

Renewable Energy Coordination Committee (RECC)

Report on activities in May - June - July 2017

Introduction

Renewable Energy Coordination Committee (RECC) is a common forum of private sector associations of alternative energy service, supply and delivery and NGOs involved in promotion of alternative energy in Nepal. Seven such institutions are associated to RECC. They are Forum of Renewable Energy Associations Nepal (FoRAN), Nepal Biogas Promotion Association (NBPA), Nepal Micro Hydropower Development Association (NMHDA), Rural Technology Promotion Association Nepal (RuTPAN) Solar Electric Manufacturers Association Nepal (SEMAN), Solar Thermal Energy Association Nepal (STEAN) and Water and Energy Consultants Association Nepal (WECAN). RECC is planning to be broadened as **Renewable Energy Confederation Nepal (RECoN)** for wider partnership in the sector to grow more and help other stakeholders grow properly.

Also to note that RECC had been entrusted as a partner organisation for **“Green and Inclusive Energy Programme (Nepal Project)”** in Nepal by Centre for Rural Technology, Nepal (CRT/N) who is conducting the programme in collaboration with Hivos Foundation.

The Green and Inclusive Energy (GiE) programme, aims to strengthen the lobby and advocacy capacity of CSO's in low and lower middle income countries. ENERGIA and IIED are implementing partners of the GiE programme. For achieving the set goals the program will work together with the local government and local civil society organizations in developing countries.

GiE systems are designed, implemented and operated using transparent and participatory decision making processes that include citizens (women and men) and meet people's energy needs for their daily livelihoods, economic activities, education and health, while reducing climate change.

Objectives

Members oriented activities

- Lobby and advocacies on professional safeguarding of private sector in RE movement
- Networking of RE, Environment and Climate Change professionals and practitioners
- Betterment and enhancing of RECoN itself and affiliated organizations

General activities

Interactions as lobby, advocacy and opinion building

- Activities to support achieve SDG (Goal 7) and SE4All
- Interactions on knowledge sharing on RE, environment and climate issues
- GiE related activities
- Consultancies on RE, environment and climate issues and mitigating or minimizing technologies and methodologies
- HRD: imparting general knowledge and skills to various levels of stakeholders.

- Online news and views dissemination on RE, environment and climate issues and movements in national context and global arena both
- TV Programmes

As per the commitments with **Green and Inclusive Energy Nepal Programme RECC** activities are considered to be linked with **GiE guidelines**. So as following aspects one, some or all are taken into consideration accordingly.

- Facilitate private interaction and engagement in the advocacy activities of Nepal GiE project.
- Actively engage in and support the consortium in implementing the Theory of Change and realizing the objectives/outcomes of the Nepal GiE project
- Develop a strategy that can be used by the consortium to engage with MSMEs on GiE and integrate this into the consortium wide advocacy strategy
- Map possible MSMEs actions that can be engaged to support advocacy and outreach on GiE issues
- Orient MSMEs actors on GiE L&A objectives and strategy
- Conduct Participatory Market System Development, PMSD, workshop to collectively identify obstacles and opportunities affecting RE and clean cooking energy market system in Nepal and Review
- Conduct a needs assessment of the of MSMEs partners on green and inclusive energy Support the development of a communique on GiE for MSMEs actors
- Convene forums to bring together MSMEs and decision-makers to engage in policy dialogues to create an enabling investment environment for GiE solutions
- Together with other consortium members, support the development of key messages (contents) and communication products targeted to the MSMEs and strategically disseminate them along appropriate communication channels to raise awareness and support L&A efforts
- Actively engage in the consortium advocacy activities
- Actively engage in the consortium meetings to monitor progress of the Nepal GiE project
- Actively engage and provide inputs into the consortium capacity assessment and development activities
- Conduct necessary capacity development/training of the consortium and MSMEs actors on the interlinkages between market approach and GiE, including the development of training materials
- Prepare case-studies to be used as advocacy tool
- Report on RECC's progress as requested by CRT/N and provide this as input in for the Nepal GiE project progress reports
- Develop a work plan as requested by CRT/N and provide this as input for the Nepal GiE project work plan

So as the recent interactions and discussions conducted by RECC had been successful in following aspects.

- Gather the experts, practitioners and professionals in building positive opinions on contemporary issues linking to GiE aspects.
- The experts, practitioners and professionals shared knowledge and experience directly or indirectly on importance of GiE aspects and direct or indirect implementation.
- Like minded of experts, practitioners and professional entered to primary phase of networking.

- Indicated, found or shown further steps and action for strong actions as lobby and advocacies.
- Supports and assistances further actions have been directly or indirectly pleaded.
- Helped plan further actions to make desirably successful and effective.

As such, the recent events as stated have been successful to create landmarks in themselves. RECC organised interactions and discussions on **Renewable Energy in the Budget of Fiscal Year 2074-75** organised on June 03, 2017, **Renewable Energy Movement in Federal Structure** on June 19, 2017 and **Waste to Energy : Challenges in Managing Waste** on June 25, 2017. Likewise, a thought interaction on **RE for Agriculture** was also organised on the occasion of Asar 15, Rastriya Dhaan Diwas. In addition with view of importance of **Rainwater Harvest**, RECC organised an interaction programme on July 01, 2017 morning.

The said activities carried out are, thus, linked to the GIE Nepal Programme as per the RECC commitment.

Interactions and discussion programmes organised recently by RECC

Well utilising the resources and expertise associated and as available abundantly within the member associations and associated academia and experts RECC had decided to put efforts to bridge the functional gaps in extending alternative energy drive in the country. As such, keeping up the integrated efforts for common professional causes as the prime function, a Think Tank Group of experts and academia had been formed. Bridging between the communities and individual households which may termed as buyers and the banks and financial institutions which may termed as lenders has been one other function being thought to carry out soon. Likewise, taking as information dissemination as an important and influential instrument in building public opinions, RECC is planning to carry out various activities with collaborations with media experts and institutions also.

Thus, the common forum has been continuously organizing meetings with member associations, academia, experts to support the alternative energy sector and member organizations and preparing plan of actions to achieve collective objectives of member associations including current problems, challenges and opportunities to well address by concern bodies.

Recently RECC had successfully organised interactions and discussions on **Renewable Energy in the Budget of Fiscal Year 2074-75** organised on June 03, 2017, **Renewable Energy Movement in Federal Structure** on June 19, 2017 and **Waste to Energy : Challenges in Managing Waste** on June 25, 2017. Likewise, a thought interaction on **RE for Agriculture** was also organised on the occasion of Asar 15, Rastriya Dhaan Diwas. In addition with view of importance of **Rainwater Harvest**, RECC organised an interaction programme on July 01, 2017 morning.

Renewable Energy in the Budget of Fiscal Year 2074-75

- on Monday, 19 June, 2017
- at The Dinning Park, Baneshwar, Kathmandu. Nepal
- Programme facilitated by Former Minister Er. Ganesh Shah
- Speaker: Mr. Ram Prasad Dhital, Executive Director, AEPC
- Speaker: Mr. Nawa Raj Dhakal, Director, AEPC
- Speaker: Mr. Vishwa Bhushan Amatya, RE Expert Freelancer
- Coordinated by Mr. Guna Raj Dhakal, Coordinator, RECC
- Managed by: Mr. Purna N. Ranjitkar

Former Minister for Science & Technology Er. Ganesh Shah moderated the meeting where Executive Director Alternative Energy Promotion Centre Mr. Ram Prasad Dhital, Coordinator of RECC Mr. Guna Raj Dhakal, Mr. Babu Raja Shrestha, Mr. Nabin Bhujel, Mr. Yug Ratna Tamrakar, Mr. Vishwa Bhushan Amatya Mr. Krishna Prasad Devkota, Mr. Shekhar Aryal, Mr. Shankar Bhattarai, Mr. Khimananda Kandel, Mr. Kushal Gurung and other participants expressed their views.

Director of Alternative Energy Promotion Centre Mr. Nawa Raj Dhakal presented in context of alternative energy promotion activities in the Budget of FY 2074/75 and financial aspects, programmes and policies related to AEPC.

Likewise, Mr. Manjeet Dhakal presented the scenario of movement on environment and climate change in Nepal. He also highlighted the policy matters in relation with environment and climate change in the country.

Dr. Mark Lawrence who has been studying under Institute for Advanced Sustainability Studies e.V. (IASS) presented on the current situation of air pollution problem in Nepal.

Opening with remarks

As said above Mr. Guna Raj Dhakal welcomed the participants in the event and elaborated the objectives. He also stressed on need of information on the budget size and defined purposes. As such, opinions of the RE professionals have to be influential in the functioning. The country shifting to federal system also equally important to be considered, he stressed.

Mr. Dhital mentioned the AEPC status and preparing changes according to the country's shift to federal system. The technical and financial modalities will also required to be restructured so as AEPC will be able to deliver services suitable to federal structure. He indicated the budget of the country to be well channelled for the promotion of renewable energy. As such the size of the budget and subject wise allocation also equally important in functioning, he opined. Mr. Dhital added that Centre of Excellency in RE Technologies is being thought to set up in the capital. All 744 local governing bodies considered to be accessed by AEPC central unit. Funding, CREF, Online system has been brought into effect to shorten the Subsidy Cycle. Thus sustainability has been taken into focus.

The entire meeting was concerned to the budget speech of Honourable Deputy Prime Minister and Minister for Finance Krishna Bahadur Mahara on Monday 29 May, 2017 in the parliament. The budget proposed spending of Rs 1,279 billion for the next fiscal year to meet various expenses and achieve economic growth target of 7.2 percent.

The proposed budget has been able to address almost all aspects of people's living and expected development process to take place.

In the energy sector, DPM and Minister had proposed Rs 62.5 billion. Likewise, Rs 146.2 billion has been allocated for post-earthquake reconstruction works.

DPM and Minister Mahara had revealed that the ongoing energy development programmes are to be continued. A new target of 17,000 MW in coming 7 years is being brought in. Minimising of use of fossil fuel is one other aim. (Part 106 of the budget speech)

Rs. 7.65 billion has been allocated for environment related programmes on the basis of sustainable development. (Part 171 of the budget speech)

Air pollution monitoring stations will be established to control and minimize air pollution level. Promotion of electric vehicles has been considered in this regards. (Part 172 of the budget speech)

'Smoke free bright homes' programme will be carried out focussing on marginalised casts' access. Solar energy, biogas plants, metallic improved cook stoves will be provided. Solar pumping systems for irrigation will be given due priority. Renewable energy technologies will be availed to health facility centres. (Part 173 of the budget speech)

Recycling of used lead acid batteries (ULABs) will be facilitated by supporting to the entrepreneurship to establish recycling units. (Part 175 of the budget speech)

The participants recognised that the budget is for short time which will need to shift to suite the federal structure once provincial and national level elections complete which are planned to be held within January 2018.

Presentation by Manjeet Dhakal

Mr. Manjeet Dhakal presented the scenario of movement on environment and climate change in Nepal. He also highlighted the policy matters in relation with environment and climate change in the country.

He indicated that actual facts and figures on RE activities and achievements are not available. As such, concerned institutions should pay due attention.

Presentation by Manjeet Dhakal

Mr. Nawa Raj Dhakal, in his presentation mentioned that the figures in detail in the budget are expected to receive soon.

RE Subsidy Policy is likely to be implemented through the local level governments. However, system of fund channelling has not yet determined, he said.

Mr. Dhakal informed through his presentation that the government in the past had received around 700 million rupees against CDM. Eighty percent of that has been planned to spend in various purposes of the technologies concerned

Presentation by Dr. Mark Lawrence

Dr. Mark Lawrence, environment specialist engage in research works in Nepal stated that air pollution is killing 36,000 persons in a year in Nepal. According to him vehicular emission, smoke

belched by factories, construction works and in-door smoke produced by traditional wood stoves are the causes of air pollution.

Discussions

In the discussion session, Mr. Vishwa Bhushan Amatya said that appropriate policy is the must to formulate. If not, chances of anarchy may rise. Such consequences may fetch negative results to all.

Therefore, working modality in Renewable Energy Sector to be practised by local government needs to be prepared at early as possible so that there could be similar modality of RE Sector development at local level.

While formulating programme and modalities for renewable energy promotion for the future or near future the professionals are needed to look at the past as access to energy was the need where as commercialisation of energy should be thought now on.

Mr. Nabin Bhujel, in the discussion session expressed that wider agenda is required for renewable energy technologies in the present context.

The budget for achievement should be seriously taken. The government commitment is there in the budget every time but achievement ratio hardly matches. As such delivery focused budget according to programmes should be expected.

The Net metering system has been said to be available to a few institutions. The wider availability is a requirement.

Private sector, by its nature, is looking for direct service, supply by diversifying the market pattern. Keeping in view RE should be well considered with social justice value as well. The time has come for the stakeholder like public sector, donors, development partners and private are need to think and behave "out of the box".

Mr. Krishna Prasad Devkota said that AEPC and private sector relationship must be enhanced by creating better situation of mutual cooperation.

AEPC now has to formulate working pattern as per the country shifts to federal system. Thus, working together with private sector also required to be revisited so as private sector comes out with better service and equipment delivery plans. Likewise, improvised and integrated technologies may be available to the communities and entrepreneurs.

Mr. Kushal Gurung mentioned that AEPC may be advised to coordinate Large scale renewable energy systems. Renewable energy technologies to be synchronised to the national grid should be at priority under AEPC programmes, he opined.

Mr. Yug Ratna Tamrakar during the discussion said that discussions focused on Budget and programmes in Federal Structure are expected to take place for fine discussions.

He opined that AEPC should address local needs to avail standard technologies. Harmony in procedures, Guidelines, purchase regulations, subsidy, funding aspects are also equally needed.

Mr. Shekhar Aryal said that advised that policies and programmes should be practicable. As such, coordination between policy making level and implementation level is the must.

Mr. Satish Mainali advised that the policy for provincial government and local level governments are learn to be drafting stage these days. As such, lobby through the proper channel may be influential to formulate better and conducive rules and regulation for RE promotion in all levels.

He also opined that legal lapses between AEPC and concerned parties (including private sector need to be addressed in the federal structure.

Mr. Khimananda Kandel stressed well defined authority and responsibilities to the central level, provincial level and local levels should be finely defined. AEPC, as such, prepare policy documents in fine details so as delivery of technical and financial supports will be smoothly carried out. The needs in the local levels should be addressed at the same level as such authority delegation should be well framed.

Concluding

Director of AEPC Mr. Nawa Raj Dhakal at the concluding of the meeting informed that legal provisions to implement as per mandate, AEPC will also create Centre of Excellency at the central level. All such desired activities could bring desirable result by forging collective efforts of all stakeholders. Mr. Dhakal also informed that National Renewable Energy Framework (NREF) is likely to be implemented from 16 July 2017.

Apart from this, he also informed the meeting that AEPC is preparing RE technologies implementation Guideline/Framework so that there will be smooth and uniform development of RE Sector technologies at local level.

The budget matter discussed in the inter-linked subjects as raised by the participants as stated below. They can be visualised at a glance in the table, chart and diagram.

In sum up, the meeting was successful to discuss and forge consensus of the stakeholders including private sector on the budget matter and aspects within it which may be called inter-linked subjects.

They are (1) Budget in detail, (2) Budget in federal system, (3) RE Movement in federal system, (4) AEPC in federal system, (5) Private sector in federal system, (6) Funding in federal system, (7) Role of funding agencies, (8) Scopes of widening/ upgrading service and delivery of RE technologies, and (9) National Renewable Energy Framework (NREF).

Recommendations

Moreover, this meeting paved way for an extensive workshop of private sector associations and professional to acquire enough knowledge on functions of the state mechanism in the coming days. That means they have to dwell on mandate and modality of AEPC in the federal system including its technical and financial aspects. Also another important aspect is authority to be delegated to the local level governments. Thirdly, private sector players are required to receive knowledge on to provide services and equipments in the changed modality. They will also have to prepare for capacity building activities of fellow private sector players, technical manpower with private sector and at free markets, and the end uses/ communities.

Another outcome of the meeting is that there is requirement of an urgent meeting of RECC, AEPC, Non-Government Organisations for renewable energy promotion, and financial institutions linked to renewable energy promotion to discuss and forge common opinion to promote renewable energy in

the forthcoming shift to federal system in the country. The meeting will also have to find ways of funding available at various national/international/regional/global resources to avail to the end users / communities easily through the existing channels or creating new but appropriate and easy channels.

Discussion on Renewable Energy Movement in Federal Structure

- on Monday, 19 June, 2017
- at The Dinning Park, Baneshwar, Kathmandu. Nepal
- Facilitated by Former Minister Er. Ganesh Shah
- Guest Speaker: Mr. Balanand Paudel, former chairman of Restructuring Commission
- Speakers: Mr. Ram Prasad Dhital, Executive Director, AEPC
- Speaker: Mr. Nawa Raj Dhakal, Director, AEPC
- Speaker: Mr. Vishwa Bhushan Amatya, RE Expert Freelancer
- Coordinated by Mr. Guna Raj Dhakal, Coordinator, RECC
- Managed by: Mr. Purna N. Ranjitkar

Opening

Former Minister for Science & Technology and Environment Er. Ganesh Shah, as a facilitator, opened up the informal event with remarks on need of Interaction and Discussion on Renewable Energy Movement in Federal Structure. The stakeholders of the sector are looking forward to the pin point provisions of Renewable Energy Movement in Federal Structure in the Constitution of Nepal. He opined that Mr. Paudel and other speakers would throw lights on the matter so as the sector would receive right information on time. This will also to be prepared for the further performances and activities in the coming days for the professionals and practitioners.

Presentations and speeches

The Guest Speaker Mr. Balanand Paudel, who headed the state level commission constituted by the Government of Nepal to restructure provincial and local level units as per the provisions of the Constitution of Nepal 20172. Mr. Paudel has been much lauded for successful accomplishment of the historical task entrusted to him and his team.

Through a PowerPoint presentation, Mr. Paudel elaborated the norms and basics of three levels of governing bodies in the federal structure of country. They are the Federal Government, the Provincial Government and Local Level Government.

All three levels are equipped with optimum authorities and responsibilities. The central government will have to coordinate all seven provincial governments while 744 local bodies will be given extensive authorities and responsibilities. The local level assemblies are able to formulate laws and regulations based on their needs as well, he explained.

Renewable energy has been one aspect incorporated well in the federal structure. Interpretation on Renewable Energy has been mentioned in annexes of the Constitution of Nepal.

The amount of energy and financial involvement are some measures to be at part of the government at centre. Regarding renewable energy as alternative energy for the bottom level consumers, communities and institutions, the local level governments will handle this matter. The local level government will also be responsible to look after technical and financial aspects on such programmes.

The government has been committed to avail some influential technologies to provide to the bottom level consumers, communities and institutions through the entrusted agencies like AEPC and some other influential agencies which now the local governments have to take over to coordinate.

Aids and supports from various countries, donors and or development partners will be channelised thorough the government at centre. As such, provincial and local governments can receive fund through the government at centre.

The legal provisions are yet underway to frame out for the well performance of the different levels of governments.

Mr. Nawa Raj Dhakal, Director of AEPC said that AEPC is working out on a framework of renewable energy movement to carry out in the federal structure of the country. AEPC will be functioning as a central unit where planning and programmes for all three level governments will be formulated and coordinate the movements in implementations. Seven authorities have been under consideration to be created to coordinate within each individual province. The framework which is still under designing phase will give wider rooms for different levels of governments to act in a harmonious manner so as Renewable Energy Movement will be considered to be in a similar shape, size and speed in the local levels. AEPC will also coordinate with the District Coordination Committees which will remain for some time in the action, Mr. Dhakal mentioned.

Mr. Dhakal also informed that AEPC will be working with GIZ, DFID, UNDP, KfW, World Bank, Asian Development Bank, UNDP and other similar agencies in different streams of renewable energy movement. In this, connection, DFID had pleaded a support of UK Pound 10 million to Nepal Government for the RE programmes to be conducted in coming few years.

Mr. Ram Prasad Dhital, Executive Director of AEPC, on the occasion elaborated the AEPC plans to act with the spirit of federal system in the country as provisioned by the Constitution of Nepal. As a regulating body in the centre AEPC will be acting as a regulating body. The fund available from domestic resources and foreign resources for the purpose of

renewable energy promotion Central Rural Energy Fund (CREF) will be managed with better operational capabilities.

Opportunities and resources at certain geographical area of the local unit should be taken into consideration and appropriate renewable technologies to be applied to tap the opportunities. So as the earlier practices like District Energy Plan, the RE Subsidy Guidelines will still be relevant in implementing in the RE Movement in the federal system.

The sources of funds like Government under Pollution Control Fee, CDM and other external resources will be brought into the control of the centre while fund will be channelled appropriately through effective channels. CREF is functioning with the same mandate while involvement of other small but effective financing system may be introduced in collaborations with the local government. Thus, the AEPC at centre will have even effective functions to coordinate authorities in seven provinces and all local governments.

Mr. Vishwa Bhushan Amatya made a short remark on the subject matter. He said that clear views are still in the waiting so as the stakeholders and other concerned units and parties will take over the RE movement appropriately. As such, the RE sector has still more to explore so as working in the federal structure in the country to be smooth to take off.

Mr. Nabin Bhujel, Member at AEPC Board mentioned that the RE Movement must be focused to tap up standardisation of technology and equipments, R&D and piloting, quality assurance and monitoring as these are the basic aspects for RE Movement to take a speed as desired. Diversified norms and regulations will not be fruitful. Therefore, an effective system is need of the hour which helps local governments, provincial governments and the government at centre take reference to go ahead for the best of results.

Mr. Bhujel also added that knowledge on system design, operation and maintenance also will be better if imparted to the local level authorities.

Discussions

Mr. Gokul Gautam said that as the laws and by-laws are under formulating by this phase, a concerted effort to ask the concerned authorities to make it appropriately workable should be carried out. Therefore RE professionals and practitioners have to study well and lobby for necessary amendments without delay. Concerned lawmakers are needed to be influenced in this context, Mr. Gautam opined.

Dr. Brijesh Mainali, currently based in Stockholm, Sweden and involved in renewable energy activities suggested that the national standard should be formulated to be followed by all levels.

Mr. Shekhar Aryal, an RE entrepreneur stressed on harmonised frame work for the certain level is needful so as differences in functionalities should not take place. It also needs to be

clear that how national budget will be delivered at local governments to act smoothly including RE movements.

Mr. Khimanand Kandel, General Secretary of WECAN and RE expert said that the Constitution mentions that planning to regulations will be carried out by local governments which may cause difference in modalities in different local governments. Therefore, capacity development to the local governments and provincial governments are needful in the present context so as harmonised functionalities will help easy performance to all stakeholders.

Representing NMB Bank Mr. Govind Ghimire said that clear policies and functional modalities have been a need for the banks to render desired services in renewable energy movement.

Mr. Batu Uprety said that the supply side now should be clear on the services and equipments to deliver to users/ communities/institutions where local governments will be influential in supporting the buyers. Thus, detail out on stakeholders' functions need to be defined now so as every stakeholder should be responsible at own part. Pilot programmes to carry out in key components at key locations may be fruitful in learning lessons to go ahead.

Dr. Indira Shakya, Mr. Neeraj Subedi, Mr. Manjeet Dhakal and Mr. Sahaj Man Shrestha also expressed their valuable views in the context of renewable energy movement in the federal system.

Conclusion

Outlined the rationale of Interaction and Discussion on Renewable Energy Movement in Federal Structure conducted by RECC, Mr. Guna Raj Dhakal, coordinator of RECC said that the interaction has been successful in sharing knowledge and exchanging views of the dedicated professionals and practitioners. He informed that RECC will follow up the find out at the soonest to fetch the best of the results. He also stated that similar event will be organised by RECC creating forum for the dedicated professionals and practitioners where the experts could contribute knowledge, experience and views for the cause of upliftment of people at even grass root levels through renewable energy promotion.

He thanked to Mr. Balanand Paudel, Mr. Ram Prasad Dhital, Mr. Nawa Raj Dhakal, AEPC, the participating RE professionals and practitioners and all.

Waste to Energy : Challenges in Management

- on Monday, 25 June, 2017
- at The Dinning Park, Baneshwar, Kathmandu. Nepal
- Facilitated by Former Minister Er. Ganesh Shah
- Presentation by Mr. Mr. Sushim Man Amatya, expert AEPC

- Presentation by Dr. Narayan Prasad Adhikari, Assistant Director, AEPC
- Remarks by Mr. Ram Prasad Dhital, Executive Director, AEPC
- Remarks by Mr. Guna Raj Dhakal, Coordinator, RECC
- Coordinated by Mr. Guna Raj Dhakal, Coordinator, RECC
- Managed by Mr. Purna N. Ranjitkar

Waste-to-energy in common understanding

Waste-to-energy or energy-from-waste is the process of generating energy in the form of electricity and/or heat from the primary treatment of waste. Waste-to-energy is a form of energy recovery. Most Waste-to-energy processes produce electricity and/or heat directly through combustion, or produce a combustible fuel commodity, such as methane, methanol, ethanol or synthetic fuels.

The consumption habits of modern consumer lifestyles are causing a huge worldwide waste problem. Having overfilled local landfill capacities, many first world nations are now exporting their refuse to third world countries. This is having a devastating impact on ecosystems and cultures throughout the world. Some alternative energy companies are developing new ways to recycle waste by generating electricity from landfill waste and pollution. The articles on this page explore waste to energy technology and potential.

Waste management is a challenge in reality. Dumping waste at designed sites is not a real solution now. The technological innovations are offering different choices in the regard.

Waste to energy is not a new concept in Nepal as the early experts express on occasions. Once waste is wealth had been an attractive slogan in the urban areas including Kathmandu Metropolitan City.

Some efforts have been put to manage waste properly and efficiently in the past by different institutions and organizations also. However, productive use of as waste to energy has been somehow new concept in practice in Nepal. The 14kW electricity generating plant in Kathmandu is one such initiative which uses waste as material and that is managing municipal waste. Some other initiative also have been said to be implemented soon.

Thus, (a) understanding concept of waste to energy is an essential component for the entrepreneurs and professionals. Likewise, (b) exploring right solution by innovation and management is another component to understand. (c) Investment in waste to energy is another component to understand.

There may be other than three components as mentioned above standing as challenges. The proposed interaction programme has been expected to churn out more to this effect. The participants will lend their opinions and views for better waste to energy concept.

Alternative Energy Promotion Centre (AEPC) has been extending its technical and financial supports to the institutions and entrepreneurs in promotion of waste to energy as well. The centre will be functioning as a focal institution to enhance waste to energy concept to bring into realities.

Opening

Former Minister for Science & Technology and Environment Er. Ganesh Shah, as a facilitator, opened up the event with remarks on need of Interaction and Discussion on Waste to Energy : Challenges in Managing Waste. As a matter of fact the waste management has been a Herculean task for municipalities mainly. Experiments and piloting in some places have been carried out but significant solution has still in waiting.

The AEPC supported similar programmes in some key locations in different size of plants are to be noted as good for replication in near future, Er Shah mentioned.

Presentations and elaborations

Mr. Sushim Man Amatya, Senior Programme Officer at AEPC presented on Large Biogas Sector in Nepal: A Solution for Waste Treatment (Waste to Energy). He mentioned the background of fuel scarcity and the best technologies available for energy to be produced from waste. He also stated that waste management has been a big head for the urban administrators since a long time.

He also elaborated the plants in construction at Dharan, Bhairahawa and Kakani. Mr. Amatya also mentioned the features and benefits to get from the plant Kathmandu Metropolitan City's new plant at Teku in Kathmandu which consumes a sizable volume of waste and produces biogas and 14 kW of electricity.

Dr. Narayan Adhikari, Assistant Director at AEPC also had a presentation on Thermal Plasma Technology (TPT) for Waste Management.

He elaborated that TPT gives advantages over as conventional system as (a) No segregation needed, (b) No drying needed, (c) No ash produced and (d) By-products are gases, metals & electricity.

Moreover, TPT is the technology available now in the developed countries. The features of TPT are as Dr Adhikari explained (a) Non incineration thermal process that uses extremely high temperatures. (b) Non-in oxygen starved environment to decompose input waste material completely into very simple molecules. (c) It uses an external energy source, resulting, thus, in very little combustion of the waste material. As a result, most of the carbon is converted to fuel gas. (d) Plasma gasification is the closest technology available to pure gasification' Because of the high temperatures involved all the tars char gasification, involved, tars, and dioxins are broken down. (e) The exit gas from the reactor is cleaner, and there is no ash at the bottom of the reactor. (f) The main product of the process is a gas, known as synthesis gas, which can be used, among others, for the production of energy and an inert vitreous byproduct material, known as slag.

Thus, TPP may be useful technology for Nepal to implement in future to address waste to energy.

Discussions

After presentation by Mr. Amatya and Dr. Adhikari the participants exchanged views on waste to energy on the basis of their experiences in different similar programmes carried out in the past.

Prof. Dr. Jaganatha Shrestha said that the best technology for waste to energy is still to be identified. Management factor is one big lapse in Nepal's context. As such, social engineering has been felt a big component to be added in such important programmes.

Er. Amar Bahadur Manandhar, an waste plant expert who had earned experience in installing and operating waste treatment plant at Bode, Bhaktapur shared the things to be considered well before planning a waste plant to install.

Mr. Prakash Lamichhane, an expert at BSPN also mentioned the common lapses in the management of waste plants installed in Nepal.

Mr. Surendra Lal Shrestha, leading personality in RE in Nepal also opined of better management practices for the technologies to be applicated.

Dr. Binod Bhatta, forestry and environment expert stated that an integrated approach for the under privileged class must be taken into consideration so as energy will be accessed along with other vital socioeconomic aspects be effective in upgrading their living standard.

Mr. Chuda Bahadur Shrestha, former Nepal Police high official, Mr. Kushal Gurung, Dr. Neeta Singh also spoke on better technologies to be introduced so as to get rid of waste management problem be addressed.

Mr. Khimanand Kandel, General Secretary of WECAN and RE expert said that

Mr. Ram Prasad Dhital, Executive Director of AEPC mentioned that AEPC will extend technical supports in installing waste to energy programmes. Ongoing support programmes in some places are the opportunities for experts and professional to learn the best technologies and the best practices. As such, appropriate technologies will be available for waste to energy and getting solutions for waste management.

Conclusion

Outlined the rationale of Interaction and Discussion on Renewable Energy Movement in Federal Structure conducted by RECC, Mr. Guna Raj Dhakal, coordinator of RECC said that the interaction has been successful in sharing knowledge and exchanging views of the dedicated professionals and practitioners. He informed that RECC will follow up the find out at the soonest to fetch the best of the results. He also stated that similar event will be organised by RECC creating forum for the dedicated professionals and practitioners where

the experts could contribute knowledge, experience and views for the cause of upliftment of people at even grass root levels through renewable energy promotion.

He thanked to Mr. Balanand Paudel, Mr. Ram Prasad Dhital, Mr. Nawa Raj Dhakal, AEPC, the participating RE professionals and practitioners and all.

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Interaction on RE for Agriculture

- On Thursday June 29, 2017
- At Dinning Park & Lounge, Baneshwar, Kathmandu, Nepal
- Organised by Renewable Energy Coordination Committee
- Facilitated by Former Minister Er. Ganesh Shah
- Presentation by Mr. Guna Raj Dhakal
- Presentation by Mr. Niraj Shrestha
- Presentation by Mr. Sagar Kafle
- Coordinated by Mr. Guna Raj Dhakal
- Managed by Mr. Purna N. Ranjitkar

Interaction on RE for Agriculture on Asar 15

People in Nepal are directly or indirectly depend on agriculture where a big portion of population adopts it as their occupation. Likewise, rice is the main crop and main food grain so as rice plantation is a festival occasion for many. Asar 15, the date in middle of best rice planting month which fall around end of June is a festival for farmers. People celebrate this day by hard working in fields as well as enjoy singing, dancing and taking simple but culturally rich food.

The day is naturally a significant to agriculture and self reliance as well. In Nepal, agriculture is still the largest sector of employment and the second largest contributor to the country's gross domestic product. Even then, the grass root people and the communities experience that there is no sufficient investment in irrigation facilities, farm implements and rural roads. Since the country's export is less than a tenth of its imports, the country fulfils the foreign exchange deficit by exporting labour to difficult foreign destinations to bring in sweat-dollars.

Many take federalism as a cure for much of the unitary state's ills but unsystematic activities of the three tiers of government at the local level, provinces and the centre threaten to create an unmanageable mess in our young republic.

But there are no efforts to replicate their successful models to benefit a larger mass. Like cottage and small-scale service industries, there is a huge scope for agro-based family enterprises in Nepal.

Now, time has come to review the technological interventions in the agriculture sector. The country had witnessed experiences by using renewable energy technologies for agriculture purposes as well so as Solar Photo Voltaic Pumping Systems have been introduced for irrigation purpose. That has been used for drinking water purpose also in many places. As such, renewable energy technologies are to be considered for agricultural development in the country.

The technical intervention will have to enable farmers in irrigating fields, drinking water, better crop, better income and food security systems. These efforts and achievements should be indicator of upgraded living standard of the farmers and better economic growth for the country.

Renewable Energy Coordination Committee (RECC) considered to organise an interaction of relevant experts including experts in Solar PV Pumping, Rain harvest, Solar thermal equipments and similar other technologies and equipments on Thursday Asar 15 (June 29, 2017).

Opening with remarks by Former Minister Er. Ganesh Shah

Opening the interaction programme Former Minister for Science and technology and Environment Er. Ganesh Shah said the renewable technologies for agriculture have been inevitable as the technologies available currently could bring water for irrigation and drinking purposes. Solar thermal technologies should be used for drying the crops for better value, low weight to carry and avoid unfavourable market price of products.

Likewise, technologies should have been introduced for upgrading horticulture, herbal products, livestock, poultry and so on for better crops, better storage, process and preserve.

Presentation by Mr. Guna Raj Dhakal

Through a PowerPoint presentation RE expert Mr. Guna raj Dhakal elaborated the technicality of Solar Photo Voltaic Pumping Systems. The system run by Solar energy in the day time does not require batteries to back up. So as it is not so expensive and portable too.

The Solar PV Systems are being used by many farmers for irrigation and also for drinking water purpose, he explained. As irrigation is possible by using Solar PV Pumping the farmers can have a good crop and multiple crops in different seasons, he added.

The government is providing support to such schemes he maintained adding that the support must be widely extended so as more farmer can purchase the technology.

Presentation by Mr. Niraj Shrestha

Mr. Niraj Shrestha who has immense of experience and academic knowledge on Solar Thermal equipments producing and better using and research works elaborated the Solar Thermal technology and applications in Nepal and elsewhere in the world.

Mr. Shrestha mentioned that Solar Thermal technologies are useful in water heating, cooking food, drying food stuffs, use of thermal energy in livestock farms and even aiding to biogas plants.

He added that Solar Thermal equipments should be extensively used in food grains, vegetables, fruits, meat etc. drying, storage, and value addition. Such simple technical inputs can enhance food security activities and income of farmers as well. Therefore the authorities must pay due attention to use Solar Thermal technologies.

Presentation by Mr. Sagar Kafle

Mr. Kafle is in a teaching job and active in environment and climate change activities. He had conducted research works on better use of agricultural waste to produce energy. Through a PowerPoint Presentation Mr. Kafle elaborated the current scenario of agricultural waste in the country. The waste has not yet been used for significantly productive purpose.

According to him, the developed countries where agricultural waste is abundantly available convert waste into source of energy by making briquette or pallet. The agricultural waste available in Nepal is also possible to be converted to briquette or pallet.

Focusing on producing pallet by using agricultural waste, Mr. Kafle said that the pallets produce better energy value. If worked seriously, Nepal could replace import coal by pallets. He also informed that Nepal imports 500,000 metric tonnes of coal per year for various industries including baking brick. The black smoke may be reduced by using pallets instead of coal, he added.

He also informed that he and some friend are in way to establish a pallet making plant at the cost of Rs 10 million.

Discussions on the presentations and the subject matters

L.R. Tamang, Mr. Hem Lal Aryal, Mr. Bala Ram Shrestha, Mr. Krishna Prasad Bhandari, Dr. Shree Bhagvan Thakur, Dr. Indira Shakya, Dr. Sunil Lohani, Prof. Ashutosh Shukla participating in the discussion on the presentations shared valuable knowledge and experiences on the subject matters to make more effective and useful to produce maximum agricultural output and better income to the farmers.

Presenters Mr. Guna Raj Dhakal, Mr. Niraj Shrestha and Mr. Sagar Kafle and facilitator Former Minister Ganesh Shah responded the queries.

Concluding remarks

Coordinator of RECC Mr. Guna Raj Dhakal delivered a brief note on the event as the concluding remarks. He thanked the facilitator, presenters and participants for valuable inputs and knowledge and experience sharing. He also said that the findings of the interactions and discussion are useful for the policy makers and planners as well. As such, such a valuable learning will be provided to the authorities concern.

Interaction on Rainwater Harvest

- On Saturday July 01,2017

- At Dinning Park & Lounge, Baneshwar, Kathmandu, Nepal
- Facilitated by Former Minister Er. Ganesh Shah
- Presentation by Mr. Bhushan Tuladhar
- Prsentation by Mr. Suman Shakya
- Coordinated by Mr. Guna Raj Dhakal
- Managed by Mr. Purna N. Ranjitkar

Rainwater harvest in Nepal: a wiser way to be ensured on water

Water is our most precious natural resource and something that most of us take for granted. We are now increasingly becoming aware of the importance of water to our survival and its limited supply.

The harvesting of rainwater simply involves the collection of water from surfaces on which rain falls, and subsequently storing this water for later use. Normally water is collected from the roofs of buildings and stored in rainwater tanks. Water can also be collected in dams from rain falling on the ground and producing runoff.

Either way, the water collected can be considered to be precious.

Rainwater harvesting techniques

The collection of rainwater from the roofs of buildings can easily take place within our cities and towns, not just in rural areas. All that is necessary to capture this water is to direct the flow of rainwater from roof gutters to a rainwater storage tank. By doing this, water can be collected and used for various uses.

If you are reliant on collected rainwater and are not connected to a town water supply, then the water collected will be especially important to you. If you are from the city, then it is possible to replace all or at least a substantial portion of fresh water requirements by the capture and storage of rainwater from roof. Being largely self sufficient in water supply is possible for a vast majority of households and buildings.

The benefits of rainwater harvesting projects in Nepal

Rainwater harvesting projects do not only provide water for drinking, but also for washing, kitchen gardening and biogas production. But there are more advantages than healthy livelihoods alone.

- When people use retained water in dry periods, the soil will regenerate and conserve the landscape, benefitting the environment.
- Combining different rainwater harvesting systems can generate more crops and because of that, a high income may be possible.

- Using credit facilities to sustainably finance rainwater harvesting projects, enables farmers to repay their loans and create local ownership.

The rainy season is when the water supply is good, why should not harvest rainwater?

Three reasons are:

- 1) This is not always the case and becoming increasingly less so. The current demand for water is 320 Million litres per day while the supply is only 120 Million litres a day in the Monsoon. In 2002 the demand was 140 Million litres a day; every day the water situation becomes worse for somebody even in the monsoon, tomorrow that person could be some of us. More than 15% of Kathmandu's population purchases trucks of water year round, meaning they spend more than 30,000 rupees a year on water.
- 2) Convenience; More than half of the people have to get up between 12 and 6 a.m. to deal with water, even during the monsoon. If you use the storage tank in your house to collect rainwater this inconvenience is avoided. Additionally the occasional sewage leaks that affect municipal supply, especially during the monsoon, will no longer be a problem during this time.
- 3) Groundwater - Most people we talked to used to have abundant water in their tube wells 15 years ago, but do not today. Why? Over pumping - No. The main problem is that the rain that used to go into the groundwater is now sent to the sewer. More rainwater inside the Ring Road is sent to the sewer than the much-hyped Melamchi will provide within this year. This figure was half 15 years ago. Before this water used to percolate into the ground and much of it remained for dry season consumption, this is no longer the case. The available technologies and experts can work help recharging this "wasted" rainwater into your well.

Moreover, the Kathmandu Valley may be taken as an instance which receives 1600 millimetres of rain every year. This means that on a typical rooftop of 100 square meters more than 160,000 litres of rain is available for capture and use. Municipal water supply is becoming increasingly inadequate, water quality questionable, and serves under half the demand in Kathmandu. Tanker water trucks are expensive and water quality questionable. Groundwater levels are depleting and quality is becoming increasingly worse. Thus, this is to be noted that the much waited Melamchi water will come to the capital valley surely but with some reasons the users will still have to spend water wisely and look for rain water as a backup.

As harvest rainwater is to save water, save money, and recharge wells improving both the groundwater quality and quantity the available technologies and expertise should be utilised at maximum level so as water scarcity can be addressed in time, before getting to the worst situation.

Opening with remarks by Former Minister Er. Ganesh Shah

Opening the interaction programme Former Minister for Science and technology and Environment Er. Ganesh Shah said the water problem in country is needed to discuss and understand the facts behind water scarcity and remedies.

The water is an important component for all for any reasons as such experts and knowledgeable experts are requested to lend knowledge and experience. The rainwater harvest is simple technology and cost effective as well therefore wise use of rainwater is desirable to overcome water scarcity. So as some or many water uses may be possible to tackle efficiently.

Presentation by Mr. Bhushan Tuladhar

Through a PowerPoint presentation Environment expert Mr. Bhushan Tuladhar elaborated the water recharging systems in Kathmandu Valley. The old civilisation and culture had given enough space to water and maintaining the water sources and channels. But rapid urbanisation had encroached many such creations of the past. The Kathmandu Valley people are now waiting Melamchi water to arrive for better living with drinking and other purposes related to health and sanitation.

He had indicated that rainwater harvest is still an easy solution for the Kathmandu Valley and rest of the places in the country.

Rainwater harvesting is a simple technology which can be applied very easily at comfortable cost. He also explained that rainwater can be used for drinking and all other waterly purposes. This technology will be useful even after arrival of Melamchi water in the Kathmandu Valley as Melamchi water and existing supplies will not meet the minimum demand of water.

Presentation by Mr. Suman Shakya

Mr. Suman Shakya has a good deal of experience in equipments and technology of rainwater harvest to his clientele. He and his company SmartPani had earned enough fame for the well performance in the rainwater harvest.

Mr. Shakya elaborated the drinking situation in The Kathmandu Valley and other place through a Power Point presentation. Elaborating the system available, he said that water problem could be solved for the households by using collected rainwater. He also said that the technology is simple and easy, and they require simple techniques and efforts to maintain.

The water bottling companies may use rainwater for better business opportunities, he added.

Discussions participated in by different personalities

Ms. Sarmila Rayamajhi, Mr. Hari Vinwar, Mr. Purak Adhikari, Mr. Gunjan Khanal, Dr. Tek Bahadur Gurung, Dr. Shree Bhagvan Thakur, Dr. Manish Pokhrel, Mr. Sudarshan Sigdel and Mr. Yug Ratna Tamrakar participated in the discussions. They put questions on implementation of the technology of rainwater harvest for particular domestic and institutional uses.

The discussions were focused on use of the technology in the households, water for the biogas plants, water for using in large size buildings, land area and transport companies and water bottling industries.

Presenters Mr. Bhushan Tuladhar and Mr. Suman Shakya and facilitator Former Minister Ganesh Shah responded the queries.

Concluding remarks

Coordinator of RECC Mr. Guna Raj Dhakal appreciating the useful and informatics presentations by Mr. Tuladhar and Mr. Shakya thanked to the participants from the academia and expertise to make the interaction programme successful. The queries and comments were encouraging and useful for enhancing the movements toward wider use of the technology, he added.

The outcome of the presentations and discussion will be put forward for necessary actions by appropriate authorities, Mr. Dhakal told on the occasion.
