

**Official Launch Event**

**AEPC / NRREP**

**Program for Large Scale**

**Commercial & Municipal Biogas Plants**

**Supported by:**

**SREP Extended Biogas Project**



Venue: Soaltee Hotel

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# Introduction to SREP Extended Biogas Program & Implementation Strategy

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# National Rural and Renewable Energy Program (NRREP)

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- AEPC is currently executing **National Rural and Renewable Energy Program (NRREP)** for five years (2012-2017) in order to promote **renewable energy technologies** in Nepal.



# The Overall Objective of NRREP

Government of Nepal and Development Partners agreed to implement NRREP to attain the developmental objective of;

- *“National Rural and Renewable Energy Programme (NRREP) is to improve the living standard, increase employment and productively of rural women and men as well as **reduce dependency on traditional energy and attain sustainable development** through integrating the alternative energy with socio-economic activities of women and men in rural communities.”*



# Objective of NRREP

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## NRREP-Output No. 2.2

- “Domestic, community and institutional (large) biogas plants are deployed/established and new biogas (waste digestion, motive power, electricity production) technology is ready for piloting. “

1,200 Plants are to be built as per program document



# SREP Extended Biogas Program Targets and Eligible Technology

- Within program period, the program has targeted to install
  - **570 commercial plants**
  - **30 MSW plants**
- **Quantitative estimated output: 9,295,575 m<sup>3</sup> of biogas and 11.68 GWh of electrical energy per annum.**
- **Any biogas technology** including standardized Modified GGC 2047 biogas plants are eligible.



# Why Large Biogas Plants in Nepal?

- Nepal is one of climate vulnerable country (4<sup>th</sup> in climate risk index in South Asia) but demonstrated the country can do in mitigation and adaptation
- Nepal has over half century long experience in biogas promotion
- Over 300,000 domestic biogas plants are already constructed and generating revenue from carbon trading both voluntary and certified.
- Has institutional approach in biogas promotion



# Scope

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- Despite of domestic, there is also potential for large biogas in the country mainly due to flourishing;
  - Poultry
  - Cow Farms
  - Food Industries
  - Liquor and Sugar Industries
  - Hotels, Restaurants, etc.





# Tentative Estimation of Biogas from Livestock

Livestock	Population in 2009/10*	Mm3 of Biogas per day	Electricity GWhr per day	Power equivalent (MW)	Compost Fertilizer (50% DS) tons/day	Assumption
Cattle (Cows)	7199260	2.88	4.75	198	14974	(assumed middle sized cows with 10kg dung/day)
Buffaloes	4836984	2.90	4.79	200	15091	(assumed middle sized buffalo with 15kg dung/day)
Pigs	1064858	0.07	0.11	5	264	(assumed middle sized pig with 1.5kg waste/day)
Fowl (Poultry)	25760373	0.18	0.30	12	850	(assumed middle sized poultry with 0.10 kg waste/day)

\* The animal statistics are based on Department of Livestock, GoN (2009-2010)



# Synopsis

- If 20% of biogas energy will be generated from previous table, it will equivalent to:
  - For electricity, Saving of 0.22 Million KL of Diesel per year ~ 30% of total Diesel consumption in Nepal in 2012/13 (Hypothetical comparison)
  - For thermal: Saving of 10 Million Cylinders of LPG per year ~ 75% of total LPG consumption in Nepal in 2012/13 (Hypothetical comparison\_



# Tentative Estimation of MSW energy potential in some municipalities

S.N.	Municipality	Total MSW collection*	Organic waste*	assumed AD Organics	Total AD Organics**	Gas Production	Total Gas production per day	Electric al Output	Power Equivalent
		(ton/d)	%	% (of organic)	tons	m3/kg	m3	kWh	kW
1	Biratnagar	50.00	77.16%	80%	31	0.056	1728	<b>2852</b>	<b>119</b>
2	Bhaktapur	25.00	74.20%	80%	15	0.056	831	<b>1371</b>	<b>57</b>
3	Lalitpur	65.00	72.00%	80%	37	0.056	2097	<b>3459</b>	<b>144</b>
4	Pokhara	50.00	54.88%	80%	22	0.056	1229	<b>2028</b>	<b>85</b>
5	Dharan	38.90	50.92%	80%	16	0.056	887	<b>1464</b>	<b>61</b>

\* Maharjan, S. 2013 "Integrated Waste-to-Energy Project Investment Plan Scaling-up of Renewable Energy Program (SREP)"

\*\* Based on Total MSW collection



# How NRREP-SREP is different from past?

- Technology Neutral
- Environmental and Social Safeguards
- Creating Market by developing consulting firms, construction companies in large sector
- Municipal Waste Management into productive end use
- Output based verification and financing schemes
- Facilitation in Technology Transfer and forums for match-making



# Governance Structure and roles

Steering Committee at National Level	The steering committee at the National Level reviews and approves the Project Operation Manual and recommends changes if any on the policy and plan of the SREP component 3 to the SREP Sub Committee.
SREP sub committee Under WB/CIF	The SREP sub-committee makes the final approval of the Project Operational Manual and the Agreement between the GoN and the WB.
World Bank	<ul style="list-style-type: none"><li>• Assists AEPC in coordination, capacity building and promotion activities for the whole Program.</li><li>• Releases retroactive funding to the project upon satisfactory performance from the SREP funds</li><li>• Reserves the right to evaluate projects at the DFS stage through the “Prior Review” process which, if approved, triggers the “No objection letter”, a requirement for the project to move to the next stage in the process.</li></ul>



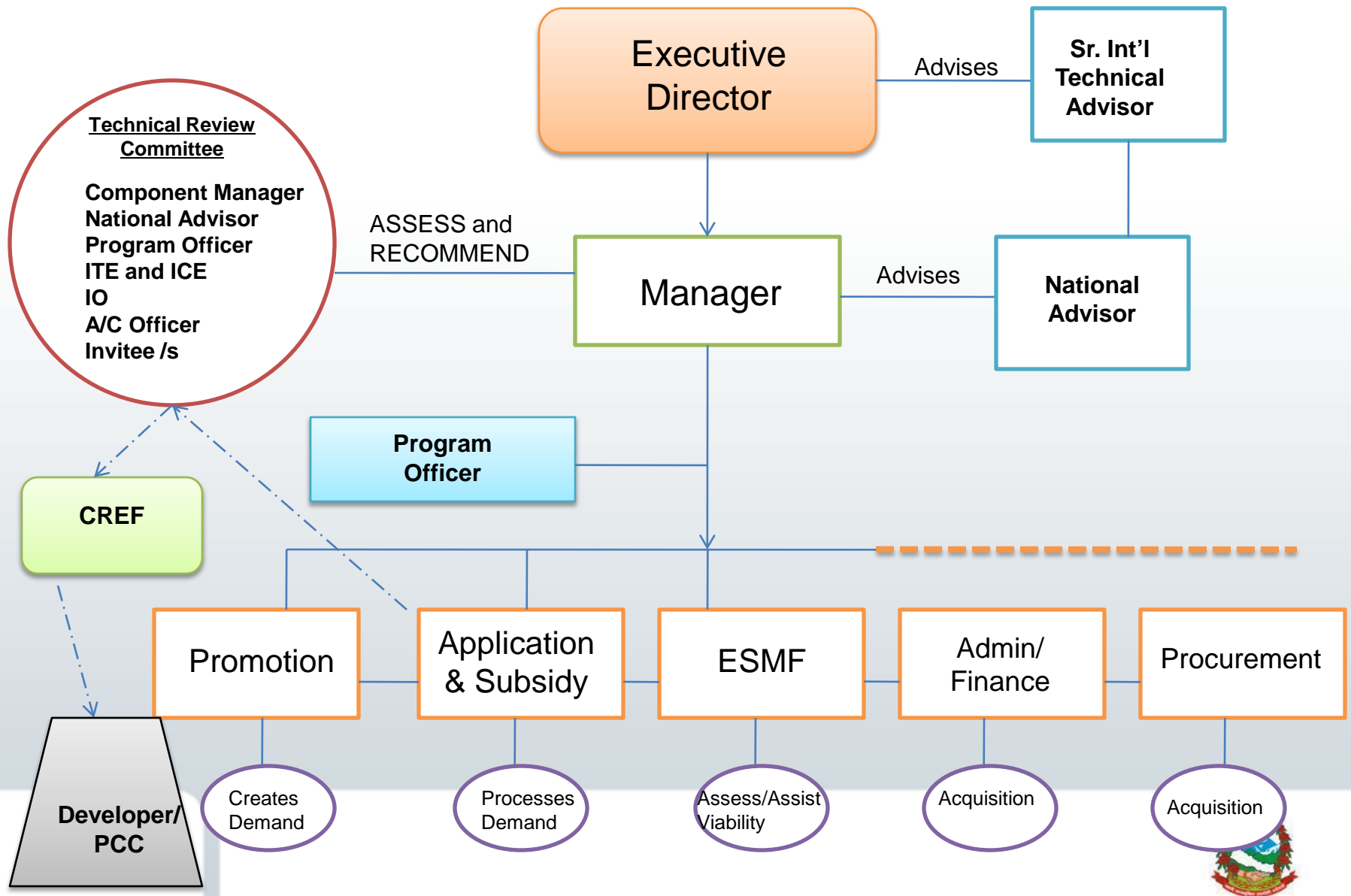
# Role of AEPC?

## **Alternative Energy Promotion Center AEPC**

- Overall management of the Program.
- Develops the systems and guidelines for the application process.
- Reviews and assesses the Application Forms and Feasibility Study reports.
- TRC Meetings
- Issues the Letter of Commitment to projects
- Monitors the performance of the plant
- Prepares the Procurement and Annual Plans for Technical Assistance activities.
- Recommends and /or Disburses the government support according to the subsidy delivery mechanism.



# Institutional Arrangement



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# Thank You

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