LifeLong Learning for Energy security, access and efficiency in African and Pacific Small Island Developing States

L[3]EAP – Results of Work Package 2

Local Report from Mauritius

Assessment of Needs for Lifelong Learning in the Energy Sector
And
Assessment of Needs for Capacity Building of University staff in partner institutions

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1 Project LEAP and the aims of WP2

Project L^{3}EAP is a three year project about lifelong learning (LLL) for energy security, access and efficiency in Small Island Developing States (SIDS). Concentration is focused on tailor-made learning offers about sustainable energy and increase the capacity at universities for delivering high quality lifelong learning courses in African and Pacific SIDS.
The Work Package 2 consists of the baseline study where training needs for lifelong learning in the energy sector were analyzed. The main objectives were to collect data on the training needs of energy practitioners and collect data on the capacity building needs of university staff.
Some Universities in Mauritius have dedicated programmes/courses to renewable energy and energy efficiency; however, solutions for developing countries are not well addressed. The planned courses will be developed, taught and administered by university staff. For this reason the knowledge of university staff in fields of lifelong learning, energy access, security and efficiency (EASE) and administration is essential. If there is a lack of knowledge the task can´t be performed successfully. Therefore the questionnaire examines the skills of university staff and where capacity building is needed. It also analyses the demanded knowledge.

2 Methodology

For the survey the template of the questionnaire prepared by the L^{3}EAP-Project was used for the energy practitioner survey (Annex 1) and for higher university staff (Annex 2). The questionnaire was sent by email and via post and the data obtained were analyzed.

2.1 Energy Sector Needs Analysis

The energy sector needs analysis was carried out by sending the questionnaires to energy related companies. The survey questionnaires were sent to 50 organization/companies and only 32 companies/organization responded which represents a response rate of 64%.

2.1.1 Survey questionnaire

The energy sector survey for energy practitioners contains 5 main questions, each divided into several parts. Question 1 was about the organization and some general data of the participant. In Question 2, the respondents defined energy related phrases. The third question surveyed knowledge levels and question 4 requested the training needs of energy practitioners. The last question was about the preferred delivery mode of courses. The paper and web based questionnaire were equally treated.

2.1.2 Other activities

In total 50 companies were requested to participate.

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2.2 University staff Capacity Building

Some universities in Mauritius have dedicated programmes to renewable energy and energy efficiency; however, solutions for developing countries are not well addressed. There are several possible barriers for the development of training courses for energy practitioners which will be listed and analyzed in the following sections.

2.2.1 Staff survey

The questionnaire was divided in sections from A to D. Sections A and D was for every participant. The section B was filled out by academic staff that is developing and delivering the courses. Section C was made for administrators and course developers. To assure that only applicable participants fill out the actual section the question whether they are administrators or developers was mandatory. There was the possibility of yes and no. It was sent to staff and professors of University of Mauritius, University des Mascareignes and University of Technology who are working in the field of energy. We send out emails to the questionnaire to 35 persons and 18 have answered the questionnaire.

3 Results

3.1 Energy Sector

3.1.1 Survey results

The survey was answered by a total of 32 persons. This analysis contains all answered surveys including the paper based survey (10 participants) and those who sent by email survey (22 participants).

Question 1: Basic bio-data

The 32 response can be categorized into companies, NGO's, public authorities and others as it can be seen in Table1. 87.5 % of the respondents were from private sectors out of which 4 organizations are from power producing companies and 1 is from renewable energy service provider. The public authority organization was basically the Central Electricity Board, which is the utility company responsible for power generation and distribution on the island.

Table 1: Types of Organizations of Energy Practitioners

Type of Organization	Number
Company/Private sector	28
Public Authority	3
Others	1

The first question in the survey was about the profession, position and energy-related duties in the organization. The response of the first question is show in Table 2 below where it was classified in terms of administration/management/leadership, project

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development, management and engineer, consulting, analyst/chemist/ environmental/sustainability officer and others.

Table 2: Energy Practitioners Profession-classifications

Classification of Profession	Number
Administration/Management/Leadership	9
Project Development and Management, also Engineers	15
Analyst/Chemist/Environment/Sustainability officer	7
Others	1

The participants from the different organization were from different levels in their respective organization as illustrated in Table 2. Classification showed that around 28 % involved in administration, management and leadership. 46.8 % of participants were involved in energy related engineering projects with development, implementation and management. 21.8 % of the participants were in charge of laboratories or environmental/ sustainability related issues. 1 participant (3.1 %) was a student from the University of Strasbourg.

Question 2: What do you understand by the terms energy access, energy security and energy efficiency?

Energy Access:
In total 32 participants gave their personal definition of energy access. Three different concepts can be found for how energy access is understood by participants of the study. This is shown in the Annex 3. In simple words the majority defined it as the 'Availability of energy that can be readily used'. Different forms of energy like heat, LPG, electricity were mentioned in some cases. Mostly participants used the word 'energy' in context with availability.

Energy Security:
32 persons gave their personal definition about energy security. In most responses, reliability and continuous energy supply was primary mentioned. The detail of the definitions is found in Annex 3.

Energy efficiency of appliances or building and in process industry:
Analyzing the given definitions of energy efficiency is difficult, because it is hard to find a classification within the answers. The phrase ratio was used very often. The detailed definitions are found in Annex 3.

Question 3: Your personal knowledge in the following areas (0 = none, 4 = expert)
The next analysis contains the answers of the question about the personal knowledge in fields of energy related issues and of laws and energy policies in SIDS. In total 32 participants chose a range between none (0) and expert level (4) knowledge. It must be

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noted that the number of the respondents was reduced to 31 as 1 participant omitted the question 3. The results of this question can be seen in Figure 1. The average of knowledge in the individual areas which is defined as the number of people responded as having an average knowledge by a score of two divide by the total response for that area. It was found that the average knowledge is in the range of 0.14 for laws/legislation/regulations to 0.45 for energy management.

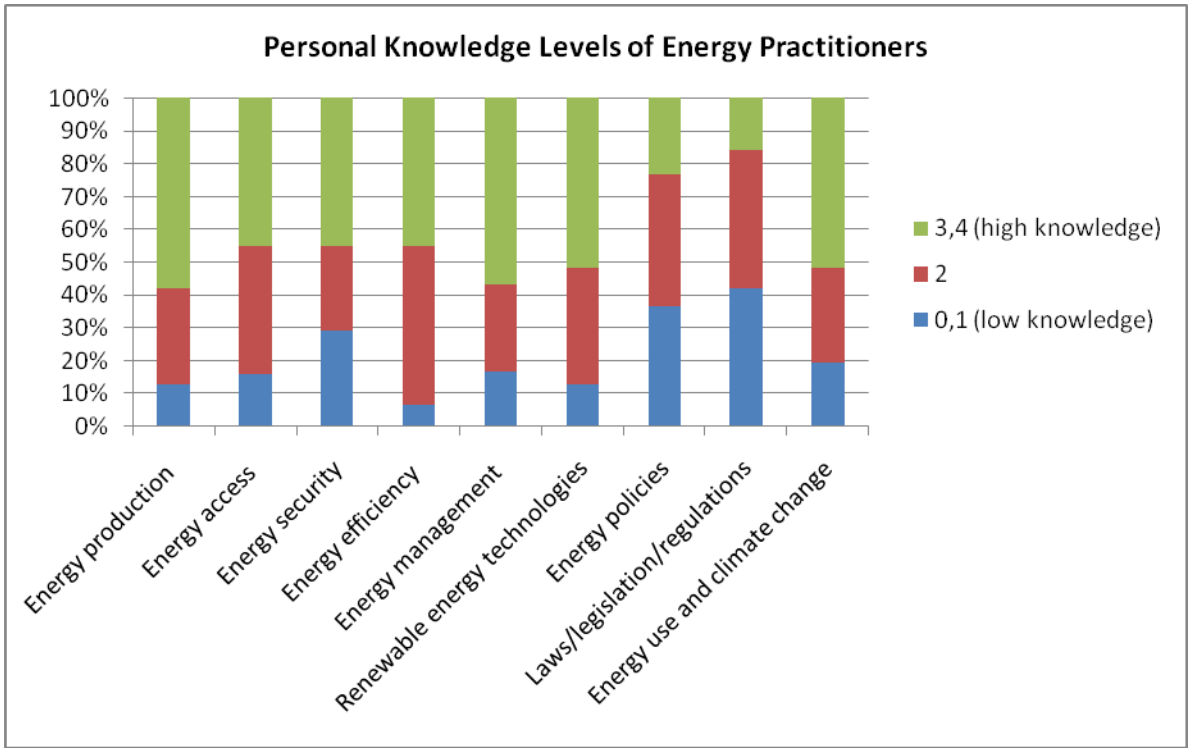

Figure 1: Personal Knowledge of Energy Practitioners

Table 3: Percentage of Personal Knowledge of Energy Practitioners

	% Level of Expertise (0 = none, 4 = expert)				
	0	**1**	**2**	**3**	**4**
Energy production	3.2	9.7	29.0	51.6	6.5
Energy access	0.0	16.1	38.7	35.5	9.7
Energy security in the SIDS	3.2	25.8	25.8	35.5	9.7
Energy efficiency	0.0	6.5	48.4	32.3	12.9
Energy management	3.3	13.3	26.7	46.7	10.0
Renewable energy technologies	0.0	12.9	35.5	41.9	9.7
Energy policies	6.7	30.0	40.0	20.0	3.3
Laws/legislation/regulations	6.5	35.5	41.9	16.1	0.0
Energy use and climate change	3.2	16.1	29.0	38.7	12.9

From Table 3, it can be seen that most of the respondent have an average knowledge in the different areas.

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Question 4: On a scale of 0 (not important) to 4 (very important), which of topics listed in the table below would you like to see included in a course on energy access, security and efficiency?

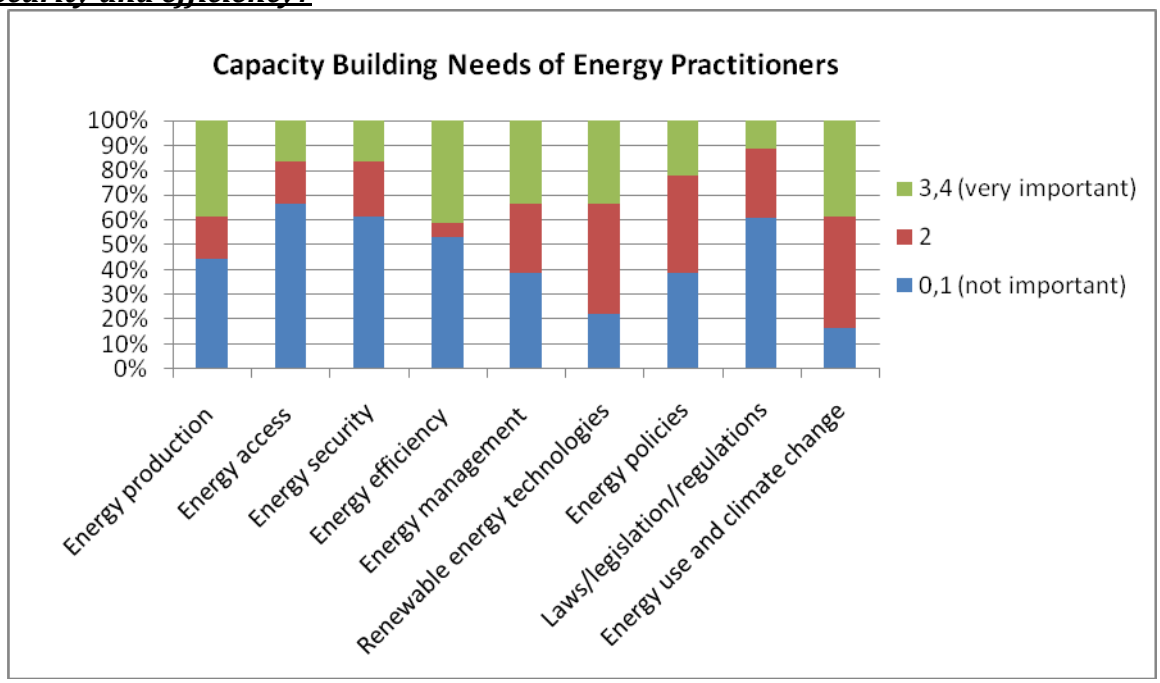

Figure 2: Capacity Building Needs of Energy Practitioners

Table 4: Percentage Capacity Building Needs of Energy Practitioners

	% Level of Expertise (0 = not important, 4 = very important)				
	0	**1**	**2**	**3**	**4**
Energy production	0.0	0.0	3.1	46.9	50.0
Energy access	0.0	0.0	28.1	34.4	37.5
Energy security in the SIDS	0.0	0.0	25.0	34.4	40.6
Energy efficiency	0.0	0.0	6.3	34.4	59.4
Energy management	0.0	0.0	6.3	28.1	65.6
Renewable energy technologies	0.0	0.0	3.1	59.4	37.5
Energy policies	0.0	3.1	9.4	46.9	40.6
Laws/legislation/regulations	0.0	0.0	15.6	43.8	40.6
Energy use and climate change	0.0	3.1	3.1	46.9	46.9

It was asked how important including the listed topics in a course on energy access, security and efficiency is. 32 participants answered this question. The response of the question is show in Figure 2 and Table 4.
In Average every item got values between 0.14 for energy production and renewable energy technologies and to 0.36 for energy use and climate change.

Listing of further topics
Out of 32 respondents, 17 Participants listed some of the further topics they would like to see in a course and commenting on the question. The topics are as follows:

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- Sustainability, blue economy versus green energy technologies-their application and advantages/disadvantages
- Calculations on energy efficiency. Industrial scale calculations. Auditing in different sectors. Use of new technologies. Use of simulation software. Case studies on energy management. Site visits in energy efficient industries.
- Research and industries collaboration.
- Barriers associated with the energy production and distribution; Impacts – social, environmental and economic
- Energy and thermodynamics, sustainable energy for SIDS, design aspects of renewable energy
- Probabilistic risk analysis
- Ways to enable and motivate consumers to manage their energy consumption; Investment analysis and prospection in energy sector and development
- Green buildings and sustainability
- Realistic examples of implementation of each topic. Use of case studies or projects to increase understanding of students. Hands on experience are highly relevant and should be incorporated as the main barrier to the success of such courses is that students never actually manage to implement it in real life situations.
- Complexities associated with integration of large quantities of variable renewable energy sources; Maximum level grid can absort with respect to variable renewable energy
- Tarrification of energy utility/ basic design and good practices in formulating/ implementing renewable energy in processes
- Conduct a study on risks pertaining to SIDS
- Economic assessment of projects
- Blue economy versus green energy technologies- their application, advantages and disadvantages
- Cost of renewable energy against conventional energy
- Energy awareness (education to students in colleges - good practices)
- Alternative sources of energy for a poultry processing plant

Question 5: How will you apply the knowledge gained from the proposed course?

Out of 32 respondents, 29 participants stated how they would apply the knowledge gained in the course about energy security, access and efficiency. Many respondents mentioned the idea of implementing energy concepts in their place of work. 7 respondents mentioned the idea of optimization of processes or products, 2 respondents stated to reduce energy losses, 1 respondent mentioned developing energy policies at his workplace and 2 mentioned application of energy management at their place of work.

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Question 6: Preferred delivery mode:

All the 32 participants responded to this question. The most preferred delivery mode for the course is mixed mode (56 %). 35 % of the respondents preferred face to face mode and only a minority of 9 % opted for the online/e-learning mode as shown in Figure 3.

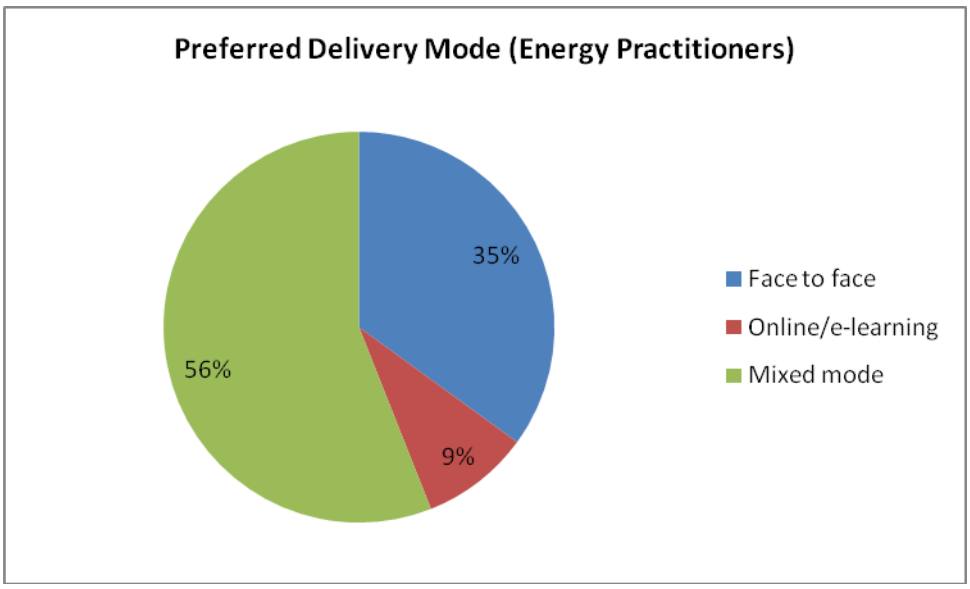

Figure 3: Preferred Delivery Mode (Energy Practitioners)

Question 7: Further comments

Out of the 32 respondents, 5 had other comments while 1 respondent queried about how to get enrolled and the fee associated with the course. The other comments are as follows:

- Emphasis should be laid on the economic and affordability aspects of sustainable energy utilisation
- Continuous training. An energy related network should be created so that every stakeholder can share their experiences, their research, results and so on.
- The course should be designed such that it should be less theory and it should be more practical and work-based.
- Involve Parastatal and Governmental bodies in the training so that they know that heavy beaurocracy can impact negatively on the implementation of energy optimisation and development of renewable energies
- Run course on a part-time basis

3.2 University staff

3.2.1 Survey Results

The survey was answered in total by 18 persons. This analysis contains all answered surveys including the paper based survey (1 participant) and those who sent by email survey (17 participants). Out of the 18 respondents, 7 are female and 11 are male.

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3.2.2 Structural and institutional barriers to course development and teaching

There are several possible structural and institutional barriers to course development and teaching. The University of Mauritius does have special courses for LLL in the field of energy; however, there was a centre for Life Long Learning which has now become the centre of innovative learning. In fact, due to the increasing demand for continuous profession development (CPD) courses, different departments have been offering different CPD on their own.

The structural barriers that are envisaged are as follows:

- There are several departments that are working in the area of energy in general and it might be difficult to bring them under the same umbrella
- E-learning has been mostly conducted for educators and it has not yet been experimented in the technical field like energy

The institutional barriers are as follows:

- The LLL has to be conducted on a face to face basis in a first instance in order to experience all the problems/difficulties that can be encountered.
- All the materials cannot be disclosed on the web as there might be high risks of the materials being copied by other institutions
- All the participants will be provided with a certificate of attendance; however, they will have to pay a small fee to cover the cost.
- Moreover, the course will have to be MQA approved so that organization sending their staff can recover part of the cost through different schemes provided by government

3.2 Staff capacity building survey results

Section A : Basic bio-data

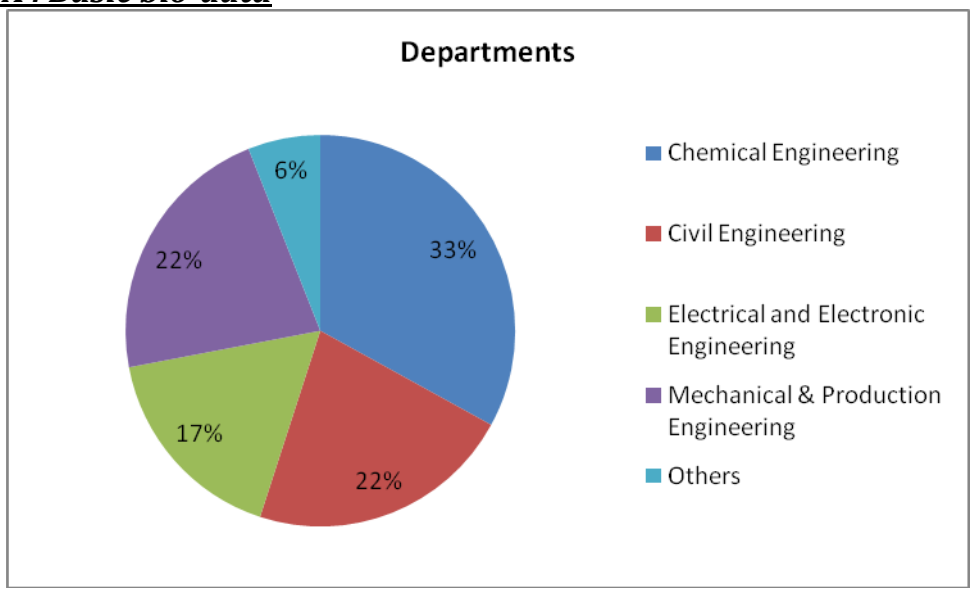

Figure 4: Departments of Participants

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Majority of the participants are staff from the University of Mauritius. Only one participant is employed at the University of Technology and one at the University Des Mascareignes. There were 18 respondents, the majority of which is from the chemical engineering department (6 respondents) followed by mechanical and production engineering department (4 respondents), civil engineering (4 respondents) and from electrical engineering department (3 respondents) as shown in Figure 4. One respondent did not mention the department.

Section B (Academic staff)

The section B is to be filled only by academic staff of the university who will develop and deliver courses. 18 respondents answered this section whereby it was asked whether energy access, energy security and energy efficiency is part of research or teaching. Energy efficiency is the most frequently mentioned (9 respondents) followed by energy access which was mentioned by 6 participants and energy security (5 respondents).

Question 3: Your personal knowledge in the following areas (0 = none, 4 = expert)

18 persons responded to this question. These answers represent the personal knowledge in specific areas related to energy. 7 respondents stated that their personal knowledge is at expert level in energy efficiency, 6 have expert knowledge in energy management, 6 have expert knowledge in renewable energy technologies and 7 have expert knowledge in relation between energy use and climate change. It must be noted that 12 respondents stated that they have low knowledge in energy access, 11 respondents stated that they have low knowledge in energy security & laws/legislation/regulations relating to energy, while 7 respondents mentioned to have low knowledge in energy policies and 8 respondents stated low knowledge in the field of energy production (Figure 5 and Table 5).

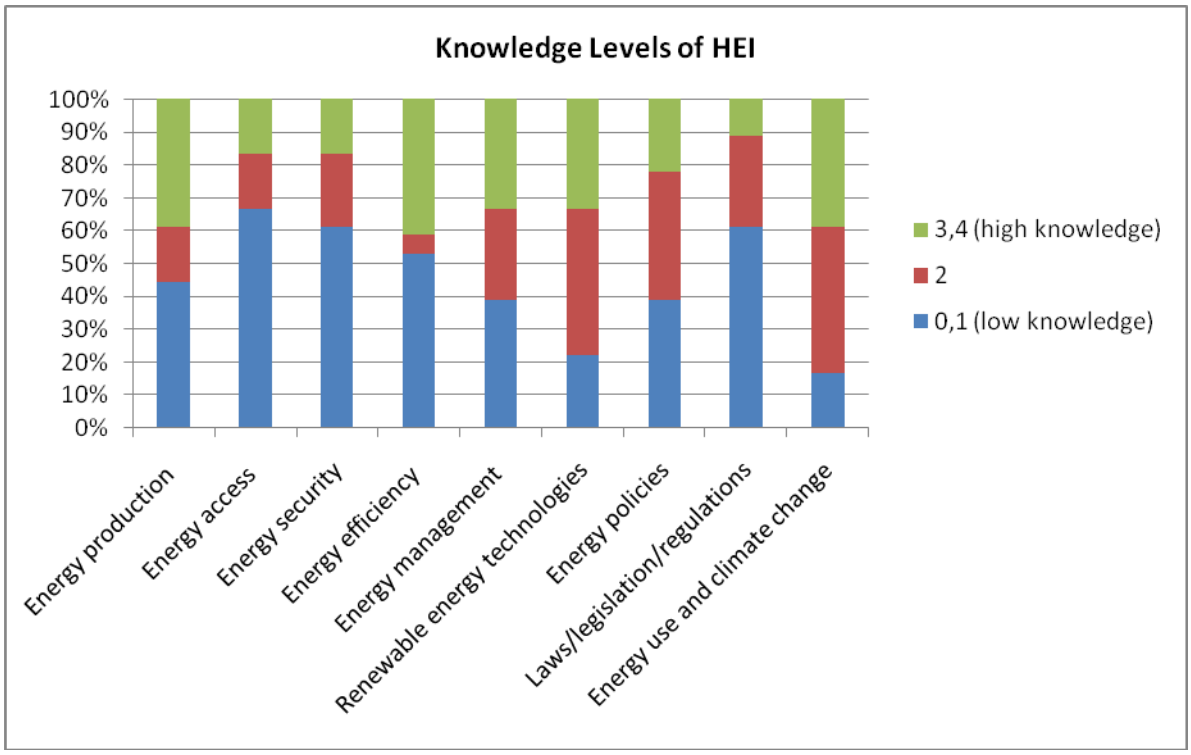

Figure 5: Personal Knowledge of University Staff

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Table 5: Percentage Level of Expertise of University Staff

	% Level of Expertise (0 = none, 4 = expert)				
	0	**1**	**2**	**3**	**4**
Energy production	5.6	38.9	16.7	27.8	11.1
Energy access	22.2	44.4	16.7	5.6	11.1
Energy security in the SIDS	22.2	38.9	22.2	5.6	11.1
Energy efficiency	5.6	44.4	5.6	22.2	16.7
Energy management	11.1	27.8	27.8	22.2	11.1
Renewable energy technologies	5.6	16.7	44.4	11.1	22.2
Energy policies	5.6	33.3	38.9	16.7	5.6
Laws/legislation/regulations	22.2	38.9	27.8	5.6	5.6
Relation between energy use and climate change	11.1	5.6	44.4	22.2	16.7

Question 4: Would you be interested in benefitting from training in the following areas:

18 respondents answered this question however, some of the participants skipped part of the question. The question about the interest of benefitting from training courses shows that 17 participants would like to benefit from energy efficiency, 16 participants would like to benefit from energy management, 15 would like to benefit from renewable energy technologies, 13 would like to benefit from energy production, 11 participants were willing to benefit from training courses related to laws/legislations/regulations relating to the energy in SIDS and 10 participants were willing to benefit from training courses related to issues of energy access in SIDS, energy security in SIDS and energy policies (Figure 6).

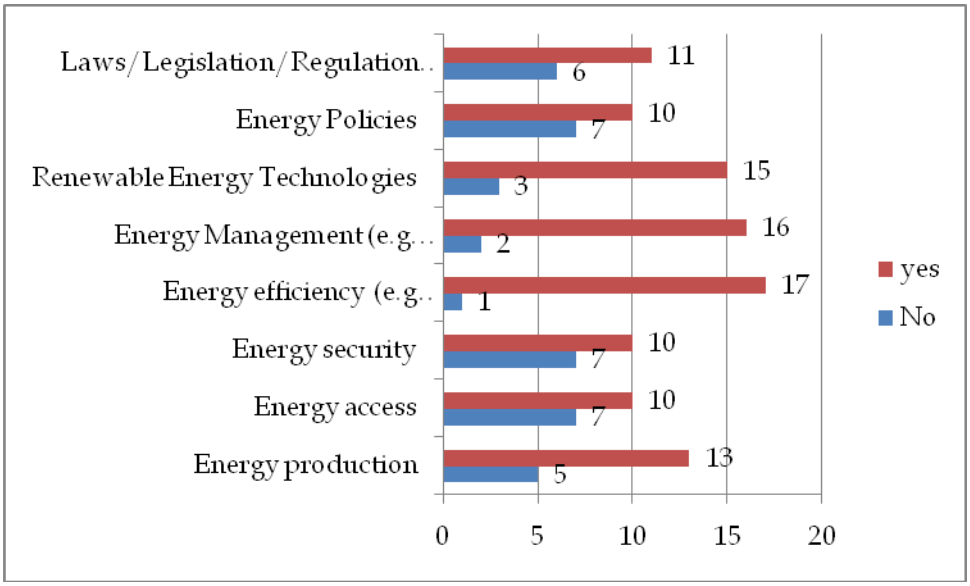

Figure 6: Number of Respondents Interested in Benefitting from Training

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Further Topics

Further topics for the capacity building were mentioned in this section. The topics mentioned are as follows:

Energy Production:

- Different ways of producing energy
- Enhancement of energy production
- Current energy mix in the SIDS and available renewable energy resources, barriers to energy production
- Construction materials- buildings and transportation
- Advanced training on environment, social and economic issues of energy production

Energy Access:

- Advanced training on issues associated with energy access and solutions to address those issues

Energy Security:

- Overcoming the challenges of energy security
- Advanced training on energy security for Mauritius

Energy efficiency:

- Energy efficient building and appliances
- Energy efficient refrigerator
- Green buildings
- Optimisation of energy efficiency
- Energy modelling in buildings, Green building design, Smart buildings
- Energy efficiency in buildings (any level of training)
- Advanced training on procurement of energy efficient appliances/apparatus

Energy Management:

- Energy audit, Energy recovery, Energy management
- Energy measures to reduce cost of electricity at home
- Energy management measures in industry
- Energy Audits (Any level of training)
- Improving energy management system
- Energy performance monitoring, Energy auditing, smart buildings and smart grids
- Advanced training on auditing and optimisation techniques

Renewable Energy Technologies:

- All RETs
- Issues related to Renewable Energy Technologies

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- Access to measured climatic data, current state of renewable energy technologies, latest development
- Any training and any level
- Advanced training on feasible renewable energy sources in SIDS

Energy Policies:

- Their challenges
- Advanced training on energy policies

Laws/Legislation/Regulations relating to energy:

- Advanced training on the legal framework related to energy in Mauritius

Section C (Administrators)

Question 5: Are you involved in developing and managing continuous professional development courses?

The section C was filled out by course developers. In total there were 8 persons answering this section. 6 respondents (75%) are involved in developing continuous professional development courses while 4 respondents (25 %) are involved in managing continuous professional development courses.

Question 6: What is your personal knowledge/experience in the following areas of Lifelong Learning courses (LLL) (0 = none, 4 = expert level). Please tick in the appropriate column.

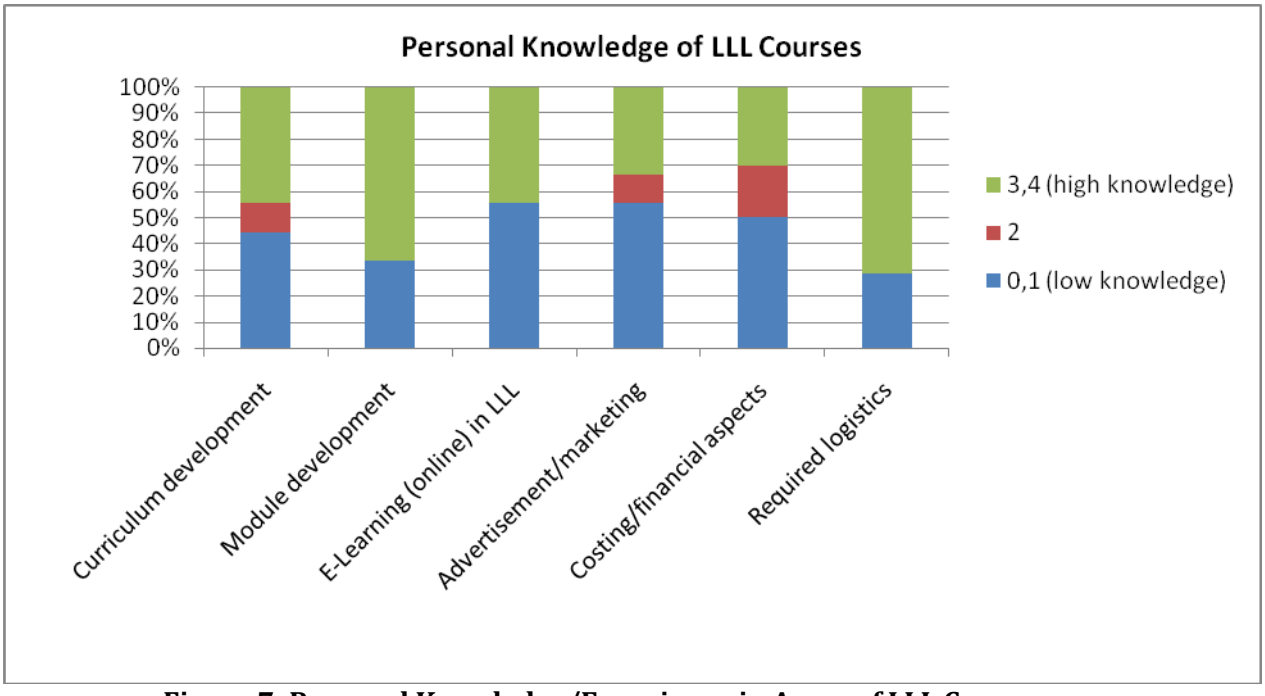

Figure 7: Personal Knowledge/Experience in Areas of LLL Courses

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Table 6: Percentage of Personal Knowledge/Experience in Areas of LLL Courses

	% of Personal Knowledge in areas of LLL				
	0	**1**	**2**	**3**	**4**
Curriculum development in LLL	22.2	22.2	11.1	22.2	22.2
Module development in LLL	22.2	11.1	0.0	44.4	22.2
E-Learning (online) in LLL	44.4	11.1	0.0	44.4	0.0
Advertisement/marketing of courses in LLL	44.4	11.1	11.1	33.3	0.0
Costing/financial aspects of the courses for LLL	40.0	10.0	20.0	30.0	0.0
Required logistics for LLL	28.6	0.0	0.0	71.4	0.0

This question was answered by 10 respondents. The experience and knowledge on module development in LLL is high (Figure 7 and Table 6). 6 persons stated to have high knowledge module development, 5 respondents have high knowledge in required logistics for LLL while 4 respondents have high knowledge in curriculum development in LLL and e- learning in LLL. The other participants do have low skills in every asked field. Especially in advertisement/marketing and costing/financial aspects where 5 respondents stated to have low level of knowledge.

Further comments stated out by one respondent out is as follows:

- One respondent has have developed with the help of other colleagues of the department a 'Licence Pro en Gestion et Maintenance des Installations Hotelieres et Immobilieres' where the audience was essentially professionals from the public and private sector. This course has been conducted on a part time basis during academic year 2013/2014. Much emphasis has been laid on energy management and energy efficiency in buildings

Question 7: Would you be interested in benefitting from training in any of the following areas of lifelong learning courses:

10 respondents answered this question. Out of the 10, 8 respondents are willing to have training on curriculum development, 7 on Module development, 8 on e-learning (online), 6 on advertisement/marketing of courses, 6 on costing/financial aspects of the courses and 4 on required logistics.

Further comments on the topics and level of training are as follows:

- Advanced training (in all proposed areas of lifelong learning)
- Construction materials and sustainability (in all proposed areas of lifelong learning)
- Any training at all levels (on e-learning)

Section D(All staff)

Further topics for the capacity building were mentioned in this section. Design exercises of non-conventional renewable energy systems such geothermal energy recovery and gas hydrate recovery and energy considerations, construction materials and

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sustainability, industrial exposure for a better understanding of energy issue, visit to other SIDS and building energy independence in SIDS are of interest.

Question 8: Which type of delivery mode would you prefer for the capacity building course for staff – F2F, online/e-learning, mixed mode?

In Figure 8 the distribution of preferred delivery mode of courses is shown. This question was answered by all the 18 participants.

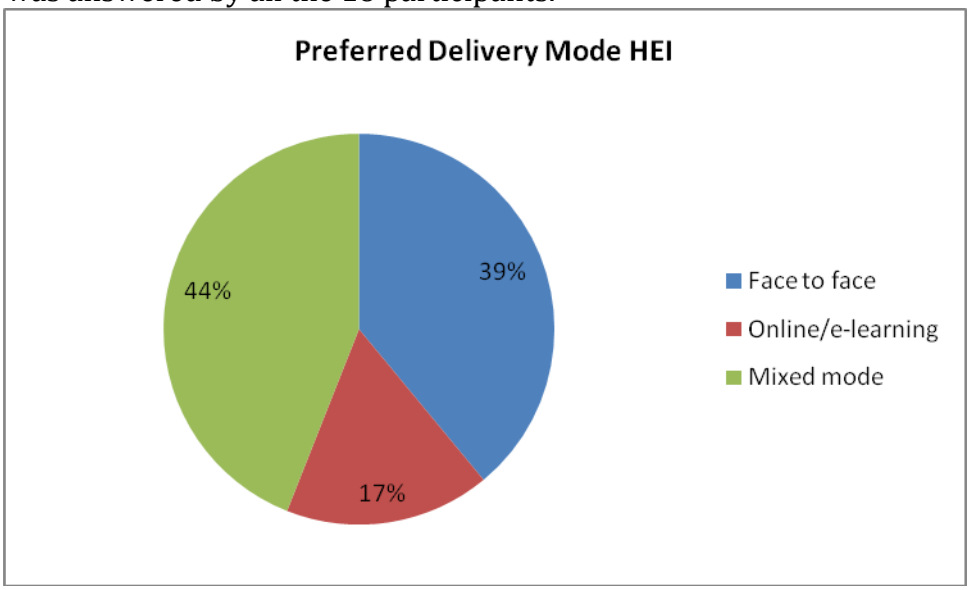

Figure 8: Preferred Delivery Mode for Capacity Building

8 respondents preferred the mixed mode of delivery while 7 preferred the face to face mode and 3 respondents opted for the online/ e-learning mode.

4 Conclusions

In total 32 energy practitioners participated in the survey. Most of them are involved in the private sector. It has been noted that the personal knowledge is high basically in areas of energy production, energy management and energy use & climate change. However, the majority of them had low knowledge on laws and regulations in SIDS. The interest in capacity building needs in all proposed areas of EASE are very much appreciated by the private sectors. In fact, it was observed that many people from industry wanted to learn on energy management tools in order to improve their existing systems. It has also been noticed that though energy practitioners have high knowledge in certain areas of EASE, they are much interested in capacity building in related fields. Therefore, highest interested in capacity building has been expressed for energy production, energy efficiency, energy management and renewable energy technologies and energy use & climate change. The most preferred delivery mode is mixed mode followed by face to face.

With regards to university staff survey, there were 18 participants who have expressed their interest in having trainings in areas of energy efficiency and LLL. Knowledge in the field of EASE have been found to be at expert level for some academic staff which is basically because they are involved in developing and delivering energy related courses

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and are involved in research of energy use and efficiency. The majority of the academic staff is willing to have training in areas of renewable energy technologies, energy management and energy efficiency. The preferred delivery mode is mixed mode, followed by face to face delivery mode. Thus we can conclude that devising courses in the fields of interest expressed by the energy practitioners and academic staff will be very beneficial to them.

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Annex 1

Energy Sector Survey on Energy Security, Access and Efficiency in SIDS

What this questionnaire is about:

Project L³EAP is developing a learning programme to inform and up-skill people involved in the energy sector of Small Island Developing States (SIDS) in aspects of energy security, access and efficiency as they impact on the lives of communities in these developing countries.

The courses will address issues relating to energy access, security and the efficient and environmentally friendly use of energy (including renewable energy) in the SIDS. They will be designed to meet the training needs of individuals (like yourself) working or looking forward to work in various sections of the energy sector of SIDS to enable technology transfer. The purpose of this questionnaire is to find out what these training needs are.

Your assistance in this survey is highly appreciated.

1.1 Name of your organization:

_____

1.2 Type of Organization:

_____

1.3 How do you best describe your profession?

_____

1.4 What is your position in your organization:

_____

1.5 What are your main energy-related duties in your organization:

_____

2. What do you understand by the terms *energy access*, *energy security*, *energy efficiency*?

Energy access

_____

_____

Energy security

_____

_____

Energy Efficiency (of an appliance or building)

_____

_____

Energy Efficiency (in process industry)

_____

_____

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3. What is your personal knowledge in the following areas (0 = none, 4 = expert level). Please tick in the appropriate column.

	0	1	2	3	4
i) Issues of Energy production in small island developing states (SIDS)					
i) Issues of energy access in the SIDS					
ii) Issues of energy security in the SIDS					
iii) Energy efficiency (in e.g appliances, buildings, transportation)					
iv) Energy Management (e.g. Energy Audit, Energy Management Systems)					
v) Renewable Energy Technologies in SIDS					
vi) Energy Policies in SIDS					
vii) Laws/Legislation/Regulations relating to energy in SIDS					
viii) Relation between energy use and climate change					

Any further comments you wish to make (including comments about the above table):

_____
_____
_____
_____
_____

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4. On a scale of 0 (not important) to 4 (very important), which of topics listed in the table below would you like to see included in a course on energy access, security and efficiency? Please tick in the appropriate column.

	0	1	2	3	4
i) Issues of energy production in SIDS					
i) Issues of energy access in the SIDS					
ii) Issues of energy security in the SIDS					
ii) Energy efficiency (e.g appliances, buildings, transportation)					
iv) Energy Management (Energy Audit, Energy Management System)					
v) Renewable Energy Technologies in SIDS					
vi) Energy Policies in SIDS					
vii) Laws/Legislation/Regulations relating to the energy in SIDS					
viii) Relation between energy use and climate change					

List any further topics you would like to see included in the course, and make any other comments that you wish to make.

_____

5. How do you wish to apply the knowledge gained from the courses that will be developed from this survey?

_____

_____

6. Which type of course delivery mode would you prefer

☐ Face to face ☐ Online/e-learning ☐ Mixed mode

7. Are there any other comments you wish to make?

_____

_____

_____

8. If you want to be kept informed of activities of the L³EAP project or want to attend to the training courses, please provide us with your e-mail.

_____

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Annex 2

University Staff Capacity Building Survey in Energy Security, Access and Efficiency in SIDS

What this survey questionnaire is about:

Project L³EAP is developing a learning programme to train and up-skill people involved in the energy sector of Small Island Developing States (SIDS) in aspects of energy security, access and efficiency as they impact on the lives of communities in these developing countries.

The programme of courses will be developed, taught and administered by university staff (such as yourself) by universities in Germany. The purpose of this questionnaire is to find out what you need to know to enable you to perform these tasks successfully.

The results of this survey will be used to prepare a series of seminars/workshops to prepare and up-skill university staff to develop, deliver and administer these courses. You will be invited to attend these training sessions.

Your assistance in developing this staff capacity-building survey is highly appreciated.

Section A. General Information

1.6 Name of your institution:

_____

1.7 Your department and position:

_____

1.8 Your Gender

☐ Male ☐ Female

Section B - For Academic Staff (To be filled only by academic staff of the university who will develop and deliver the courses. Others please proceed to section C)

3. **Are you doing research or teaching in areas relating to energy access, energy security or energy efficiency?**

Energy access No ☐ Yes ☐
Any comment: _____

Energy security No ☐ Yes ☐
Any comment: _____

Energy Efficiency No ☐ Yes ☐
Any comment: _____

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4. What is your personal knowledge in the following areas (0 = none, 4 = expert level). Please tick in the appropriate column.

	0	1	2	3	4
i) Issues of energy production in the SIDS					
ii) Issues of energy access in the SIDS					
iii) Issues of energy security in the SIDS					
iv) Energy efficiency (e.g appliances, buildings, transportation)					
v) Energy Management (e.g. Energy Audit, Energy Management Systems)					
vi) Renewable Energy Technologies in SIDS					
vii) Energy Policies in SIDS					
viii) Laws/Legislation/Regulations relating to energy in SIDS					
ix) Relation between energy use and climate change					

Any further comments you wish to make (including comments about the above table):

_____
_____
_____
_____
_____

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4. Would you be interested in benefitting from training in the following areas:

	No	Yes	If yes, please specify details (eg topics, level of training)
i) Issues of Energy production in the SIDS			
ii) Issues of energy access in the SIDS			
iii) Issues of energy security in the SIDS			
iv) Energy efficiency (e.g appliances, buildings, transportation)			
v) Energy Management (Energy Audit, Energy Management Systems)			
vi) Renewable Energy Technologies in SIDS			
vii)Energy Policies in SIDS			
viii) Laws/Legislations/Regulations relating to the energy in SIDS			

Add any other energy areas in which you would like to have training:

_____

_____

_____

Section C. For Administrators/Course developers (If not applicable to you, please proceed to section D)

5. Are you involved in the following:

Developing Continuous Professional Development courses (i.e. Lifelong Learning Courses or Continuing Education Courses)

☐ No ☐ Yes

Managing Continuous Professional Development courses (Lifelong Learning courses or Continuing Education Courses)

☐ No ☐ Yes

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6. What is your personal knowledge/experience in the following areas of Lifelong Learning courses (LLL) (0 = none, 4 = expert level). Please tick in the appropriate column.

	0	1	2	3	4
i) Curriculum development in LLL					
ii) Module development in LLL					
iii) E-Learning (online) in LLL					
iv)Advertisement/marketing of courses in LLL					
v) Costing/financial aspects of the courses for LLL					
vi) Required logistics for LLL (e.g arranging for venue, projector, handout, etc)					

Any further comments you wish to make (including comments about the above table):
_____
_____
_____

7. Would you be interested in benefitting from training in any of the following areas of lifelong learning courses:

	No	Yes	If yes, please specify details (eg topics, level of training)
i) Curriculum development			
ii) Module development			
iii) E-Learning (online)			
iv)Advertisement/marketing of courses			
v) Costing/financial aspects of the courses			
vi) Required logistics (e.g venue, projector, handout, etc)			

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Section D. For all staff

List any further topics you would like to have capacity building in, and make any further recommendations:

_____
_____
_____
_____

8. Which type of delivery mode would you prefer for the capacity building course for staff

☐ Face to face ☐ Online/E-learning ☐ mixed mode

9. Are there any other comments you wish to make?

_____
_____
_____
_____
_____
_____
_____
_____
_____

10. If you want to be kept informed of activities of the L³EAP project or want to attend to the training courses, please provide us with your e-mail.

_____

Thank you for your help!

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Annex 3

Energy access	Energy security	Energy efficiency (of an appliance or building)?
How readily people can get access to modern energy for the provision of clean water, sanitation and healthcare and for the provision of reliable and efficient lighting, heating, cooking, food processing/refrigeration, air conditioning, mechanical power, transport, telecommunications services, security and comfort.	Availability of adequate, reliable, continuous and efficient energy generation and distribution system including sufficient fuel storage facilities to avoid load shedding and to ensure proper energy access at reasonable and affordable price.	Energy efficiency in appliance or building ensure proper and economical use of energy primarily to support space heating or cooling, ventilation, water heating, refrigeration through energy saving technologies like programmable system (including on/off timer with standby mode) to control energy utilization (as and when required within reasonable/acceptable limits, low energy lighting, efficient appliances with variable speed motors, proper insulation, reflective roofing material, maximizing natural lighting and ventilation, energy efficient design of the building. Encouraging the use of renewable sources of energy as far as practicable e.g solar water heater or solar panel for electricity generation.
Availability of electrical energy and other types of energy like LPG for use	Assurance needed for economic growth and a continuous high level of economic performance	Maximum work done by appliance per unit energy consumed
It may be having access to energy sources without any discrimination. A fair share of energy sources.	Energy Security means the availability of energy sources at affordable prices.	Energy efficiency of an apparatus means using less energy to deliver the same service

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Availability of energy and its services to the society	Management of energy supplies and exploitation of energy resources for consumption. Ensuring equal distribution of energy supplies	Design and construction of an appliance or building to reduce energy consumption. For example, construction of a greenhouse or energy labeled appliances
Energy access: consumption of a specified minimum level of energy whereby specification varies with location(rural/urban) and mainly linked with households.	Energy security: the relationship between the requirements of a nation to maintain survival of the state through the availability of natural resources for energy consumption & its intelligent use.	Energy efficiency: opting for green buildings by reducing amount of energy required to provide for products and services and optimizing the use of natural resources of energy (eg. solar energy√)
Energy access refer to the availability of the energy services (electricity/fuel) easily, continuously and at an affordable price and on	Energy security is a term used to imply the supply of energy throughout the year to meet our needs	Efficiency of an electrical device is a measure of the useful energy (light, heat) obtained for each unit of electricity consumed.
a household having reliable and affordable access to clean cooking facilities and connection to electricity	An uninterrupted availability of energy sources at an affordable price	Means to update or design new buildings and appliances to take advantage of natural resources and minimize energy waste and use significantly less energy_____
Energy access can be understand as a household having reliable and affordable access to clean cooking facilities	Energy security has two key dimensions, reliability and resilience. Reliability means users are able to access the energy services they require, when they require them. Resilience is the ability of the system to cope with shocks and change	Energy Efficiency (of an appliance or building) we can use the example of an electric kettle. It is the energy needed to heat the water to 100 degrees C divide by the energy used the kettle

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How energy is made available to all	How energy can be generated from reliable sources continuously without disruption in supply or distribution	How minimal energy can be used in order to achieve the same result in terms of end use
It is the consumption of a minimum amount of electricity to a party, household or simply a entity in a society.	It is the uninterrupted availability and supply to energy at an affordable price to a concerned party.	It is the ratio of useful work done by a medium according to the desired want with respect to the amount of energy consumed by the medium.
Acess to reliable and affordable energy services for basic human needs such as cooking, lighting and communications as well as for productive uses.	It refers to the availability of sufficient amount of energy at reasonable prices with a capacity of withstanding threats.	It is how much of a task or product is achieved (For example: heat of a building for a specified time) per unit of energy required for the task.
Availability of energy that can be readily used.	Energy availability for the foreseeable future, at a reasonable cost	The capability of the building to minimize its energy consumption by making optimal usage of natural lighting, wind drafts(for cooling) as well as utilizing energy efficient appliances further reduce its energy usage.
Accessibility to electricity supply ; nearer the network facilities, easier is the access to electricity	available generation is sufficiently high to meet the demand	Delivering same or better level of performance with lower energy consumption
availability of energy supply eg national grid	accessibility to a stable, reliable source of energy	how much energy is consumed by the appliance to deliver its intended output
The right to use any source of energy for any appliance	The right to have adequate supply of energy as and when required	Ratio of total useful energy output to total energy input

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Reliable, uninterrupted and clear source of energy that is accessible to business and residential sectors	source of energy which is available without interruption and offered at a reasonable cost	technology designed to consume less energy while doing the same amount of job
A situation where large number of people in poor countries are facing difficulting to access clean energy	Ensuring the constant availability of clean energy to the population at large	using less energy by the appliance in delivering the same service
access to modern energy services/solar PV/renewable sources of energy	good grounding/bounding/ RCD/Insulation/protectiv e equipment	Number of KWH consumed that impact on your CEB bill
accessibility of electricity	Guarantee to access of energy	Amount of effective energy that is used
Guarantee to have access to different kinds of energy mainly electricity	Assurance of having access to energy	A measure of the amount of energy that is being used
accessibility of energy mainly electricity for day to day running	energy is available for some time without any problem	ratio of total output over input
The easiness of having access to energy	Availability of energy for long time	Energy that is consumed and energy that is lost
Supply of energy, e.g Electricity and Diesel for proper running of production	Safe usage of electricity - workers and operators should be well protected while operating equipment	Production of required quantity using lesser amount of energy within/restricted space and time
Accessibility to sector energy	safe use of energy	Economic consumption of energy
availability of energy for use	the guarantee to use energy in the future	it is a measure of losses which leads to inefficiency

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It means the accessibility of energy for human being, process and power production	It means the amount of energy that is available for future use for power generation	It is defined as the amount of energy required used per unit of product. For example, in case of air conditioning, it is the amount of energy used to cool the room by one degree Celsius.
The ease/availability of relatively free (hassle) access to the comfort of energy	Availability of energy sources/production to meet demand	How much of available energy is converted to useful energy (percentage)
Access of energy (electrical, thermal) to an organization easily	Having energy at any point in time and anywhere	Ratio of output to input of an appliance/building
The physical availability of modern sources of energy and improved devices at the household level at affordable prices	The availability of natural resources for energy consumption in the long run	The goal to reduce the amount of energy required to provide products and services
ability to access to electricity	Ensuring availability and quality of energy	Energy output per unit energy input
Use of energy for running of plant smoothly	Availability of energy for continuous operation	Use of minimum amount of energy
Use of energy (electricity, heat, power) in industrial activities	Association between national security and the availability of natural resources for energy consumption	optimisation of energy consumption

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About the L³EAP project:

Lifelong learning for Energy Security, Access and Efficiency in the African and Pacific Small Island Developing States (L³EAP) is a three-year project that concentrates on tailor-made learning offers on sustainable energy. The purpose of the project is to increase the capacity of universities in African, Caribbean and Pacific Group of States (ACP) small Island Developing States (SIDS) for the delivery of high-quality lifelong learning courses on the topics of energy access, security and efficiency.

www.project-l3eap.eu

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