposed 10 political actions to achieve three energy goals: accessibility, availability and acceptability of energy, fundamental for ensuring political stability throughout the world, for energy business strategy and the world achieving a sustainable future [6]. This concept could be adopted in Russia as a basis for consumer related policy on energy efficiency and climate change. 5)The unsatisfactory state of the fuel control and accounting systems and energy consumption.	I. Lack of available funding and resources II. Barrier in administration support in managing Research and development activities in HEIs. III. Issues on policy planning and implementation and evaluation procedures in education system IV. Inadequate technical capacity of HEIs V. Lack of initiatives to develop new programs and curricula for capacity building of academics and students
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	

1. Lack of institutional framework for introducing such education (no generic competence) 2. Lack of teaching staff 3. Lack of funds 4. Lack of courses for non related areas 5. Lack of knowledge in climate change among students		Lack of expertise and Scientific Knowledge. Lack of research on Climate Change. Lack of networking among key stakeholders. Lack of prioritization of Climate Change and Energy Efficiency by Education and Research Institutions
12. (BU), Bangladesh.	13. (UoM), Sri Lanka	
Education sector is very vital for the socio-economic development of the country and to face challenges. Awareness among the people's is an urgent issues to face the future coming disasters related to global climate change. However, there are some gaps in the integrated education in Bangladesh on consumer behaviour relevant to energy efficiency and climate change. These gaps are- i) Lack of capacity on participatory, experimental, and inclusive teaching and learning methodologies. ii) Lack of quality training facilities. iii) Education, training and public awareness issues relating to climate change. iv) Modern quality education requirements and stack holder needs. v) Dissemination of information at national level.	One of the most significant issues which Sri Lanka faces is the uneven quality of and access to education, despite its commitment to the universal provision of education. Despite high rates of enrolment at the primary level, the education system is unable to retain youth at higher levels. 37% of youth do not proceed beyond the upper secondary level, even though education is highly valued in Sri Lankan society. 23% of respondents of the National Youth Survey 2013 stated they dropped out of school as they did not find it useful and only 2% reported being enrolled in higher education. Among public and private technical, vocational and training institutions, the quality is not high enough to satisfy the demands of the domestic industry or the changing economic environment. Brain drain is also a problem, with Engineers and other professionals who are valued in industrialized nations migrating to those countries. Therefore, Public awareness on climate change and energy efficiency is very low. Further, most of the systems still rely on traditional systems since there is low international exposure. Moreover, the availability of resources is low compared to other countries. However, as described in the below diagram it has identified major energy sectors challenges in Sri Lanka. However, our country has not identified yet, 'education' is an important tool to overcome those factors and to upgrade the current education system, which integrates with consumer behaviour relevant to energy efficiency and climate change.	

4 POLICIES RELEVENT TO HIGHER EDUCATION, AND THEIR RELATIONSHIP WITH CONSUMER BEHAVIOUR ON ENERGY EFFICIENCY AND CLIMATE CHANGE

This section examines the illustrative policy and planning issues relevant to integrated education on consumer behaviour relevant to energy efficiency and climate change. Please answer following questions.

4.1 Policy and planning

Please describe policy and planning issues currently being addressed by the HEI in the field of integrated education on consumer behaviour relevant to energy efficiency and climate change.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	The university has the following courses in full: "Electric Power Engineering and Electrical Engineering" levels of bachelor and master programs; "Electric and heat engineering (PhD level)". Bachelor course "Power system and heat engineering" is also available. Currently, we have prepared new master course "Thermal Engineering and Heating Engineering"; it is being approved. The university has state accreditation in the integrated group of specialties (UGSN) 13.00.00 “Electrical and Thermal Power Engineering” therefore we actively participate in the activities of the federal UMO in the system of higher education in this field. Based on state educational standards and exemplary educational programs, the university’s curriculum provides modules reflecting consumer behavior related to energy efficiency and climate change. Teaching staff of the University is actively involved in conducting research in the energy sector: the use of renewable energy sources, ensuring the quality of electricity and energy saving in power supply systems, the introduction of digital technologies in the energy sector [13-16]. In the framework of these scientific studies in the electrical engineering direction, final diploma works are carried out by students	University policies are formulated to tally with the national policies to reflect the Govt policies University act has been created in 1978, Which has been revised several times. Any changes to the act have to go through the parliament which is the legislative constitution of the country.The policies of Sri Lanka have been changing due to political influences. Various structural changes, curriculum development, changing examinations and teacher training of HEIs have not adequately addressed the real needs of the country and just to implement the ‘political agendas’(Liyanage, 2014). Asa result, very low attention has been given on policy formulation relevant to energy efficiency and climate change. The policies has been identified to attend on, Energy Security, Providing Access to Energy Services, Providing Energy Services at the Optimum Cost to the National Economy, Improving Energy Efficiency and Conservation, Enhancing Self Reliance, Caring for the Environment, Enhancing the Share of Renewable Energy, Strengthening the Governance in the Energy Sector, Securing Future Energy Infrastructure and Providing Opportunities for Innovation and Entrepreneurship(Ministry of Power and Energy, 2017). There is a lack of policies to enhance the collaboration among universities as well as schools and other higher education institutions towards sharing of resources, knowledge, skill and technologies in a collaborative way to transform the education on climate change among institutions.Cross sectoral and inter agency collaboration and institutional arrangements. The issues pertaining to implementation and monitoring need a great deal of restructuring.The inability to establish a monitoring and evaluation

		mechanism for educational policies in the country has left a wide gap on stock taking and honest reporting. The lack of adequate data to evaluate the progress also stems from the continued failure to address the policy issues in Higher education.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Ministry of Higher education and Science does not prioritize integrated education in the field of climate change, except for the specialized programs.		As mentioned earlier, there are a number of educational programmes on Consumer Behaviour relevant to Energy Efficiency and Climate Change in the University of Colombo both for undergraduates as well as for postgraduates. Through these programmes and by research carried out centering these educational endeavors, a number of issues both at policy level and implementation are addressed. For instance, in the course on Environmental Sociology which is taught as part of the Bachelor of Arts Degree, undergraduates are exposed to the social dimensions of environmental issues. These range from daily consumption practices of people which contribute negatively to climate change to after-effects of disasters and promoting resilience. In addition, in programmes such as the postgraduate diploma in Environmental Management offered by the Faculty of Graduate Studies, the overall issue of climate change as a major global environmental concern, anthropogenic causes and impacts of climate change are included to enable learning opportunities about the strategies and application of remedial measures in addressing climate change, including international cooperation and national efforts in mitigation and adaptation. Simultaneously, the Master of Enviornment Management exlpores new trends in the global environment movement with emphasis on ecosystem services and their economic valuation, appreciation of economics of ecosystems and biodiversity.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
Currently HEI dealt with the issues with climate change but the integration with energy efficiency and climate change is poorly addressed. The main policy and planning to focus on the impacts of climate change related issues, mitigation and adaptation. In the curricula few courses are present on climate change related issues.	With the rapid economic transformation from an agriculture-based rural economy to a more commercial economy, successive governments have prioritized investments in infrastructure (ex.construction of dams and irrigation) and with the end of the civil conflict, investments in infrastructure are expected to triple with the expansion of the road network and export-led productive sectors. The trade-offs are likely to be negative impacts on the environment if mitigation plans are not put in	

	place. Over the years, Sri Lanka has also become more vulnerable to climatic changes and development actions need to focus on building resilience. Sri Lanka's economy is highly reliant on climate-sensitive sectors such as agricultural, forestry and energy production. In the energy, sector policies have been developed to support increased energy efficiency and to reduce associated environmental pollution. As an example "Code of practice for energy efficient buildings in Sri Lanka" was published on this date of 30th June 2009 under clause 36 (g) of Sustainable Energy Authority Act, in Sri Lanka.However, these codes are not focusing on consumer behaviour or not integrated with the current curricula in HEI. Fortunately, there are few courses teaching in relating to sustainability and climate-sensitive design and energy efficient strategies to the students who are specifically studying in Engineering, Architecture and Green technologies. However, those subjects are not integrated into the consumer behaviour relevant to energy efficiency and climate change in a holistic manner. Further, Vocational stream was introduced letting those who dropped-out from the schools after Ordinary Level exams. This is not directly linked to the said topic, however this can be considered as a positive move towards integrating education on consumer behavior. The government has identified the need of international benchmarking of degrees and there have given budget allocation for uplifting infrastructure facilities as well as to improve their curriculums.

4.2 Gaps in policy and planning

Please describe other, if any, policy issues that are not currently being handled by the HEI but should be considered.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1) Creation of department branches at the leading organizations and enterprises of the Kaliningrad region energy industry with the focus on consumer energy efficiency. 2) Organization of the step by step implementation of integrated education of bachelors, masters and doctors of science on the problem of consumer behavior related to energy efficiency and climate change as part of the educational process.	The process of policy implementation is weakened due to insufficient allocation of funds for educational policy. Moreover, due to mismanagement of the resources atadmirative level, policy planning and implementation procedures are affected. There are many gaps in evaluation procedure of education policies and reviewing or updating for effective implementation and monitoring actions, so local jurisdictions can continuously monitor their plan to

	3) Involvement of students in course projects and final qualification works related to the end - consumer energy efficiency and climate change. 4) Organization of classes for advanced training conducted by the university for energy specialists, on the behavior and role of the consumer in problems solving related to energy efficiency and climate change.	evaluate its success and ensure that the plan remains up to date as conditions evolve.Whereas monitoring focuses on changing conditions and updated standards to identify the gaps between educational planning and applications. The lack of lateral coordination between ministries is a constraint exacerbated by the lack of effective coordinated outcomes from the three institutions/line departments of non-formal education. Lack of proper understanding of the educational policies in general amongst the administrative and political leaders has led the destructive development process in the country; the political commitment to transformation is yet to be secured. Training and development initiatives for research and innovation have not incorporated to national level policies.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
-		N/A
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
At present in HEI, education should be considered keeping the views of climate change related issues along with energy efficiency. Besides, curricula should be integrated with energy efficiency and climate change. Modern learning, teaching tools and methodologies should be considered at HEI to develop the socio economic condition. N.B. The responses to these questions do NOT require describing each policy and planning issue but only the identification of the type of issues being addressed and those not being addressed. The questions are only meant to understand the scope of coverage of important issues by the HEI.	• E-based learning • Smart classroom • Vocational education • Standardize private education • International recognition for HEI • Research base HE without focusing only on teaching • Selection of students to HE • The state universities of the county don't have way of enrolling student's directly. • Universities get students through UGC which is a central body. • Energy efficiency is not a priority area in the current higher education system. • Higher education system consist of six streams namely science, mathematics, vocational, technology which doesn't have much interactions each other. Even though universities are looking for international bench marking, there no/little prevision given for knowledge sharing/ content sharing leading to credit transfer	

5 CAPACITY TYPES

This section aims at assessment of the existing state of capacities in the HEI for integrated education on consumer behaviour relevant to energy efficiency and climate change. As defined by the CAPNAM analytical framework, the four types of categories are institutional, organizational, individual, and the knowledge base.

5.1 Institutional capacities

This part describes the institutional capacities at HEI level. Please answer following questions.

1. Please provide brief presentation of the HEI.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	

2. Please describe general model of studies according to different levels (bachelor, master, PhD).

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Bachelor Degree – 4-year studies Master Degree – 6-year studies Specialist Diploma – 5-year studies Postgraduate education – 4-year studies All educational programs include compulsory and choice-compulsory courses. All programs are developed by the university in accordance with Federal Education Standards. Programs provide development of multipurpose, general professional and professional competences and skills. Every year of bachelor program is followed by lumped practice.	The University offers basic degree programs in their respective disciplines. Depending on the facilities available, MA, MBA, MSc, MPhil and PhD degrees are also offered. In addition, diploma and certificate courses are offered in various disciplines. These are full time courses consisting of a number of course units organized as two semesters per academic year. The general degree programs run through six semesters while the special degree programs run through eight semesters. Examinations and evaluations are held throughout each semester. At this level, start studying a course or program in a subject area that doesn't require previous university studies. It is for beginners to higher education.

	Master and postgraduate programs have both lumped and distributed practice.	Most programs offered at the bachelor's level in Sri Lanka are 3 years or 4 years of full-time studies in length and award 90 credits for 3 years general degrees and 120 credits for 4 years special degrees. In order to study a program at the master's level, student must have successfully completed a 3 year or 4-year bachelor's degree from a university. Masters with course work award 30 credits and conducted 1-year time period. Next level of Master degree which contain a research component with the course work and its award 60 credit and research component should be minimum 15 credits. Minimum 2 years of fulltime or equivalent time of original research required for Master of Philosophy. The enrolment requirement for the Doctor of Philosophy (PhD) degree is the completion of a Master's degree, or completion of an Honors Bachelor's degree. Minimum 3 years of fulltime or equivalent time of original research after honors degree. Source : (Ministry of Higher Education, 2015)
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
		Generally, the key mode of studies in the Bachelors, Masters and PhD programs include traditional forms of teaching and learning although MOODLE platforms are created in the Bachelors level to assist the teaching and learning process as a supplementary learning platform. In addition to this, the University of Colombo established a Virtual Center in 2016 with the objective of promoting open and distance learning models for external degree students. The center aims to create a virtual campus with the mission of facilitating expanded higher education through extension, distance, and blended courses using advanced technology, thereby contributing to national development. At the moment, a number of degree programmes are offered to external students via such models. They are Bachelor of Science in Electronics & Automation Technologies, Bachelor of Science in Financial Engineering and Bachelor of Information Technology. Based on the interviews conducted with the administrative staff of the Virtual Center it was highlighted that the university wishes to expand this further by providing completely online platforms for undergraduate and postgraduate students.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	

Bachelor : 4 years integrated Honors Masters : 1.5 years (Research and/or Coursework)	The following figure shows the current general education system in Sri Lanka. It shows only the public education system. Due to the high demand for government school, some of the students enter to either a private school or an international school. They teach the London Edexcel or Cambridge curriculum and prepare students for London O/L and A/L examinations. Though they passed in good grades these students do not have an opportunity to apply for state universities in Sri Lanka. Either they have to go abroad and study in a foreign university or they can enter a private university in Sri Lanka if they wish to obtain a university education. These may be public universities, public and private degreegranting institutions which award their own degrees or degrees from foreign universities. In Sri Lanka, there are two types of educational systems and university-level education can be obtained by either public (state) or private. There are 17 state universities and out of that six universities which have an intake of students for engineering education on passing their advanced level (A/L) examination and they provide free education for all Sri Lankan students. Students who scored high marks in their A/L are eligible to study for BSC (Honours) in Engineering in all part of the country. The marks obtained by students in different subjects are standardized using a statistical formula and converted to “Z” scores for ranking. However, in order to ensure equity for children coming from disadvantaged areas, a district quota is allocated on the basis of the population in the district and a percentage is reserved For the most backwards districts. As the number of places available in the universities is much less than the number of students who qualify there is intense competition to enter the universities Therefore, those who are not admitted to the government university can pay for enrolment in degree programmes at private institutions where they wish to study. There are eight private institutes approved by University Grant Commission (UGC) which offer engineering degrees in Sri Lanka. At universities, students first complete the bachelor’s degree, after which they may pursue a higher master’s degree. The target time for completing a master’s degree is generally five years. Universities also arrange separate master’s degree programmes with separate student selections, for which the entry requirement is a bachelor’s level degree. At the

	universities, students can also study for scientific or artistic postgraduate degrees, which are the licentiate and the doctorate degrees. It takes approximately 3 to 4 years of full-time study to complete. One of the basic principles of education is that all people must have equal access to high-quality education and training. Education is free at all levels from pre-primary to higher education (degree education).

3. Please provide key facts and figures about the HEI:

3.1. Number of students:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	12000	9201
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
38150/2560		25000
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
7593	3601	

3.2. Number of academic staff:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	840	546
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
9390/293		700
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
180		

3.3. Student/Academic staff ratio:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	14:1	17:1
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
4.06/8.7		35:1
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
42	23:1	

3.4. Number of Faculties (please specify):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	15 • Faculty of Bioresources and Nature Management • Commercial Fishery Faculty • Mechanics and Technology Faculty • Faculty of Shipbuilding and Power Engineering • Civil Engineering Faculty • Faculty of Production Automation and Control • Institute of Management, Economics and Entrepreneurship • The Humanities Faculty • Fundamental Training Faculty • Professional Upgrading Faculty • Fundamental Training Division for Foreign Students • Faculty of Transport • Faculty of Navigation • Marine Engineering Faculty Radiotechnical Faculty	10 I. Faculty of Agriculture II. Faculty of Engineering III. Faculty of Fisheries and Marine Sciences & Technology IV. Faculty of Graduate Studies V. Faculty of Humanities & Social Sciences VI. Faculty of Management & Finance VII. Faculty of Medicine VIII. Faculty of Science IX. Faculty of Technology X. Faculty of Allied and Health Science
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.

10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
40 Faculties in all areas of Science		Nine faculties – Arts, Education, Law, Management and Finance, Medicine, Science, Technology and Nursing
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
6	5 • Faculty of Architecture • Faculty of Business • Faculty of Engineering • Faculty of Information Technology • Faculty of Graduate Studies	

3.5. Number of graduates:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	20000	31739
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
7800/694		2633
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
4000	1518	

3.6. Number of study programmes:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	124	40
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.

10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
18 (programs of the Faculty of Economics)		185
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
2	20	

3.7. Number of international academic partners:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	87	145
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
: 215/41		76
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
2	-	

3.8. International rankings of the HEI (if any):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	N/A	▪ world Ranking – 2701 ▪ Presence rank – 1840 ▪ Openness rank – 1321 ▪ Excellence rank – 2164
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
): QS 90 – by reputation		2223
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
N/A	2708	

4. Please describe main education and research areas of the HEI.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	In country report	UoR cover a wide spectrum of specialized education and research within and between disciplines in medicine, agriculture, biological sciences, engineering, science, management, fisheries and marine science, computer science and information technology, social science and the arts and humanities. Agricultural biology, agricultural economics and extension, agricultural engineering, animal science, crop science, food science &technology and soil science can be identified as main education and research areas of the Faculty of Agriculture. The Department of Agricultural Engineering is covered education and researches on fallowing areas, Sustainable resource management, sustainable environmental designs, sustainable environmental technology, sustainable energy, farm machinery, green building, waste management and recycling, environmental management, irrigation and water efficiency management, smart farming technologies, non-distractive monitoring techniques, post harvesting, Hydrology and meteorology, green technology, precision agriculture.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Economics, Management, Finance		The University of Colombo offers Bachelor's degrees, Masters Degrees, Master in Philosophy and Doctor of Philosophy to undergraduate and postgraduate students on various disciplines in the faculties of Arts, Education, Law, Management and Finance, Medicine, Science, Technology and Nursing. The research interests of the university are mainly in line with the programmes offered by the faculties and tend to be extremely diverse. According to the 2019 research grant scheme, the prioritized research areas stem from Agro-technology, Basic Sciences, Biotechnology, Computer Science & Information Technology, Energy, Engineering Sciences & Architecture, Environmental Sciences, Natural Resources & Biodiversity, Food Sciences, Geology & Earth Sciences, Health Sciences, Nanotechnology, Nursing, Library & Information Science, Social Sciences, Science Education, Science & Technology Policy Studies and Technology.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
HEI serves as an interdisciplinary faculty for education, research, evaluation, policy studies training in undergraduate and post graduate level. HEI provides higher education research information. HEI involves in multidimensional research fields like arts, humanities,	Computer Engineering, Spatial Planning, Transportation, Photovoltaic, Low energy architecture, Sustainable material and design, Consumer behavior, Engineering Education, Robotics and Automation, Fashion and Textile, Advanced Materials in Textiles, Construction innovation management, Robotics, Biomedical	

social science, bioscience, science and engineering, biochemistry and biotechnology.	Engineering, Transport Economics, Carbon constrained buildings and economies, Net zero emission building operations, Structural Engineering, Waste Management, Plastic recycling, Maritime transport, Marketing, Women entrepreneurs, Fashion, Finance, Marketing & Entrepreneurship, Computational Statistics and Signal Processing

5. Is there any strategic priorities given to integrated education on consumer behaviour relevant to energy efficiency and climate change at HEI level? Please specify.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	At present, the energy systems of the Kaliningrad Region and the Baltic countries operate as part of the IPS / UPS energy pool. In 2025, the energy systems of the Baltic countries plan to secede from the IPS / UPS energy interconnection and to connect to synchronous operation as part of the UCTE West European Energy Interconnection. At the same time, the power system of the Kaliningrad region will go into autonomous mode of operation. Therefore, the development of energy in the region is a strategic priority. To ensure this strategic priority, including in the field of consumer behavior related to energy efficiency and climate change, we conduct training of bachelors, masters and candidates of sciences in the energy profile at an institution of higher education. It should be noted that Kaliningrad State Technical University is the leading university in the Kaliningrad region, providing training in this area.	Since the Agriculture Sector is more vulnerable to disasters, Faculty of Agriculture redesigned degree programs and courses to address the Climate change and mitigation issues. Faculty of Agriculture introduced a BSc and MSc programs on Green Technology in 2012 to address the issues pertaining to consumer behavior on energy efficiency and climate change. This program along with other programs offered by the University is now in a high priority area.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
No special priorities		No
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
HEI mainly focuses on the education of climate change and its impacts but lack of strategic priorities to integrated education on consumer behaviour relevant to energy efficiency and climate change..	NO	

6. What are the needs at HEI in integrated education on consumer behaviour relevant to energy efficiency and climate change (please list up to five major needs):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)Development of the educational system on the basis of the university in the field of energy saving, which will ensure a systematic approach to the implementation of the energy saving concept. 2)The need for some modules such as "Theory and Practice of Engineering Solution" or "Organization and Methodology of Scientific Research" in the scope of "Electric Power and Electrical Engineering" master degree level. The development of this module will allow the graduate to solve engineering and scientific problems in the energy sector, including in the field of consumer behavior related to energy efficiency and climate change. Module "The newest technoloigies of power production, transfer and usage" in the direction of "Electrical - and heat engineering (Level of training of highly qualified personnel)". 3)The use of energy efficiency standards, mandatory building codes and regulations, planned indicators related to the use of highly efficient energy-saving and environmentally friendly technologies for the consumer in training courses in the following directions: "Power and Electrical Engineering", bachelor and master levels and "Electro- and heat engineering " (Level of training of highly qualified personnel). 4)The need to finance scientific research on the use of distributed energy and renewable energy sources on the territory of the Kaliningrad region. The team has a scientific basis for solving scientific problems [13–16]. 5)The need to assess the relationship between energy efficiency and climate change for consumers in training courses in the areas of "Electricity and Electrical Engineering", bachelor and master level and "Electricity and heat engineering "(Level of highly qualified personnel).	I.Proper support from government and educational stakeholders II.Develop new programs and curricula for education on consumer behavior relevant to energy efficiency and climate change III.Develop training programs for academic and technical staffs and students on capacity building on use of new technology IV.Develop new partnerships with industry and stakeholders to accelerate learning and increase knowledge creation by enhance the university industry collaboration. V.Development of Infrastructure facilities in HEIs
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
1. Generic competence 2. Teaching staff training 3. Integration into curriculums 4. Institutional support on universities management level		1. New knowledge, expertise and training 2. Platforms for conducting research 3. Funding prioritizing the different facets of consumer behaviour relevant to energy efficiency 4. and climate change

• Institutional support on Ministry of Higher Education level		5. Academic opportunities and awareness building
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
i) Upgraded curricula of the integrated education relevant to energy efficiency and climate change ii) Practice of modern learning, teaching tools and methodologies which are now being used in Europe. iii) Quality training, awareness and development of teacher's capacity and strength. iv) Scientific network among universities to enhance the strength of integrated education. v) Capacity building of the institutes and staffs.	1. Understand the necessity of environmental protection 2. Learn to observe the changes taking place in the environment 3. Evaluate the impacts of their own consumption 4. Adapt their behaviour to support sustainable development. 5. Familiar with the main aspects of the ecological, economic, social and cultural dimensions of sustainable development and be able and willing to act in support of sustainable development in their own lives	

7. What are the gaps at HEI in integrated education on consumer behaviour relevant to energy efficiency and climate change (please list up to five major gaps):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)It is necessary to provide the concept of consumer behavior related to energy efficiency and climate change in integrated education of bachelors, masters and doctors of science; this is a real means of solving a wide range of social, economic and environmental problems. 2)In the advanced training programs for energy profile specialists conducted by the institution, there is a need to introduce a section on consumer behavior and role in solving problems related to energy efficiency and climate change. 3)Preparation of materials and examples for mass media on the efficiency of using highly efficient energy saving technologies and renewable energy sources in the region, including in the field of consumer behavior related to energy efficiency and climate change. 4)The concept of the World Energy Council (WEC) proposed 10 political actions to achieve three energy goals: accessibility, availability and acceptability of energy, fundamental for ensuring political stability throughout the world, for the energy business strategy and the world achieving a sustainable future. This concept could be taken as the basis for	I.Lack of available funding and resources II.Lack of trained professionals who are specialized in these subject areas III.Technical capacity of HEI is not sufficient IV.Lack of Motivation to academic and non-academic staffs and students for these subject areas V.Lack of a substantial inter-agency coordination mechanism and lack of institutional support for Strategic Planning and Management of HEI

	the development of consumer-related modules for energy efficiency and climate change. 5)Insufficient state of education with school students on the effectiveness of using highly efficient energy-saving technologies and renewable energy sources, including in the area of consumer behavior related to energy efficiency and climate change.	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
1. Lack of institutional framework for introducing such education (no generic competence) 2. Lack of teaching staff 3. Lack of funds 4. Lack of courses for non-related areas 5. Lack of knowledge in climate change among students		1. Lack of funding 2. Lack of courses designed particularly to cater to consumer behaviour relevant to energy 3. efficiency and climate change 4. Lack of experts specializing in consumer behaviour relevant to energy efficiency and climate change
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
i) Lack of capacity on participatory, experimental, and inclusive teaching and learning methodologies. ii) Lack of quality training facilities. iii) Education, training and public awareness issues relating to climate change. iv) Modern quality education requirements and stack holder needs. v) Dissemination of information at national level	1. The provision for credit transfer is not recognized as an option for students to go for different directions. 2. HEIs have not given the opportunity to enroll students and hence, there is a very little chance of absorbing international students. 3. Financial autonomy was not with mainly the state HEIs and that prevent setting their own development targets with the institute. 4. Less provision is available for knowledge sharing by hiring good quality academics as the salaries are paid by the government.	

5.2 Organisational capacities

This part describes the organisational capacities pertinent to integrated education on consumer behaviour relevant to energy efficiency and climate change at HEI. Please answer following questions.

1. Is integrated education on consumer behaviour relevant to energy efficiency and climate change sufficiently included in the curricula of HEI? Please specify according to different levels (bachelor, master, PhD):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.

4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
		Bachelor level Green Technology Agricultural Resource Management and Technology Agribusiness Management Fisheries and Marine Sciences Civil and environmental engineering Business Administration **Master level** Master of Science in Green Technology Master of Science in Crop Production Technology Master of Science in Agribusiness Management Master of Engineering in Civil Engineering Master of Engineering in Structural Engineering Master of Science in Agri Business Management Master of Science in Agricultural Economics and Resource Management Master of Science in Animal Science Master of Science in Crop Production Technology Master of Science in Food Science and Technology Master of Business Administration
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Bachelor programs, Master programs, PhD		No, while there are a number of courses integrated in academic programmes within the university in Bachelors and Masters level, these tend to focus on a wide variety of issues related to energy efficiency and climatic changes and fail to address the role of consumer behavior. Examples can be drawn from courses such as the Post graduate diploma in Climate Change and Environmental Management (offered by the Department of Zoology; Faculty of Science), Environmental Sociology (offered by the Department of Sociology), Past Climate and Climatic Change and Urban Environment and Management (offered by the Department of Geography)in the Bachelor of Arts and Post graduate diploma in Environmental Management and the postgraduate courses in Disaster Analysis Management and Mitigation.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	

1.1. Study programme level (Please list relevant study programmes):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	"Electric Power Electrical and Electrical Engineering" (Bachelor and Master), "Electric and heat engineering" 09.05.03-Electrotechnical complexes and systems (PhD).	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Bachelor programs, Master programs, PhD		• Bachelor of Arts • Postgraduate Diploma in Environmental Management • Postgraduate Diploma in Climate Change and Environmental Management • Master of Environment Management
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
Bachelor and Master	• Civil Engineering • Electrical Engineering • Architecture • own and Country Plannin	

1.2. Study subject level (Please list relevant study subjects/modules):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	"Electric Power Engineering and Electrical Engineering" bachelor training modules: "Power supply", "Energy-saving power supply technologies", "Renewable energy sources". "Electric Power Engineering and Electrical Engineering" master training modules: "Research Methods in the Electric Power Industry and Electrical Engineering", "Energy Efficiency in the Engineering Systems of Stations", "Electrical Engineering Standards". "Electric and heat engineering" of scientific specialty 05.09.03-Electrotechnical complexes and systems doctor of science training modules: "New technologies of production, transmission and use of electric energy", "Renewable energy sources".	• Agroecology and Sustainable Agriculture, • Agro-meteorology and Applied Hydrology • Forest Management • Postharvest Technology • Applied Green Technologies in Agriculture • Land Resource Management • Irrigation and Water Resource Engineering • Protected Agriculture • Advanced Climatology and Reservoir Hydrology • Land use and Environmental Quality • Environmental Impact Assessment and Valuation Techniques • Natural Resource Management

		• Environment and Pollution • Atmospheric Pollution and Prevention Natural Resources of Sri Lanka • Environmental Biotechnology • Biodiversity Conservation • Virtual Water and Water Foot Print • Renewable Energy • Climate Change and Carbon Balancing • Environmental Economics • Biomass Energy Technology • Energy Analysis and Budgeting • Sustainable Crop Production Technology • Water Resource Management • Sustainable Solid Waste Management • Green Buildings Designing • Cleaner Production • Organic Food Production and Preservation • Life Cycle Assessment • Green Productivity • Composting Technology • Environmental Evaluation • Disasters and Green Solutions • Green Chemistry • Climate change and oceans • Environmental Impact assessment • Water treatment technology • Waste water treatment technology • Marine diversity conservation and management • Wetland management • Water resource management • Water governance and policy Aquatic pollutions
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Environmental Economics, Public Policy and Human Development		Bachelor of Arts (Sociology) – Sociology of Environment and Disaster Management, Urban Development and Relocation Bachelor of Arts (Geography) - Past Climates & Climatic Changes, Environmental Pollution & Planning

		Postgraduate Diploma in Environmental Management – Natural Hazards and Management, Environmental Management and Sustainable Development Master of Environment Management - State Policies and their Implications on Environment, Global Environmental Issues and their Implications, Climate Change Impacts, Mitigation and Adaptation
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
Environmental Chemistry, Environmental Geology, Coastal management and oceanography	• Low Energy Architecture, Climate and Comfort, Net Zero Emission Buildings • Optical and electronic device engineering • Environmental Economics • Solar Geometry and Heat Transfer • Sustainable design and development • Optical and electronic device engineering • Global Fashion business • Fashion and Textile • Transport Economics • Maritime Transport • Marketing • Marketing and Managemen	

1.3. Study topic level (Please list relevant study topics):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	"Electric Power Engineering and Electrical Engineering" bachelor training topics of study: electricity consumers, power quality, energy saving at industrial enterprises, energy saving in energy consumption, wind power plants, secondary energy resources, energy storage and transmission. "Electric Power Engineering and Electrical Engineering" masters training topics of study: revision and analysis of modern and promising technologies in the field of production, transmission and consumption of electric energy, analysis of approaches, research methods in the implementation of technologies in the field of electric power, energy saving and resource saving in the production and distribution of heat and electricity, basics of energy audit of buildings and structures, economic and	• Global and Domestic energy demand • Energy inputs and Outputs in Agricultural Products • Energy sources • Energy flow in production process • Energy auditing • Energy conservation • concepts of green technology • Application of green technology to agriculture towards sustainability • Concepts of sustainability • Green technology and rural environmental concerns • Inputs in agriculture • Selection of technology • solar energy

	organizational direction of energy conservation and energy efficiency. "Electric and heat engineering" of scientific specialty 05.09.03-Electrotechnical complexes and systems doctorate training topics of study: scientific principles of the use of alternative and renewable energy sources: analysis, temporal characteristics, quality, an integrated approach to energy planning, technical and socio-economic problems of using non-conventional and renewable energy sources; "Smart Home" and the principles of its construction; Ecological consequences of the widespread development of renewable energy sources; Problems of solar energy development; The influence of wind energy on the environment; Environmental characteristics of the use of bioenergy plants.	• Wind energy • Bio mass energy • Hydro power energy • Geo-thermal energy • Environmental pollution and agriculture • Impacts of wastes • Classification of wastes • Properties of agricultural wastes • Effect of agricultural wastes on natural resources • Effect of agricultural wastes on environmental pollution • Objectives and planning of agricultural waste management (AWMS) • Different methods of organic waste management • Composting technology • Biogas technology • Impacts of green technologies • architecture of green building • planning and management of green building • cleaner production • Importance of cleaner production • Steps of cleaner production • Material balances • Energy balances, Cost assignments, Review process • generating cleaner production opportunities • Identifying and screening of environmental impacts of development projects • Methods of quantification and valuation of environmental and social impacts of development projects • Environmental tools • Initial environmental evaluation • Concept of Environmental impact assessment • Sources and types of aquatic pollutants • chemical and biological indicators for estimation of aquatic pollutions • Issues on virtual water • Virtual water footprints • Virtual water cycle and calculator • Virtual water in food production and trade • Virtual food consumption; food storage as reservoirs of virtual water • Virtual water value • Concept of marginal virtual production site • principles in assessing virtual water • applications and features of virtual water • computing virtual water trade at global level

		• applying the principle of marginal gain in estimating virtual water • virtual water imports generate real water savings • Concept of Energy, Units and Measurement • Types of energy, Energy and Power • Energy demand, History of fossil fuels • Environmental Science and technology • Media and people, decision making and applications of Environmental Science. • Environmental ethics • Global and national environmental issues • Human impact on environment and its consequences • Weather, climate, factors affecting for climate change • Greenhouse gases • Greenhouse effect • Impact of climate change on natural resources • Ecological footprint • Life Cycle Assessment (LCA) • Carbon footprint of products, persons • Feature of carbon offsets • Carbon credits • Carbon trading. • Air Quality standards • Emission standards • Criteria pollutants • Air pollution and meteorology • Atmospheric stability • Atmospheric dispersion • A line source dispersion model • Area-source models, Indoor air quality • Indoor air quality model • Emission control • Emission controls for vehicles • Energy flows and suppliers • Basic concepts of biodiversity and conservation • Influence of geological • hydrological and climate factors on diversity in flora and fauna among • Management of ecosystem & agroecosystem • Sustainability of farming system • Introduction to Sustainable Agriculture • Management of sustainable ecological farming
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.

10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Climate Change Mitigation, Sustainable Development		
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
Climate change, disaster, coastal management etc	Solar cells Sustainable design and development (PhD) Environmentally sustainable design (PhD) Impact of climate change accross fashion supply chain and consumer knowledge ,awareness, their purchase intention and preferences towards sustainable fashion Slow fashion, up-cycling garments, Natural dyes, Zero wastage garment manufacturing, zero wastage consumer life style, Eco fashion, Sustainable fashion and textiles Containment of externalities in Transport Sector Bunker fuel usage Green Marketing (PhD)	

2. Is funding sufficient for integrated education on consumer behaviour relevant to energy efficiency and climate change at HEI? Please specify.

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	The Ministry of Education and Science of the Russian Federation annually finances the recruitment of students to a higher education institution on a budgetary basis in the following areas: “Electric Power Engineering and Electrical Engineering” bachelor and master degrees and “Electric and heat engineering (PhD level)”. This allows the university to carry out integrated education in the field of consumer behavior related to energy efficiency and climate change within these areas. Thus, the university has sufficient funding for integrated education in the field of consumer behavior related to energy efficiency and climate change.	Government funding is not sufficient for in depth program of integrated education on consumer behavior relevant to energy efficiency and climate change at HE due to the facts mentioned in earlier sections. Since Govt funds are shrinking additional funds are to be raised to introduce an efficient program.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.

No specific funding		No, while there a number of funding schemes in the university that address varied issues in the local and global contexts, the topic at hand is not considered as a priority and is only discussed in relation to climatic change and energy efficien
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
In HEI, very few modern multi-disciplinary courses linked to climate change and consumer behaviour related to energy efficiency for integrated education. However, funding is not sufficient for integrated modern multidisciplinary education on consumer behaviour relevant to energy efficiency and climate change.	NO, the possibility of interacting and training the staff on new teaching and learning methods are lagging, mainly due to lack of funding available. There are very less emphesis given on R&D on Education, teaching and learining as the main stream funding is very rearly available in these areas	

3. What are the needs at HEI in integrated education on consumer behaviour relevant to energy efficiency and climate change related to organization of study process (please list up to five major needs):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)Creating information and educational system university based in the field of energy conservation, including the field of consumer behavior related to energy efficiency and climate change, will require the creation of online training materials (videos available to the public, simulators (calculators and software). 2)Development of several modules. Modules: "Energy efficiency" (bachelor level), "Organization and methodology of scientific research" (master level) as the part of "Electric Power Engineering and Electrical Engineering" training programs. Module: "Newest technologies of electrical energy production, transfer and usage" as the part of "Electric and heat engineering" (PhD level) training program. It will require inclusion of above mentioned modules in the appropriate curriculum. 3)Standards on energy efficiency, mandatory building codes and regulations, planned indicators related to the use of highly efficient energy-saving and environmentally friendly technologies for consumers in training courses in the areas of " Electric Power Engineering and Electrical Engineering", bachelor degrees and master degrees "Electric and heat engineering" (PhD level) should be included in the teaching fund. 4)Conducting research on the use of distributed energy and renewable energy sources in the territory of the Kaliningrad region can be organized and carried out throughout the period of practice.	I. Support from government and educational stakeholders II. Develop training programs for academic and technical staffs on capacity building III. Allocate sufficient budget for HEIs for research and innovation activities IV. Implement policies to support HEIs for researches and capacity building strategies for academics V. Development of infrastructure facilities

	5)It is very important that the hierarchical coordination in curricula and organization of the educational process is related to energy efficiency and climate change for the energy consumer in training courses in the following areas: “Electric Power Engineering and Electrical Engineering”, bachelor and master levels and “Electric and heat engineering" (PhD level).	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
• Generic competence • Teaching staff training • Integration into curriculums • Institutional support on universities management level • Institutional support on Ministry of Higher Education level		Approval to offer courses on the topic from tertiary educational bodies and committees within the university and the University Grants Commission Clear university rules and regulations to offer courses to all internal and external students Costs attached to offering and maintaining the course Online Platforms to offer the programme Technical knowledge for organization of MOOCs
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
i) Upgraded curricula of the integrated education relevant to energy efficiency and climate change ii) Practice of modern learning, teaching tools and methodologies which are now being used in Europe. iii) Quality training, awareness and development of teacher's capacity and strength. iv) Scientific network among universities to enhance the strength of integrated education. v) Capacity building of the institutes and staffs.	1. Curriculum reforms to match the country need 2. Availability of resources on Sinhala/Tamil 3. Staff training 4. Development of infrastructure facilities 5. Funding on research and development	

6. Please list up to five major gaps in integrated education on consumer behaviour relevant to energy efficiency and climate change related to organisation of study process:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)Organization of the step by step implementation of integrated education of bachelors, masters and doctors of science on the problem of consumer behavior related to energy efficiency and climate change as part of the educational process. 2)Organization of classes for advanced training conducted by the university for energy specialists, on the behavior and role of the consumer in problems solving related to energy efficiency and climate change. 3)Development of materials and examples for the media on the efficiency of using highly efficient energy-saving technologies and renewable energy sources in the region, including in the field of consumer behavior related to energy efficiency and climate change, and their use in the educational process. 4)Organization of special trainings for the students on the effectiveness of using highly efficient energy-saving technologies and renewable energy sources, including in the field of consumer behavior. 5)Creation of a specialized audience of high-efficient energy-saving technologies, including materials on consumer behavior related to energy efficiency and climate change, with a view to its use in the educational process.	I. Lack of technical capacity of the HEI II. Lack of academic professionals in this subject area III. Lack of funding and infrastructure facilities IV. Lack of organizational policies and management strategies V. Lack of university industry collaborations
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
1. Lack of institutional framework for introducing such education (no generic competence) 2. Lack of teaching staff 3. Lack of funds 4. Lack of courses for non-related areas 5. Lack of knowledge in climate change among students		1. Lack of rules and regulations to offer courses to all internal and external students (At the present, this is not possible as the university does not consist of a legal framework to implement and offer courses via the virtual campus) 2. Lack of funds to offer courses without running the risk of loss due to financial requirements set by the university 3. Lack of online platforms (The virtual campus of the university merely coordinates programmes and does not have the online platforms to run the programmes)

		4. Lack of technical knowledge and expertise 5. Lack of modern, up to date resource
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
i) Lack of capacity on participatory, experimental, and inclusive teaching and learning methodologies. ii) Lack of quality training facilities. iii) Education, training and public awareness issues relating to climate change. iv) Modern quality education requirements and stack holder needs. v) Dissemination of information at national level	1. Poor attention given on these area by the industry 2. Demand for these knowledge areas in the job market 3. Unavailability of state of the art knowledge in local context	

5.3 Individual capacities: Staff skills

This part describes the individual staff capacities pertinent to integrated education on consumer behaviour relevant to energy efficiency and climate change at HEI. Please answer following questions.

1. How many academic staff works at your unit? (which implements the project):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	4	64 permanent academic staff including 15 Professors and 39 PhD scholars specialized in wide range of disciplines. (Faculty of Agriculture
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
4		05
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
5	05	

2. Is there enough teachers who specialise in integrated education on consumer behaviour relevant to energy efficiency and climate change? How many?

2.1. At university level:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.

4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	12	95
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
20		
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
		05
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
8	10	

2.2. At your unit/department: faculty:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	6	Faculty: 20, Department: 10
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
8		02
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
5	3	

3. Is there sufficient number of researchers who specialize in consumer behaviour relevant to energy efficiency and climate change? How many?

3.1. At university level:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	12	125
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.

14		05
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
-	4	

3.2. At your unit/department:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	6	25
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
5		02
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
-	02	

4. Please describe the current state of the staff training in HEI. Is it sufficient?

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	The university staff, as a rule, annually undergo advanced training, participate in the implementation of scientific research, reports at Russian and international conferences.	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Each staff member participate in the training every 3 years		No, in most of the undergraduate courses (due to the large number of student population), the staff face difficulties in the teaching and learning process mainly in relation to conducting lectures, marking, monitoring and supervision. However, the university consists of a Staff Development Center (SDC) that provides training to staff members of different levels on random areas related mainly to teaching, learning and assessment.

13. (BU), Bangladesh.	14. (UoM), Sri Lanka
No	No, the local training is again not enough. No regular upgrading and monitoring process is available. Since, the acknowledgement of staff is not based on their performance, less attention was given for their individual continuous professional development. The international exposure on teacher training is vastly lagging and that prevent being in touch with state of the art knowledge.

5. Please describe the current state of the staff training on consumer behaviour relevant to energy efficiency and climate change. Is it sufficient?

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	The staff of the university, in connection with the implementation of this project, thoroughly analyzes the existing and promising training programs for bachelors, masters and doctors in order to prepare topics on consumer behavior related to energy efficiency and climate change, and their inclusion in curricula. This is sufficient for the implementation of the project.	Not sufficient
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Is not sufficient (not applicable)		No it is insufficient as the staff lacks training on consumer behaviour relevant to energy efficiency and climate change.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
No	No, there's no such training available locally.	

6. Does the academic staff have flexibility in designing its own skill development plans or does it have to follow a centrally determined package?

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Faculty members have the freedom to develop their own skills development plans.	The staff has the flexibility and capability to initiate the skill development program. However,it would be a necessity to jointly work with the other colleagues of the consortium to frame out an appropriate program.

7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Academic staff has a flexibility in choosing training programs.		There is staff stability.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
Yes, academic staff have flexibility in designing its own skill development plan.	Possible, however, less attention has paid since there is no recognition given for those.	

7. Is there staff stability, or does it suffer from high turnover among such professionals?

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	At the department and in the structure of the university, implementing this project, there is no staff turnover.	The staff stability is not a major problem in Sri Lankan Universities. Job security is the one of major factor for the attracting academic professionals to the universities. Generally, professionals who are working in universities have higher prestige with comparatively high salaries with professional freedom compare to the other government institutions. Academic freedom, higher wages and incentives, financial and other facilities offed by the government are at satisfactory level when compare to others. Due to those reasons, professionals are not willing to turnover from their organizations.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Low staff turnover		There is staff stability.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
Yes, academic staff have flexibility in designing its own skill development plan	It's now becoming stable as the staff remunerations have increased drastically within last 6-7 years	

8. What staff skills are required for integrated education on consumer behaviour relevant to energy efficiency and climate change (please list up to five major needs):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Appropriate education, diligence, active participation in research, participation with reports at congresses and conferences related to	I. Skills on teaching abilities and Learning methods II. Patience, adaptability and mentoring skills III. Communication and presentation skills

	energy efficiency and climate change, communication and cooperation with leading specialized enterprises.	IV. Technical knowledge, skills and capacity building V. Group facilitation techniques,leadership and organizatinal skills
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
1. Interdisciplinary up to date knowledge 2. Presentation skills 3. Innovative teaching methods (case studies) 4. Skills in digital economy (big data, AI, machined learning)		1. Academic expertise 2. Training and pedagogic practice in integrated education on consumer behaviour relevant to 3. energy efficiency and climate change 4. Research opportunities
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
1. Training and workshop. 2. Communication skills development	1. Communication 2. IT skill 3. Communication 4. Teamwork and Leadership 5. Creativity and Problem Solving 6. Information Usage and Management 7. Adaptability and Flexibility	

9. Please list up to five major gaps in integrated education on consumer behaviour relevant to energy efficiency and climate change related to staff skills:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Low awareness in the media, lack of access to information, closeness of technical information of companies about their technological breakthroughs, a small number of high-quality textbooks, the need to create specialized laboratories in universities for the implementation of technical solutions made by students and graduate students in consumer behavior related to energy efficiency and climate change	I. Lack of policies to support HEIs for researches and capacity building strategies for academic II. Technical konwledge of staff is not adequate III. Issues in strategic planning and management at national and institutional level IV. Lack of systametic procedure for managing and mortivation of academic staff V. Lack of training programs for academic and technical staffs on capacity building VI. Lack of assessment and evaluation procedures for academic and technical staff
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.

10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
1. Interdisciplinary up to date knowledge 2. Presentation skills 3. Innovative teaching methods (case studies) 4. Skills in digital economy (big data, AI, machined learning)		1. Lack of modern academic and technical expertise. 2. Lack of research opportunities and frameworks (Due to time and financial constraints) 3. International collaborations and networking. 4. Lack of necessary software and physical equipment.
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
1. Develops and employs decision-support resources 2. Focuses, where appropriate, on place-based analyses to support decision making in specific	1. Gap in Infrastructure facilties 2. Gaps in training and staff development 3. Gaps in research and development in teaching and learning 4. Gaps interaction between staff/student and the industry	

5.4 Access to Information, Knowledge and Technology

Access to information, knowledge and technology is becoming increasingly critical for sustaining long-term growth and development of education. It relates to the capacity to enable academic staff and students to mobilize, access and use information and knowledge, including access to and effective use of internet. Please answer following questions.

1. Do students and teachers have access to the novel educational resources on consumer behaviour relevant to energy efficiency and climate change? Please specify:

1.1. Printed learning materials in national language:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Students and teachers of KSTU have access to educational resources in printed form in the library system of KSTU. It contains in free access to 19 documents and 457 articles of periodicals in the field of “energy efficiency”, 60 documents and 115 articles of periodicals, including materials in the field of “climate change”, 119 documents and 29 articles of periodicals, including material in the field of "consumer behavior" in print. Approximately 10% of these publications address consumer behavior in relation to energy efficiency and climate change. It is possible to deliver books by interlibrary card	yes
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.

		Partly provid
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
No	No	

1.2. Printed learning materials in English or other languages:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	KSTU library has only a few free access documents in the indicated areas in English, in particular: Sustainable development [Text]: textbook / B. Nath, L. Hens, D. Devuyst. - Brussels: VUBPRESS, 1998. - 365 p.Energy. From fossil fuels to sustainable energy resources [Text] / J. Salay, P. Borjesson, P. Helby. - Uppsala: Uppsala Publishing House, 1997. - 52 p. If necessary, a large number of publications, including in foreign languages can be obtained using the interlibrary card.	yes
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
not enough		yes
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
yes	No	

1.3. Online learning materials (open-source videos, simulators (calculators and software), case studies, text material) in national language:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Students and teachers of KSTU have free online access to the following educational resources in Russian: 1)The University Library Online electronic library system. Address for work in the system: http://biblioclub.ru 2)Electronic library system «Book.ru». Work Address: https://www.book.ru/	yes

	3)Publishing "Lan". Work Address: https://e.lanbook.com 4)National Electronic Library (NEB). Address for work: https: //neb.rf/ 5)Polpred.com Media Review. Work Address: http://polpred.com/news 6)The electronic library system of the publishing house “Urayt”. Work address: http://biblio-online.ru 7)Electronic library system IPRbooks. Work address: http://iprbookshop.ru 8)Publishing Center "Academy". Work Address: http://www.academia-moscow.ru These library systems are not limited to book resources only, but also contain interactive and multimedia educational content, e-learning courses and tests. In addition to the above library systems, the KSTU library allows access to a large number of educational resources, including those including online courses. More information: http://klgtu.ru/library/elib/	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
subscription to bases		
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
No	No	

1.4. Online learning materials (open-source videos, simulators (calculators and software), case studies, text material) in English or other language:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	KSTU students and teachers have free online access to materials from more than a hundred foreign journals in various fields, including in the field of energy efficiency. The full list is available at the link: http://klgtu.ru/library/elib/index5.php In addition, students and teachers of KSTU have free online access to a large number of resources including training materials, video	yes

	courses, etc., including the most well-known and high-rating databases like Scopus, WebOfScience, Nature Science, Elsevier, Wiley, Taylor & Francis, IEEE etc. More information on the link: http://klgtu.ru/library/elib/eor/	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Not enough		yes
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
Yes, English	yes	

2. Does HEI use MOODLE for educational purposes

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	Yes, KSTU uses its own electronic educational environment, developed on the basis of MOODLE.	yes
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Yes		yes
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
No	yes	

3. Does HEI use computer-based intelligent systems, MOOCs, computer learning systems, big data mining for educational purposes? Please specify:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	At present, the electronic educational environment allows students to develop access to their own MOOC courses within the scope of the MOODLE platform. A number of courses in the direction of "economics" is already available for students. Consideration is being given to the possibility of preparing such courses in English as part of	yes

	the implementation of the master program in the field of "Electric power industry and electrical engineering". There is a techno park in KSTU which has accelerated interaction of companies in the high-tech sector due to the presence of a developed infrastructure and the provision of essential services. A number of projects implemented in the techno park use computer intelligent systems, computer learning systems, and big data mining. At the same time, for educational purposes, besides involving individual students in the work on the projects being implemented, these areas are not used.	
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
No		Yes, Computer learning management systems, MOOCS, and MOODLE platforms are utilized for undergraduate and postgraduate courses by all faculties of the university. For example, in the Faculty of Arts, all undergraduate courses are supplemented with a MOODLE platform which facilitates student learning and increase teacher student interaction. In addition, the MOODLE platform is also utilized for the implementation of alternative assessments in undergraduate courses
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
To some extent, HEI uses computer based system for educational purposes.	No	

4. Does HEI use software for integrated education on consumer behaviour relevant to energy efficiency and climate change? Please specify:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.

4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	KSTU does not use specialized software in the scope of consumer behavior related to energy efficiency and climate change. At the same time, in the scope of energy efficiency and energy saving, the program products EPLAN and RASTR which licensing for the needs of the university at this day can be considered as applicable.	yes
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
No		No
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
No	No	

5. What Information/Knowledge/Technology is required for integrated education on consumer behaviour relevant to energy efficiency and climate change (please list up to five major needs):

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)Implementation of modern information-educational environment in the field of energy conservation, including in the field of consumer behavior related to energy efficiency and climate change is required. 2)It is necessary to prepare a large number of educational materials, including interactive educational resources for filling the information-educational environment, which will require the use of a large amount of time resources of university teachers. 3)For the full implementation of such programs, it is necessary to upgrade the English proficiency skills of some teachers. 4)It is necessary to introduce computer intellectual systems, computer learning systems, big data intellectual analysis for educational purposes in the specified area on the basis of the university. 5)It is necessary to ensure closer cooperation with representatives of the industry in order to organize the improvement of their qualifications and ensure the practice of students in this area.	I. Support from educational stakeholders II. Develop new programs and curricula for education on consumer behavior relevant to energy efficiency and climate change III. Develop training programs for academic and technical staffs and students on capacity building on use of new technology IV. Allocate sufficient budget for HEIs for research and innovation activities V. Develop new partnerships with foreign universities and organizations for share knowledge and technologies for capacity building activities.
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.

10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Subscription to case studies and simulators, Big Data mining		1. Technical and academic knowledge in the field of Consumer Behaviour relevant to Energy 2. Efficiency and Climate Change. 3. Research expertise. 4. Technological equipment. 5. Network among key stakeholders. 6. Awareness raising
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
i) Online open sources MOODLE ii) Sufficient support and access iii) Free access to the resources	1. Knowledge on sustainable energy, renewable energy etc. Adopt more efficient technologies, Try to reduce energy losses, Knowledge about reducing climate polluting emissions. Invest more on renewable energy. 2. Awareness programs should be arranged not only for the students but also for the public.Basic fundamentals of energy cycles and diverse effects 3. Change people's attitude. For that, they need proper education regarding what is the impact of 'consumer behavior relevant to energy efficiency and climate change'. Initially, people should know how to save energy through their day-to-day life. 4. Information about CURRENT situation of root cause problems for energy consumption and what measures are available to support to reduce climate change. 5. Knowledge related to overall behavior 6. Energy economics, Theory of utility and choice theory, welfare economics 7. General awareness on energy efficient technologies and their impact on climate	

6. Please list up to five major gaps in access to information, knowledge and technology pertinent to integrated education on consumer behaviour relevant to energy efficiency and climate change:

1. VGTU, Lithuania.	2. (UoH), UK	3. (TalTech), Estonia.
4. (MGSU), Russia.	5. (KSTU), Russia.	6. (UoR), Sri Lanka.
	1)Low level of proficiency in foreign languages, both students and teachers.	I. Technical capacity of HEI not adequate II. Lack of trained professionals who are specialized in these subject areas III. Lack of funding and infrastructure facilities

	2)Insufficient use of modern educational methods and tools, educational and methodological approaches in the implementation of educational programms. 3)Insufficient material support and the provision of modern program-based tools used by educational programs. 4)A low basic level of education in the field of energy preservation, the lack of trained specialists in this field and, as a consequence, the complexity of integrating narrowly specialized courses into educational programs. 5)The complexity of registration and access to foreign databases of educational resources in foreign languages. Access to a number of them is possible only from the local network of KSTU. The expected creation of an intranet and controlled access to the Internet by Russian users.	IV. Lack of motivation to academic and non-academic staffs and students for these subject areas V. Lack of communication in inter and intra institutional level VI. Lack of access to data sources for research and innovation activities
7. (UNIBO), Italy.	8. (SPbPU), Russia.	9. (ASV), Russia.
10. (MSU), Russia.	11. (PSTU), Bangladesh.	12. (UoC), Sri Lanka.
Subscription to case studies and simulators, Big Data mining		1. Lack of technical capacity 2. An organized approach and framework for knowledge and research contribution. 3. Lack of manpower. 4. Lack of educational policy frameworks. 5. Lack of finances to sustain knowledge building and dissemination
13. (BU), Bangladesh.	14. (UoM), Sri Lanka	
i) Lack of knowledge on integrated education on consumer behaviour relevant to energy efficiency and climate change ii) Lack of training and workshop iii) Transfer of technology and methodologies	1. Poor knowledge and skills in ICT 2. Lack of fluency in English language 3. Unequal access for Internet 4. Poor bandwidth 5. Inadequate training opportunities 6. Lack of human resources 7. Lack of technologies	