

Centre for Renewable Energy (CRE)



Newsletter

(A Bi-Annual Publication of the Centre for Renewable Energy)

Volume I

Number 1 (Jan – June)

2006



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"A sustainable society is one that satisfies its own need without jeopardizing the interests and prospects of future generation."

"Light for All" campaign

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EDITORIAL

We have not been able to include all the achievements of this NGO for the past many years in this publication, we have yet tried to capture the synopsis of the major achievements of immediate past two years only.

Clean renewable energy is the future of mankind and CRE is the forum setup to exchange ideas, debate, research and analyse the possibilities of harnessing this clean renewable energy. CRE studies, plans, designs and promotes efficient generation, utilisation of appropriate renewable energy technology. In doing so, the Centre encourages the use of existing resources (expertise and materials) and liaises with national, regional and international agencies/organisation to share information on available appropriate RETs and on the possibilities of adaptation and transfer to specific local conditions. CRE has an extensive range of books related to renewable energy and has just recently installed broadband connection internet thus strengthening its role as a clearing house for information dissemination on renewable energy (RE) sector.

The long term goal of CRE is to assist the nation to maximise the use of appropriate renewable energy technology and environmentally friendly energies such as solar PV, solar thermal, wind, pico-hydro, bio-energy etc.

With the theme "Light for All", CRE has launched a massive national campaign from the beginning of 2005 AD to replace kerosene wick lamps in 2.4 million households of Nepal by promoting Solar Tuki. The Solar Tuki project was one of the 63 selected amongst the 2300 projects for the Global Market Place, World Bank and the same was also one of the 22 selected amongst the 1062 projects in the Nepal Development Marketplace (NDM). Thus, with the support of GEF/SGP, NDM and also with the collaboration of ECCA, Winrock International Nepal, etc. the campaign aims to entirely displace kerosene tukis with Solar Tukis in Nepal and beyond. This campaign has a dual objective of providing solar lighting as well as improvement in the livelihood of rural people where massive amount of money is spent solely on purchase of kerosene required for basic lighting purpose.

Message from the President

CRE is now into fourteenth year of its existence. With a few ups and downs in its journey, it has come a long way since a group of enthusiasts led by its founder President Mr. T.P. Gauchan created CRE, a non-profit, non-government organization with its aim to promote Renewable Energy (RE) in Nepal. At the time it was possibly the first Renewable Energy NGO registered in the country.

Since its establishment it has completed the pioneering stand alone SHS project in **Pulimarang** some 12 years back, completed AIT-I/II/III RETs project with the support of SIDA and is now vigorously promoting **Solar Tuki** projects to completely displace kerosene tuki from 2.4 million households for lighting purpose within the next ten years. CRE is also promoting Biomass Energy, Wind Energy etc. wherever possible.

After a long interval, CRE has again published CRE Newsletter and CRE profile. CRE is now planning to publish CRE Annual Journal within this year.

There is much to be done in RE sector in Nepal and is possible only with the goodwill and whole-hearted support of all the members. I, therefore, would like to request all the members to come forward for the cause of RE promotion in our society. Let us all work together for this common cause.

B.R. Shrestha
President, CRE

CRE Ongoing Projects

1. LIGHT FOR ALL, “Displacement of kerosene lamps by low cost white light emitting diode (WLED) based solar Photovoltaic (PV) lighting systems (Solar Tuki/Tukimara systems)” in Morang and Ilam District under



GEF/ UNDP Small Grant Programmes in collaboration with the local NGOs; *Ayam Yuwa Club, Fikkal, Ilam, Save the Existence of Nepal, Biratnagar*. The major objectives of this project are:

- Mass awareness among the local community.
 - Information dissemination on UNDP/GEF – Small Grant Program.
 - Micro Finance Provision.
 - Qualitative Product and Qualitative Service.
 - Mobilization of Technical Manpower at Local Level.
- LIGHT FOR ALL, “Solar Tuki Bids Goodbye to Kerosene Wick Lamps” in Jhapa & Siraha District under NDM (National Development Market Place), World Bank in collaboration with *Clean Energy Industry* (manufacturer). The aim of this project is:
 - Awareness creation and information dissemination about Solar Tuki
 - Entrepreneurship training for local entrepreneurs to manufacture Solar Tuki
 - Operation and maintenance training to the user community and local NGOs and CBOs
 - Training on micro-finance management of the revolving fund.



2. LIGHT FOR ALL, “Solar Tuki – IN “Wicked Kerosene Lamp – OUT” in collaboration with ECCA under World Bank. The aim of the project is to displace kerosene wicked lamps by solar based household lighting thus improving the livelihood of

the rural populace and reducing the environmental pollution.

3. “Reducing Greenhouse Gas emissions by promoting advanced heat applications” in collaboration with AEPC/ESAP under FAO/ UN. The objective of the Full-Scale Project (FSP) is to enhance energy efficiency and reduce greenhouse gas emissions by promoting the adoption of improved Bioenergy Technologies for heat applications in the domestic and enterprise sector in South Asian countries, namely; Bangladesh, B h u t a n , Nepal, and Sri Lanka. The activities of the full-scale project w o u l d consist of:



- technical and commercial evaluation and demonstration of selected bioenergy technologies
- support to the creation of an enabling policy environment
- development of financial incentive schemes and leveraging of investments
- awareness-raising and capacity-building of stakeholders;
- dissemination of results for replication, and
- monitoring and evaluation of the full-scale project

The final study report has already been submitted to AEPC on the first week of January, 2006.

4. CRE has begun Gasifier Development Works.

This work involves the design and fabrication of gasifiers developed at AIT, Bangkok suited to



Nepalese conditions. This also involves the commercialization of gasifiers with the aim to substitute cooking fuel.

5. CRE is undertaking the 5th round of the Quality Assurance and Monitoring of Solar Home System (SHS) for AEPC/ESAP.

CRE News/Activities

Solar Tuki

1. More than a decade earlier CRE had pioneered Nepal's first Solar PV Village in Pulimarang VDC in Tanahu District using the stand-alone Solar Home System, (SHS). Although the SHS costs Rs. 20,000-35,000, the government started offering subsidy after the success of CRE solar home system (SHS) works at Pulimarang. Since then more than 80,000 such Solar Home Systems have been installed in villages around the country but CRE pioneered to promote only 64 such sets.

Now, CRE is promoting the Solar Tuki in its bid to develop decentralized, reliable and cost effective renewable energy systems to provide sustainable light and energy sources to the rural people for replacing kerosene tukis

There are still 2.4 million households in Nepal which continue to rely on kerosene-wick *tukis* for their household lighting needs, and another 96,000 households who do not have access to any form of lighting energy source. Although most rural households in Nepal use biomass like firewood, agricultural waste or animal dung, for cooking their meals, they continue to rely mainly on kerosene and very few get electricity for household lighting.

That every Nepali household will have hydropower energy continues to be an elusive dream. Of its 83000 MW hydro-electrical potential it is said that it is economically feasible to harness only 43,000MW. But so far the total installed hydropower capacity with Nepal Electricity Authority remains at 606 MW only. Even if Nepal were to tap the full hydropower potential, it would still not be economically feasible to have each and every Nepali household connected to the electrical grid due to the country's difficult topography. This is a factor that forces us to seek for alternative energy / lighting sources.

Kerosene is not a very feasible or sustainable alternative. It has to be imported from overseas and despite the government subsidies, still turns out to be quite expensive and not easily accessible in villages. A single rural household in Nepal consumes an average of 3 litres of kerosene per month for lighting purpose.

Practically, the urban poor cannot afford to take advantage of the government subsidy, as they cannot buy the fuel in bulk. Furthermore, in the hills, added transportation and handling charges makes kerosene more expensive and the subsidy is insignificant for rural folks who have to travel long distances for the scarce fuel.

With the initial high investment of the typical solar home system, and the unfeasibility of kerosene as a fuel source, the "Solar Tuki" is seen as an ideal alternative. The "Solar Tuki" System promoted by CRE, which costs only Rs. 3,500/- consist of two sets of WLED based lamps with rechargeable Nickel Metal Hydride batteries, a 2.5 to 3-watt solar panel and a 3 volt accessory for connecting to an AM/FM radio. If the users were to avail of micro finance, they would only need to pay a monthly installment of Rs.150/- only for two years, which is as much as they are paying per month now for the kerosene and dry-cell batteries. *At the end of two years, the users would be getting light virtually free.* The only recurring cost will be the replacement of the rechargeable batteries every two years for an additional cost of Rs.300/- only. Solar Tuki system promoted by CRE has 5 years guarantee.

2. CRE prepared "*Solar photovoltaic system design manual for solar design engineers*" with the financial assistance of AEPC/ESAP in June 2003. The objective of this manual is to provide the trainees the guidelines on various aspects of the solar PV system design. After the completion of the scheduled training course based on this manual, the engineers will be able to design a complete solar PV system (pumping and non-pumping applications).
3. CRE implemented Solar Tuki pilot project with REPSO, Winrock International Nepal for test of social acceptability, technical sustainability, financial viability and possibility for developing a CDM project of low wattage (< 10 Wp) solar powered WLED lamps in 2004.
4. CRE was a part of the team from May 2004 – May 2005 that formulated Strategic Planning and Management (SPM) for Energy sector of Nepal.
5. CRE undertook a study for AEPC/ESAP for the "*Study on system sizing of solar home systems*" in April 2005. This study was undertaken with the following objectives:

- Carry out a comprehensive study on system performance and life of different size SHS
- Conduct in-depth analysis for appropriate system sizing and configuration
- Recommend necessary guideline on system sizing and configuration to address the problems related to system performance and system configuration
- Recommend other necessary and related improvements to be made in NIPQA.



6. CRE and ECCA joined hands on April 2005 to work on Renewable Technology and Environmental Protection. This MoU will be valid till June 2007.
7. Under AEPC/ESAP CRE conducted Quality Assurance and Monitoring of Solar Home System (SHS) in Argakhanchi, Darchula, Dhading, Dolkha, Gorkha, Gulmi and Solukhumbu, etc. districts in 2005 A.D.
8. MoU has been signed on July 22, 2005 between REPSO, Winrock International Nepal and CRE for joint cooperation in the field of enabling micro-credit mechanism and CDM of Solar Tuki. MoU will be valid till May 31, 2010.
9. Synopsis on AIT Phase I, II, III RETs works has been published and is now available in booklets in CRE for distribution.



10. Synopsis on Project Idea Notification (PIN) for Solar Tuki CDM has been prepared in November 2005 by REPSO, Winrock International Nepal.

11. Contract has been signed between AEPC/ESAP and CRE on the 24th of February 2006 for consulting services of Quality Assurance and Monitoring of Solar Home System (SHS) in the field.

Wind Energy

12. MoU has been signed between Mechanical faculty of Institute of Engineering (IOE) TU, Pulchowk and CRE on August 2005 for a period of 2 years for wind energy development.



Under this the wind mapping has to be done in selected locations of Nepal. The recorded data shall be transferred to Department of Mechanical Engineering (DME) in a monthly basis by e-mail or on a hardcopy. Based on data obtained, DME and CRE shall jointly carry out the development and modification of windmill and wind pump.

Biomass

13. CRE has just recently completed the study of the first phase of the project “Reducing Greenhouse Gas emissions by promoting advanced heat applications” in collaboration with AEPC/ESAP under FAO/UN. The study project period was from August 2005 – December 2005.



14. Since 2005 March CRE has begun commercial gasifier development works for the substitution of



cooking fuel. This will involve the design and fabrication of gasifiers. CRE completed the fabrication of the commercial gasifier and was successfully tested at Wise use house compound, Jwagal in April 2006.

15. Meeting was held on the 1st of March 2006 at CRE office, Jwagal for the formation of Ad Hoc Committee of Bio Energy Network Nepal (BENN). Under the coordinatorship of Prof. T.N. Bhattarai, a 5 member action committee was formed to start BENN. The secretarial support for the same will be provided by CRE.

Workshops and Seminars

- Workshop on *Biomass Briquette* was held on the 27th of May 2004 at Hotel Himalaya, Kathmandu. This workshop was organized by CRE with the support of AEPC and FAO.



- CRE nominated Mr. Raju Aryal to participate in one month special study program at the energy field of study at Asian Institute of Technology (AIT), Bangkok from 20th September to 19th October 2004.

- CRE participated in an *Interactive seminar on Grid connection of Micro/small hydropower plants* held on 10th March, 2005 at Hyatt Regency, Kathmandu. This seminar was organized by Winrock International and GTZ.



- CRE nominated Mr. Rishi Shah to participate in Wind and Bio-energy management held in AIT, Bangkok from 26-30 April, 2005.



- Exhibition and Interaction Programme on *Modern Cooking Stoves based on Gasifier Technology* was organized by CRE and NEFEJ at Wise-Use House, Jwagal, Kupondole, Kathmandu on 16th June 2005.

- CRE along with RECAST held the *NDS phase III* workshop at Hotel Malla, Kathmandu on the 5th of August 2005. This was the final phase and the follow up of the phase II of the regional research and dissemination programme (RETs) funded by the Swedish International Development Cooperation Agency (Sida) and coordinated by the Asian Institute of Technology (AIT), Bangkok. With the overall objective of promoting selected mature and nearly mature renewable energy technologies in selected Asian countries through adaptation to local requirements and conditions, three renewable energy technologies: photovoltaics, solar drying, and biomass briquetting and briquette stoves were involved in the programme. From Nepal, CRE represented photovoltaics – Solar Tuki, RECAST was involved in solar drying and biomass briquetting and briquette stoves were done by RONAST.

- CRE participated in the *national workshop on household energy, indoor air pollution and health impacts* held on 27th August, 2005 at Hotel Yak & Yeti, Kathmandu. This workshop was organized by Winrock International Nepal.

- CRE supported by AEPC/ESAP held a one-day workshop on “*Reducing Greenhouse Gas emissions by promoting advanced heating applications*” was held at Hotel Himalaya on the 28th of August 2005. This workshop was held with the objectives of identification of bio-energy technologies to be included in full scale Regional GEF Project, preliminary listing of Institutional and Policy Barriers in effective dissemination and marketing of Biomass technologies and preliminary capacity assessment necessary for effective dissemination of Biomass technologies.

- CRE nominated Mr. B.B. Ale to participate in “*Regional Programme Proposal Preparation for*

Biomass for Thermal Applications” organized by TERI in New Delhi from 6th-10th September 2005.

- CRE participated in the *Stakeholders Consultation workshop on Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement (PREGA)* held on 30th September, 2005 at Hotel Annapurna, Kathmandu. The workshop was organized by Winrock International Nepal with the support from MoEST, HMG/N and ADB.

- CRE participated in the two-day Carbon Fair held at Hotel Soaltee Oberoi, Kathmandu on the 17th and 18th of November 2005. . The major theme of this fair was to explore the *CDM marketing possibilities of Nepal*. This fair was held with the objective of interaction between the carbon credit buyers, verifiers and the potential sellers. The major projects presented were the Solar Tuki, Biogas, Micro-hydro, Landfill gas, Improved Water Mills, Vertical Shaft Brick Kilns, and Improved Cook Stoves. This fair was organized by Winrock International Nepal with the support of MoEST, HMG/N and ADB.

- CRE participated in the two-day *Training Workshop on Climate Change and Developing CDM Projects* held on September 7-8, 2005 at The Godavari Village Resort, Kathmandu. The papers presented on the two-day workshop were:

- ⚙ Science of Climate Change and Its Impacts
- ⚙ Adaptation and Mitigation of Climate Change
- ⚙ Introduction to Kyoto Protocol, CDM Project Cycle
- ⚙ Developing CDM Projects
- ⚙ Marketing CDM Projects and Practical Realization of CDM CER Values
- ⚙ Development of CDM Project/s

The workshop was organized by Winrock International Nepal with the support of MoEST and ADB.

- CRE nominated Mr. K.R. Joshi and Mr. O.B. Shrestha to participate in *Learning cum Review Workshop*, which was held on 29th September 2005 at Hotel Dragon, Damside, Pokhara. The workshop was organized by GEF/SGP, UNDP.

- CRE participated in the Regional Stakeholders workshop, UNDP/GEF Small Grants Programme held in Biratnagar on 4th January, 2006.

- CRE held a one-day Second Stakeholders Consultation Workshop on “*Reducing Greenhouse Gas emissions by promoting advanced heating applications*” on the 6th of January 5, 2006 at Hotel Himalaya, Kupondole, Lalitpur with the support of AEPC/FAO.



- CRE participated in the two day workshop on Indoor Air pollution held on the 27th and the 28th of February 2006 at Hotel Malla, Lainchour. The workshop was organized by ITDG/Practical Aid Nepal.

- CRE participated in the two day exhibition of NGOs and INGOs held on the 28th Feb. and 1st March 2006 at Bhrikutimandap, Kathmandu. The exhibition was organized by Social Welfare Council.



- CRE participated in the one day workshop on the *introduction of prototype electric vehicle made in Nepal* on the 22nd March 2006 which was held at Hotel Soaltee Crowne Plaza, Tahachal, Kathmandu. This workshop was organized by KEVA.

- CRE participated in the half day workshop *Regional Mapping of Options to promote Private Investments in Alternative Energy Sources for the Poor; a national level study of Nepal* on the 24th of March, 2006 held at Hotel Annapurna. This workshop was organized by Winrock International Nepal.



- CRE participated in the Learning cum Review Workshop on 01-03 April, 2006 at Hotel Dragon, Damside, Pokhara. This workshop was organized by Integrated Rural Development Center in cooperation with UNDP Global Environment Facility/Small Grants

Programme. CRE presented at the workshop the development of Solar Tuki and its present status.

- CRE participated in one day National Seminar on *Prospects of Liquid Bio-fuel in Nepal* on 29th May 2006 held at CES/IOE. The seminar was jointly organized by CES/IOE and ICIMOD and supported by AEPC/MOEST.

Trainings

- 3-day *Motivators' Training on Solar Tuki* organized by CRE and ECCA was held at Wise-Use House from 7th – 9th of September, 2005.

- *Repair and Maintenance Training on Solar Tuki system* organized by CRE was held at Biratnagar from the 8th to the 10th of December 2005.



- 3-day *Interaction program on Solar tuki* organized by CRE was held at Biratnagar from the 23rd to the 25th of March 2006.



CRE Annual General Meeting (AGM), 28th January 2006 and CRE Executive Committee Election.

CRE held its annual general meeting on the 28th of January 2006 at Yala Maya Kendra, Patan Dhoka, Lalitpur. A new *11-member executive committee* for the coming 2 years was formed under President Mr. Babu Raja Shrestha on the same occasion.

On the same occasion, after the AGM, two talk programmes were held namely: 1. “The outcomes of

Mechanical Engineering for Entry level practice” which was presented by Mr. Guna Raj Poudel, a Ph.D scholar of KU and 2. “The present status of Solar Tuki and its progress till date” was presented by Mr. Babu Raja Shrestha, President CRE.

Upcoming Programs

- Gasifier development works going on. This work is the outcome of the project “*Reducing GHG emissions by promoting bioenergy technologies for heating applications*”.

- To design, fabricate and disseminate of Wind Energy Based Water Pumping System for Terai Region of Nepal. The **specific objectives** of this project are:

- to study the wind flow pattern and measure wind speed
- to design wind mill and wind pump to suit the local needs based on available wind speed,
- to fabricate the wind mill and wind pump,
- to install wind mill and wind pump for irrigation purpose at selected sites,
- to train the locals how to operate, maintain the wind mill and wind pump,
- to increase the agricultural productivity of farmer,
- to reduce the consumption of fossil fuel with motive of saving of environmental degradation and foreign currency,
- to help reduce climate change by increasing the use of renewable energy based technology,
- to increase the financial status of unprivileged people and ultimately the economic growth of the nation.



RE News Abroad *

Spain remains the most attractive market for renewables

Spain continues to be the most attractive country in the world for renewable energy, remaining one point ahead of the United States.

Spain stays in top spot due to its new five-year energy plan that provides a firm foundation to its strong indigenous industry, concludes the latest Renewable Energy Country Attractiveness Indices produced by Ernst & Young. The country's overall index for renewable energy was 68, with a 69 in wind and 69 in solar, but a score of 61 in biomass and a 73 in infrastructure. Third-place Britain scored 63 overall, with 65 in wind, 46 in solar, 58 in biomass and 71 in infrastructure. Fourth ranking on the indices goes to Germany with an overall score of 60, with 60 for wind, 69 for solar, 52 for biomass and 54 for infrastructure. India scored 57 overall, and 59, 54, 44 and 51 on the sub-rankings.



Six nations propose alternative to Kyoto

The United States, Australia, China, India, Japan and South Korea will develop and promote “new investment opportunities, build local capacity and remove barriers to the introduction of clean, more efficient technologies” which include wind, solar, geothermal, hydropower, nuclear and clean coal. Clean coal technology topped the list of technologies to be promoted, but the agreement mentions no targets for reducing GHG emissions. The Kyoto Protocol requires industrialized countries to reduce GHG emissions by an average of 5.2% by 2012, but the U.S. and Australia declined to ratify the treaty, while Japan did ratify and is legally bound by its provisions, while



it does not apply binding emissions limits to China, India or South Korea.

Global wind potential is 72 trillion watts

Researchers from Stanford University collected wind speed measurements from 7,500 surface stations and 500 balloon-launch stations to determine global wind speeds at 80 m above surface, equivalent to the hub height of modern turbines. Results estimate that 13% of the world experiences winds with average annual speeds of 6.9 m per second, which is strong enough for power generation. Locations with suitable wind resources could generate 72 trillion watts of power, compared with an estimate from the U.S. Department of Energy of 3.5 trillion watts.



Household waste could generate 17% of Britain's electricity by 2020

There is “huge potential” for increasing the generation of energy from waste, and 17% of UK electricity could come from rubbish by 2020, according to



‘Quantification of the Potential Energy from Residuals in the UK’ produced by the Institution of Civil Engineers and the Renewable Power Association. Thirty million tonnes of household waste is sent to landfill dumps in England each year, of which more than half could be used to generate power for two million homes.

Ethanol produces more energy than it takes to produce, says U.S. analysis

Ethanol generates 35% more energy than it takes to produce, due to the use of solar energy to grow the corn, according to a study by Argonne National Laboratory. In the last ten years, only two studies (both conducted by Cornell University entomologist David Pimentel) have found the net energy balance of ethanol to be negative.

“Some of the confusion arises over the fact that some of the total energy used in the production of ethanol is ‘free’ solar energy used to grow the corn in the first place,” the report notes. “Since the solar energy is free, renewable and environmentally benign, we shouldn’t care.”

Ethanol also has a positive benefit in the reduction of greenhouse gas emissions, Wang found, with corn ethanol reducing GHG emissions by 18% to 29% on a per-gallon basis.

The United States consumes 3 billion gallons of fuel ethanol a year, second to Brazil, with most produced from corn and most blended with gasoline.



Latest RE globally successful news

Fill ‘er up with recycled cooking oil

OBERLIN, Ohio, Jan. 3 (UPI) — A former gas station in Oberlin, Ohio, could become the first in the Buckeye State to pump 100 percent recycled vegetable oil to power diesel vehicles.

Today, motorists who pay up to \$2,000 to refit their vehicles can tap diesel-vegetable oil blends at Full Circle, which plans to offer 100 percent biodiesel next June.

That will be bolstered with cooking oil from every restaurant in Oberlin and Merrett’s alma mater to produce 40 gallons of biodiesel a week.

In the winter months, though, the fuel will be capped at 20 percent vegetable oil since biodiesel loses viscosity in colder temperatures.

Kyoto Treaty Boosts Sales for American Renewable Energy Companies

While President Bush and the U.S. Senate have declined to endorse the Kyoto Accords, which would have placed a cap on carbon dioxide emissions nationwide, American alternative energy companies are benefiting from the ratification of



the accords by European countries. Companies such as Solar Integrated Technologies have booming sales in Europe, especially in Germany where solar energy sales have increased more than 150 percent over the last year, reports the *L.A. Times*. Most western European countries have instituted strict regulations on carbon dioxide emissions and are pushing for the wide scale commercialization of renewable energy technologies.

Global Investment in Renewable Energy Sets New Record

Global investment in renewable energy projects reached a new record of \$30 billion in 2004, according to a report recently released by the Renewable Energy Policy Network for the 21st Century (REN21). The report indicates that energy from wind, solar, biomass, geothermal, and small hydro projects produce 160 gigawatts of electricity, around four percent of the world’s total energy. Energy experts expect that global investment in renewables will continue to grow rapidly over the coming decades. The current energy crisis has spurred governments around the world into action.



IndyCar Series to Switch to Ethanol in 2006

IndyCar competitors might leave tracks during the race, but starting next year, they’ll leave a smaller environmental footprint. The Indy Racing League has announced that the IndyCar Series will be fueled by environmentally friendly ethanol beginning in 2006. Ethanol, a renewable fuel derived from grains, is clean-burning, non-toxic, and biodegradable. These characteristics mean less air pollution and, thus, less damage to the environment. Plans for the 2006 season call for a maximum blend of 90-percent methanol and 10-percent ethanol. In 2007, though, the series will use 100-percent fuel-grade ethanol.

*(Source: Internet)

Alternative fuels just few blocks away

-Er. Sarbagya Tuladhar

Alternative fuels are emerging as important potential tools for reducing emissions from motor vehicles. Alternative fuels to gasoline and diesel include methanol (made from natural gas, coal or biomass), ethanol (made from grain), vegetable oils, natural gas (predominantly composed of methane), liquefied petroleum gas (composed of propane and butane), electricity, hydrogen and synthetic liquid fuels (derived from coal or natural gas).

Natural gas has many desirable qualities as an alternative fuel for motor vehicles. Relatively clean burning, cheap and abundant in many parts of the world, it already plays a significant role in a number of countries. The major disadvantage of natural gas as a motor fuel is its gaseous form at normal temperatures. It is usually stored in a vehicle in compressed form.

Liquefied petroleum gas (LPG) is a mixture of several gases in varying proportions. Major constituents are propane and butane, with minor quantities of propylene and other hydrocarbon gases. As a fuel for gasoline engines, LPG has many of the same advantages as natural gas, and the additional advantage of being relatively easier to carry aboard the vehicle.

The major disadvantage of LPG is its limited supply, which would rule out any large-scale conversion to LPG fuel.

Methanol can be used as a motor fuel either on its own or mixed with gasoline. It is made from natural gas, coal or biomass and can be transported in liquid form. It has several desirable combustion and emission characteristics. As a liquid, methanol can either be burned in a gasoline engine, or with a supplementary ignition source, injected into the cylinder as in a diesel.

The major air pollution issues with methanol engines are unburned fuel and formaldehyde. Methanol, and formic acid produced on combustion, exhibit a number of safety and handling problems which have led to some concerns about its possible widespread use. Formaldehyde, the first product of oxidation of methanol, is a powerful irritant and suspected carcinogen, and it displays very high photochemical reactivity. Another major drawback with methanol as a fuel is its cost, and the volatility of the pricing.

As the next highest of the alcohols in molecular weight, ethanol resembles methanol in most combustion and physical properties. Also, like methanol, ethanol can be produced from biomass it has considerable attraction as a

potential alternative fuel, because it reduces a dependence on oil products. Technology for ethanol utilization is essentially the same as for methanol.

Ethanol is produced primarily by fermentation of starch from grains or sugar from sugarcane. As a result, the production of ethanol for fuel is in direct competition with food production in most countries. The resulting high price of ethanol, almost twice as expensive as gasoline in relation to the amount of energy obtained from it, effectively rules out its use economically as a motor fuel till date but the possibilities are emerging with Brasil leading the pack.

In loving Memoriam



Late Mr. Narayan P. Nayan

Mr. Narayan Pd. Nayan, one of the founder members of CRE, passed away on the 2nd of January, 2006. Mr. Nayan will always be remembered by CRE for his active role in the planning, implementation and monitoring of CRE landmark project of stand-alone SHS project of Pulimarang, Tanahu. His untimely death at the age of 61 years has deeply saddened CRE. We express our deepest sympathy and heartfelt condolence to his family and pray for the eternal peace of his departed soul.

Executive Committee

(January 2006- January 2008)

- **President**
– Mr. Babu Raja Shrestha, M.Sc., (Mechanical Engineering)
- **Vice- President**
– Mr. Rishi Shah ,M.Sc., (Electrical Engineering)
- **Secretary**
– Mr. Mohan M. Gurung, M.Sc., (Mechanical Engineering)
- **Associate Secretary**
– Mr. Kiran Raj Joshi, M.Sc., (Electrical Engineering)
- **Treasurer**
– Mr. Om Bahadur Shrestha, M.Sc., (Automobile Engineering)
- **Members**
– Prof. Dr. Dinesh Kr. Sharma , Ph.D., (Electronics Engineering);
– Dr. Dambar Bdr. Nepali, Ph.D., (Mechanical Engineering);
– Mr. Prachar Man Singh Pradhan, M.Sc., (Hydropower Engineering);
– Mr. Rajendra Bdr. Adhikari, M.Sc., (Mechanical Engineering);
– Mr. Tej Prasad Gauchan, M.Sc., (Mechanical Engineering),
– Dr. Krishna Raj Shrestha, Ph.D. (Bio Mass)

We have moved!!

From the 29th of May, 2005 CRE shifted to its present location Wise-Use House, Jwagal, Kupondole, Lalitpur/Kathmandu after about 8 years from Bagbazaar. Wise-Use House, Kathmandu is a network of eight non-governmental organizations (NGOs) located in the same compound involved in the field of renewable energy and environmental protection.

CRE Profile 2006

CRE profile 2006 is completed and is now available for distribution at CRE office.



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