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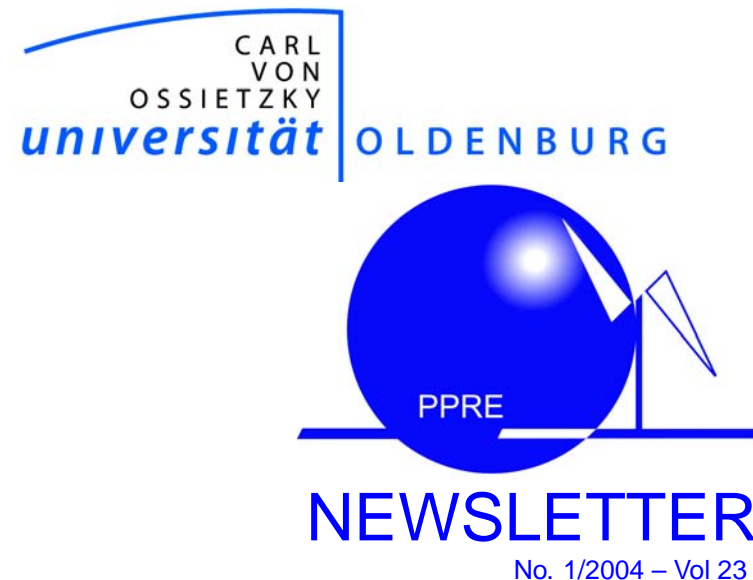
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EDITORIAL

Dear Reader—it took us longer than usual to complete this issue of the PPRE Newsletter. The reasons are manyfold and will be obvious when you turn the pages and see what was and is going on in the PPRE programme and in the Renewable Energy research at Oldenburg.

So the PPRE staff hope that you will find this issue of the Newsletter as attractive as the previous ones and it will help to strengthen the bonds between all people involved with or interested in the Oldenburg programme and/or its alumni worldwide.

Well, let me express my hope that your interest and contributions will help us to finish the next issue much more quickly. We might expect and receive your input until January 2005, please.

Best regards and all good wishes

Konrad Blum

PS: Please see also the articles about PPRE Web site and alumni questionnaire!

Postgraduate Programme Renewable Energy — PPRE

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NEWS FROM OLDENBURG

Winds of Change / a new PPRE Structure

by Edu Knagge / Michael Golba

After months of discussion and preparation the Postgraduate Programme Renewable Energy will be restructured completely, so that already the next intake for Winterterm 2004 will face quite some changes. The probably most significant differences to the current PPRE, which is running already for about 17 years, are

- the extension of the programme up to 16 months (which means: end of the next programme is scheduled for 31.01.2006!
- the implementation of Tuition fees (1000 Euro per term)
- restructuring of the curriculum (implementation of modules) and the MSc project.

Details about motivations, which lead to the new structure, the changes themselves, consequences for future students and further initiatives are given in brief in the following.

Motivation for a New PPRE Structure

- Advancement / development in the RE field requires a full 2 semester lecturing programme
- The Master Thesis requires a 6 months research project integrated into a research unit or company
- For national and international recognition of the Masters degree the acceptance by an accreditation agency is required

- Running an internationally fully-fledged Masters programme requires tuition fees

Prerequisites for a New Structure

- Students and employers demand a programme as dense as possible to cover all required subjects and as short as possible to keep the jobs (leave-taking)
- The programme has to stay open for students not able to pay tuition fees (scholarships from DAAD and others)

New Structure Outline

- New modulised course structure
- Overall duration 16 months: October 1st year x to end of January year x+2
- six-month Master Thesis with research units at Oldenburg University or in co-operation with other research institutes / companies

Consequences for PPRE students

- Duration is extended to 16 months
- Master thesis of 6 months, embedded into research projects / also with external institutions
- New modulised curriculum structure
- Implementation of international credit system
- Accredited MSc degree
- Tuition fees of EUR 3000,- (i.e. EUR 1000,- per term)

Further Initiatives planned:

Distance Education

- Developing, testing and implementing modules

- Target groups - tailored modules for on the job training
- Task Force Distance Education for Sustainable Development (DESDe) comprising partners within Oldenburg University

2nd PPRE Publication Project

by George C. Bandlamudi (PPRE 2003/04)

After the first successful PPRE publication project the second volume is in preparation – articles have been submitted now and the editors and advisors are busy with the process of making the volume ready for printing.

Below you find the call for papers, as it appeared on PPPE-L, some months ago:

Dear friends, as you know that PPPE has been an international course with participants from all over the world and is 17 years old, having its alumni, currently working in various parts of the world and in very many interesting organizations. A few of us had thought that it would be nice if we could compile some technical papers/articles which would be of use to us while we work in our respective fields. As we all know, one cannot specialize in everything at the same time. Yet, we need one another and the co-operation and contribution from one another. And hence, we are going to compile some papers/articles drawn from all the different varieties of renewable energy technologies currently viable, from the rich experiences of our PPPE and our contacts. Here are a few details:

The compilation: (Aim / Purpose):

- It would help us while we work in the field
- Current renewable energy technologies of various kinds are discussed at length in just one compilation
- Some Tips and ways to make these technologies viable in our own places of work, etc.
- It would be a good and collective work of the PPPE down the years and help us all to share with others as to what we do and what we did.

PhD Programme

- Concept development for an interdisciplinary and internationally oriented Graduate School centred around Renewable Energy

EHF joins EUREC Master Programme

The Department EHF (Energy and Semiconductor Research – see <http://www.physik.uni-oldenburg.de/ehf/> for a description of the research fields.), the ‘mother organisation’ of PPPE, a member of EUREC (European Renewable Energy Centers Agency – <http://www.eurec.be>), has decided to join the *European Master Renewable Energy* as a *core provider*. EUREC Masters students will take their first term at Oldenburg in English and then join another university for their specialisation — details see on the EUREC web site <http://www.eurec.be>.

For the first intake at Oldenburg we expect about 8-10 EUREC students at the end of September 2004.

New University Structure

Carl von Ossietzky University of Oldenburg has changed its structure: now five faculties and a lot of institutes and departments under the faculties are organising research and teaching. See more details on the university’s updated web site — <http://www.uni-oldenburg.de>.

LIST OF FORMER PARTICIPANTS

NO	YEAR	Surname	Name	Tit.	COUNTRY	e-mail
1	87/88	BEKDACH	Hussein	Dr.	Libanon	
2	87/88	DEMEL	Lothar	Mr.	Germany	demel@uni-oldenburg.de
3	87/88	DIBOR	Alfred	Mr.	Nigeria	
4	87/88	FISCHER	Eric	Mr.	Brazil	efischer@cefetpr.br
5	87/88	HEILSCHER	Gerd	Mr.	Germany	heilscher@meteocontrol.de
6	87/88	ZARATE	Carlos	Mr.	Peru	carlos-zarate@web.de
7	88/89	HAMAD	Bakri	Mr.	Sudan	
8	88/89	KIMARO	Ainea	Mr.	Tanzania	ainea_2000@yahoo.com
9	88/89	HOLTORF	Hans G.	Mr.	Germany	hans.holtorf@uni-oldenburg.de
10	88/89	MORAES-DUZAT	Rejane	Dr.	Brazil	rudzat@hotmail.com
11	88/89	NONTASO	Ngarmnit	Ms.	Thailand	ngarmnit@kku.ac.th
12	88/89	LU	Bai	Ms.	China	
13	88/89	JIA	Xi-Nan	Dr.	China	thmasia@mbox3.singnet.com.sg
14	88/89	MAIGA	Alhousseini Issa	Mr.	Mali	cnesoler@spider.toolnet.org
15	88/89	OLUDHE	Christopher	Dr.	Kenya	coludhe@uonbi.ac.ke
16	88/89	PIETSCHER	Jochen	Mr.	Germany	jopiet@gmx.de
17	88/89	RAKHA	Hassan	Mr.	Egypt	
18	88/89	CAMILLO	Roger R.	Mr.	Nicaragua	riguenergy@yahoo.es
19	88/89	RAMESH	Muthya Praneshrao	Mr.	India	rameshmuthya@hotmail.com
20	88/89	TORO CORTES	Francisco	Mr.	Chile	
	88/89	RIVASPLATA	Cesar	Mr.	Peru	crivasplata@hotmail.com
21	89/90	GAO	Ying	Dr.	China	
22	89/90	JAHN	Ulricke	Ms.	Germany	ujahn@easynet.de
23	89/90	KIMANI	John Muiruri	Mr.	Kenya	mjkimani@yahoo.com
24	89/90	HAN	Wei	Dr.	China	
25	89/90	MIRANDA MURILLO	Alexis	Mr.	Honduras	ujahn@easynet.de
26	89/90	MISRA	K.	Mr.	India	lesolarch@vsnl.net
27	89/90	MUKHERJEE	Partha S.	Mr.	India	
28	89/90	REYNALDO	Reynaldo	Mr.	Philippines	r_reynaldo@yahoo.com
29	89/90	SCHWARZ	Thomas	Mr.	Germany	tom.schwarz@t-online.de
30	89/90	TARH	Zaccheus T.	Mr.	Cameroon	
31	89/90	THI HONG HAI	Nguyen	Ms.	Vietnam	
32	89/90	PARK	Myong-Sik	Mr.	Korea	
33	90/91	BARROGA	Mania L.	Ms.	Philippines	
34	90/91	HASSAN	Gimba	Mr.	Nigeria	
35	90/91	USBECK	Stefanie	Ms.	Germany	uh.su@t-online.de
36	90/91	ENNISON	Isaac	Mr.	Chana	
37	90/91	PANDEY	Krishna C.	Mr.	India	krishna@ciae.mp.nic.in
38	90/91	ADAM	El Fadil Ahmed	Dr.	Sudan	fadiladam@hotmail.com
39	90/91	KIOKO	Joel M.	Mr.	Kenya	kebs@africaonline.co.ke
40	90/91	KNAGGE	Edu	Mr.	Germany	edu@uni-oldenburg.de
41	90/91	MISHRA	Christianand	Dr.	India	
42	90/91	OKAE	Charles	Mr.	Ghana	cokae@juno.com
43	90/91	OSMAN	Abdalla	Mr.	Sudan	
44	90/91	PEIRIS	Wettasingha	Mr.	Sri Lanka	
45	90/91	LEMUS	T. Hernando	Mr.	Bolivia	
46	90/91	XIE	Enhai	Mr.	China	
47	91/92	ABEL	Bettina	Ms.	Germany	bettina_abel@gmx.de
48	91/92	ALLY	Noel	Mr.	Guyana	noelally2003@yahoo.com
49	91/92	AUNG GYI		Mr.	Myanmar	
50	91/92	HAKIEM	Mahmoud EL	Mr.	Sudan	
51	91/92	INGWE	Anna Naftal	Ms.	Tanzania	reecon@mitsuminet.com
52	91/92	KAUR	Jagjit	Ms.	India	
53	91/92	MANSARAY	Kelleh G.	Dr.	Sierra Leone	kellehgawuru@hotmail.com
54	91/92	XIANG-JUN	Ming	Mr.	China	mirroxy@sohu.com
55	91/92	MUGISHA	Patrick	Mr.	Uganda	pmugisha@techmuk.ac.ug
56	91/92	SANTOSO	Murtiyanto	Mr.	Indonesia	murtis@peter.petra.ac.id
57	91/92	TEGELER	Ludger	Mr.	Germany	
58	91/92	NABUTOLA	W. Musungu	Mr.	Kenya	reecon@mitsuminet.com
59	92/93	AL KAILANI	Fayez Jamil	Mr.	Jordan	
60	92/93	BUDIONO	Chayun	Mr.	Indonesia	chayun@INDO.NET.ID
61	92/93	HAMID	Mohamed Ali	Mr.	Sudan	ohaj99@yahoo.com
62	92/93	KARIYAWASAM	Palitha L.G.	Mr.	Sri Lanka	pmktr@ceb.lk
63	92/93	KASSENKA	Gabriel	Mr.	Tanzania	kassengagr@yahoo.com
64	92/93	ABDU (Former: Danja Laufun)	Bertha	Ms.	Nigeria	abdulonis@yahoo.com
65	92/93	MAGNO DESENDARIO	Evelyn	Ms.	Philippines	evendesendario@yahoo.com
66	92/93	SHRESTHA	Kedar Shankar	Dr.	Nepal	ksshrestha@hotmail.com
67	92/93	PANDYA	Udayan	Mr.	India	mail2udayan_in_india@rediffmail.com

MHP Training Course on the Internet

This email is to let you know that the Energy Alternatives online microhydro course is now online! Thanks for your patience. You can access the course from a banner on our homepage or by following this link:

Registration forms can be accessed from this link:

<http://www.energyalternatives.ca/HydroCourse/>

Energy Alternatives 8 - 6782 Veyness Road Saanichton, BC V8M 2C2, Canada

Eritrea Traditional Stove Efficiency Information

<http://www.punchdown.org/rvb/mogogo/>

See fig. 2.4

MHP calculations

See microhydro@yahoogroups.com:

Quite often people are asking about pipe sizing/head loss. Below is a link to a site that makes it quick and simple. Use it for design, play what if, or just remove the mystery!

<http://www.connel.net/freeware/flowcalc1.shtml>

Digital Divide

Digital Divide, was one of the key words of the Johannesburg conference events. *Therefore please* have a look at JHAI Foundations work on internet for remote areas. http://www.jhai.org/jhai_remoteIT.html

NewScientist on Biodiesel

An oil frequently found on your bathroom shelf may prove a viable alternative to diesel

fuel for cars and trucks. Early tests show that jojoba-fuelled engines kick out fewer pollutants, run more quietly and for longer, and perform just as well as diesels.

The search for alternative fuels, driven by dwindling oil reserves and concerns over exhaust emissions, has lead researchers to investigate more sustainable sources such as vegetable oils. Sunflower oil, soybean oil and even opium poppy oil have all been tested as potential fuels.

Now it is jojoba's turn. Jojoba is a desert shrub that can reach up to 4.5 metres high and typically lives more than 150 years, producing nuts that yield half their volume in oil. The non-toxic oil is widely used as a non-greasy skin-smoothing ingredient in cosmetics, and as a base for shampoos and make-up.

Engineers think the oil has potential as a motor fuel because it releases a lot of energy when it burns and is chemically stable at the high temperatures and pressures in a working engine.

<http://www.newscientist.com/news/news.jsp?id=ns99993464>



Fig. In the Garden of Energielabor

Copies of the first publication *Renewable Energy for a Sustainable Future* [ISBN 3-8142-0837-4] are still available from PPRE secretariat

- As this compilation will have contributions from the PPRE (staff, students both current and the past), we believe that this would be a platform for renewable energy (green) technocrats to express themselves and form a good network of global players.
- The content will be subject like market trends, issues and barriers technology specific or RET, pragmatic approach, policy concerns, technical issues, viability of RETs in developing countries, etc.
- The readers, markets targeted are institutions (Energy Renewable Energy institutions) and our contacts, etc.
- The compilation would be in the book form which will be a sequel to the existing publication.

PPRE Alumni Data Base Online

by Edu Knagge

End of last year the PPRE team initiated a small project to develop a comprehensive PPRE Alumni Data Base online, which basically is meant to provide an Internet-Forum for all PPRE alumni to present themselves and their organisations or companies online. This public forum is supposed to enhance and enrich the already existing international PPRE network.

The proposal was acknowledged by DAAD, who is actually supporting this project in the frame of its "follow-up operations for students from developing countries" programme. End of February 2004 a questionnaire was sent to approx. 220 PPRE

alumni worldwide, who are asked to return the filled in questionnaire together with any other information, which they would like to present online.

Basically alumni are asked to provide the following data: Name, Nation, Contacts, Studies, Present Job, Professional Career, other information, like papers, articles published, projects, etc. Besides any business-links or links to any organisations or projects they work for may be added. Next to the questionnaire PPRE Oldenburg also offers free Web space for its alumni – so any alumni who is in need of webspace, but is lacking money or resources to do so, might send us his company profiles, project reports, etc., which will be put online by the PPRE team within a certain period of time needed for data processing.

By mid of July about 60 completed questionnaires were returned to our office and data processing is going on. In a few weeks time all information provided can be seen online at: <http://www.ppre.de/alumni>

But in order to boost the capability of the PPRE Alumni Network we want to have more of our alumni participating in the PPRE alumni Data base.

Questionnaires may be sent back to: alumni@ppre.de

PPRE Alumni Summer School 2004 — RE for Sustainable Development at Oldenburg University

by Edu Knagge

From 25–29th May 2004 the *Postgraduate Programme Renewable Energy (PPRE)* organised a Summer School for its alumni at Oldenburg University, which was sponsored by DAAD.

During five days the Summer School, which actually took place in the new buildings of the Technology Centre Oldenburg (TGO – constructed in 2002) located next to the Wechloy campus of University of Oldenburg, we counted some 80 participants. Nearly 40 PPRE alumni (see fig. 1.2) from 20 countries found their way back to *good-old-Oldenburg*. Also the present PPRE group with 19 Students enjoyed this exciting change from regular classes. Other participants came from the University of Oldenburg, local RE companies, DAAD, and other research institutions in Germany.

During the Summer School about 50 presentations were given grouped by subjects as listed below. The complete programme is available at: <http://www.ppre.uni-oldenburg.de/alumni/>

The programme consisted of four days with presentations, seminars and workshops and a one-day excursion to RE facilities in the region. The key topics of the sessions have been (no.s of presentations in brackets):

- Wind Energy Research (4)
- Wind Energy — State of the Art / Projects (8)
- Energy Meteorology (3)
- Photovoltaic – Research / State of the art (3)
- Photovoltaic Projects / Rural Electrification / RET (8)
- Fuel Cells / Hydrogen (3)
- Solar Thermal (3)
- Biomass for Energy Generation (5)
- Energy Economy/CDM (2)
- Education in RE / Distance Education (6)
- Workshop: *Market opportunities*

The majority of the contributions were presented by PPRE alumni, staff and PhD students of Oldenburg University and members

of the newly established Centre of Wind Energy Research <http://www.forwind.de/>, which is located just near the University campus. Additionally local German companies informed about their ongoing projects and external researcher from other institutions in Germany were invited in order to inform about new research fields with respect to RE.

The PPRE-Alumni-Summer School was part of a series of events which took place in combination with the World Renewable Energy Conference *Renewables2004*, which was held in Bonn, Germany from 1–4 June 2004 (for details please check: <http://www.renewables2004.de>). All activities were supported by DAAD and the German Ministry for Economical Collaboration.

Actually 20 selected PPRE-Alumni together with staff representatives of Oldenburg University were also invited to take part in the Higher Education Forum, which was a related event to the *Renewables2004* conference in Bonn. This alumni congress was titled *Capacity building in Developing Countries — Bringing RE to the People*.

PPRE 2002/03

Although PPRE 2002/03 started with 15 students only 14 made it to the final exams, where they obtained their MSc degree early in September 2003. We had seven students from Asia, three from Europe, two from South America and two from Africa.

Graduation speech by Manoj Khadka

After one very nice and good year with you people I am now heading towards my country Nepal tomorrow morning. We had a really nice time and there are a lot of things that happened within one year which even

ity information of wind and solar energy resources to thirteen developing countries. Helping to assess the overall potential for renewable energy and creating reliable site-specific information, SWERA is developing information tools for energy planners and project developers, including regional and national maps of solar and wind energy resources, and is also developing a geographical information system (GIS) interface.

The web site of SWERA can be accessed at - <http://swera.unep.net> which is primarily designed to facilitate communication among members of the collaborating agencies. As such, it has a forum for use by the collaborators to share information, and a calendar to help keep track of events and meetings. The core of the web site is the Data Archive and Dissemination System which is used to share data both among the collaborators and with civic society interested in Solar and Wind Energy alternatives. Early in the life of the project the focus will be on the construction of the Energy Resource Assessments.

Find more at <http://swera.unep.net>.

Kyoto Protocol Without the United States

There is a working paper that analyses possible options for the European Union to react to the US non-participation in the Kyoto Protocol. In particular, the paper argues that it would be permissible under world trade law for the European Union to enact comprehensive border adjustments on energy taxes against the United States. Such border tax adjustments could be made, for example, when US products are imported into Europe, to adjust for the much lower energy prices in the United States. They could also take the form of special rebates on energy-intensive EU exports to the United States to adjust for the higher energy prices in Europe, in particular in those countries

that have enacted ambitious energy taxation schemes to implement the Kyoto Protocol.

Source:

<http://www.glogov.org/workingpapers/-index.html>

Green Empowerment

Green Empowerment is a public non-profit international development organization based in Portland, Oregon that is supported by individual donors, foundations, businesses, and international and governmental aid organizations.

They tell on their web site:

“Our mission is to promote community-based renewable energy projects internationally to generate social and environmental progress. Since our inception in 1997, we have developed a strong administrative structure. We have a diverse funding base, important national & international partnerships, and a solid track record. Our Guiding Principles and Development Model are reflective of our core values of social justice, local leadership and sustainability. Our Projects are usually associated with: Residential lighting and electricity, Power for schools and clinics, Energy for economic development and micro-enterprise, Comprehensive community environmental plans and watershed protection, and the protection, development and accessibility of potable water sources. We utilize small hydropower, biomass, wind and solar power projects to energize communities and stimulate positive social and economic advances in an environmentally safe manner. All projects have a strong environmental protection component that includes watershed mapping, resource conservation, and restoration activities.”

<http://www.greenempowerment.org/>

Torsten Bröer of PPRE 2003/04 attended this conference!

You can have a look on the details by visiting the website <<http://www.teriin.org>> and clicking on DSDS2004.

Conference on Renewable Energy Technology for Rural Development

The Center for Energy Studies, Institute of Engineering and Nepal Solar Energy Society organised the second International Conference on Renewable Energy Technology for Rural Development on 12–14 October 2003. The conference contributed to the exploration of the existing engineering educational activities, disseminating successful RETs undertaken in the participating countries and developing closer cooperation among them.

Submitted by: Ram Prasad Dhital <rpdhital@rrn.org.np>

WEB LINKS

RETSCREEN

<http://retscreen.gc.ca> recommended by Everson Possamai, Brazil (PPRE03/04), who thinks it contains useful software.

GTZ / GATE Information Service

Question Answer (QA) enquires can be made in any one of the following languages:

English, Spanish, French, German. Q/A makes its know-how available, free of charge, to anyone from the developing country or a non-commercial organization involved in development cooperation. Q/A services include:

- Demand-and problem oriented information on specific technologies.
- Contacts to NGOs and experts in partner countries
- Information on individual products and procedures
- Addresses of manufactures and consultants
- Project experiences
- etc.

Online documents:

<<http://www.gtz.de/gate/id/publications.htm>>

Contact: E-mail: <gate-id@gtz.de>

EUFORES-Newsletter

This newsletter contains valuable information about RE in Europe, is available free of charge from:

Marc Timmer EUFORES -
Renewable Energy House
26 rue du Train
B-1000 Brussels, Belgium
Tel: +32 2 546 1948
Fax: +32 2 546 1947 eufores@eufores.org
— <<http://www.eufores.org>>

Towards Sustainable Energy Systems

If you are motivated to see Germany's position on the subject above, then please look at <<http://www.wbgu.de/>> and download the summary of the report on 'World in Transition—Towards Sustainable Energy Systems'.

SWERA — Solar and Wind Energy Resource Assessment

The Solar and Wind Energy Resource Assessment (SWERA) is bringing high qual-



Figure 1.1: Participants of PPRE Alumni Summer School 2004 at TGO-building in Oldenburg



Figure 1.2: Participants of PPRE-Alumni-Summer School 2004 visiting ENERCON-company

Table 1.1: PPRE 2002/03

Name	Country	Training	Thesis project
Saha, Jhantu K.	Bangladesh	GTZ	Hybrid Systems
Shao Jie	P.R. China	GTZ	CDM in China
Njiki, Alice G. Asaah	Cameroon	Univ. Emden	Biogas
Trujillo Q., Juan José	Colombia	Garrad Hassan	Wind
Tafesse, Anteneh G.	Ethiopia	E-Labor	Wind
Peter, Marco	Germany	GTZ	Efficient Stoves
Vega, Fernando A.	Honduras	BEI	Energ. Meteor.
Irasari, Pudji	Indonesia	E-Labor	Wind
Nacci Gianpiero	Italy	IT Power India	CDM Policies
Khadka, Manoj K.	Nepal	ZSW Stuttgart	PV Systems
Mishra, Subhash K.	Nepal	ISET Kassel	PV Systems
Choudhry, Ihtsham F.	Pakistan	E-Labor	Micro-Hydro
Lee, Joo Yeol	Korea	Lahmeyer	Simulation
Bango C., Alejandro	Spain	SSD-EN, Mali	PV Systems

I could not believe could happen in such a short period of time. But its true in any kind of friendship there are moments which drives ourselves away from each other and the same moment has came now also. I do not know when we will see each other in the future again but I hope we all have a lot of time and our interests are similar which could bring us together once again.

One year PPRE was just not only fruitful in terms of study – rather it was better in term of our different taste, cultural and other similar reasons, in which we all could accomodate and build a strong relationship within each other. At the last moment I would like to wish all of you best of luck for the future and try to remain in contact.

Speech by the Director of Physics Institute – Prof. Martin Holthaus

Dear graduates,
since many of you may not have seen me before, I should introduce myself: My name

is Martin Holthaus; I am teaching Theoretical Physics — which is stuff concerned with quantum mechanics and abstract mathematics —, so I am not directly involved in the Postgraduate Programme “Renewable Energies”, in short: PPRE. However, I am the person who gave the leftmost signature on the bottom of your certificates, since I am currently serving as director of the Institute of Physics. This may sound great, but it is actually a reason to pity me, because this involves an awful lot of paperwork and administrative duties. Nonetheless, in spite of all these duties, being here now on the occasion of your graduation ceremony has first priority.

Let me explain this statement in a few more words. A couple of days ago I happened to listen to a song by one of my favourite songwriters, John Lennon, entitled “Imagine”. Many of you may know this song; there is a line in it saying — I hope I get it right —: “Imagine all the people, sharing all the world. You may say I’m a dreamer but I’m not the only one. I hope some day you’ll join us and the world will live as one”.

support the growth of technologies within our people who will ultimately raise production levels of all sectors of the economy including tradable commodities. So you have done a noble job in that direction, and we are much thankful.

Microhydro-Electric Systems workshop

Microhydro-Electric Systems workshop — San Juan Islands, Washington state, April 2003—Harness small streams for home independence! Classroom sessions, labs, system tours, and hands-on work Monday-Thursday, April 21-24 - Tuition: \$450.

This workshop showed how to design a fully functional micro-hydro electric system. Learn site evaluation, including how to measure and estimate head and flow. Perform preliminary system sizing and design for mechanical and electrical power generation of 50 watt to 100 kilowatt capacities. The workshop included classroom sessions, tours of systems, lab sessions, a tour of Canyon Industries, a hydro turbine manufacturer, other system tours, and a hands-on installation.

Topics: * System Components * Turbine Types * AC & DC Systems * Site Analysis & System Design * Battery Storage & Controls * Troubleshooting & Maintenance * Hybrid Systems * Case Studies.

Registration: Solar Energy International PO Box 715 Carbondale, CO 81623 970-963-8855 Fax: 970-963-8866 <sei@solarenergy.org>
www.solarenergy.org>

Downsizing Technology for Rural Development

International Seminar on Downsizing Technology for Rural Development was organised at Regional Research Laboratory,

(CSIR) Bhubaneswar, India, (7 to 9 October 2003.)

The seminar brought out various downsized appropriate technologies available all over the world today, which can be propagated and adopted for improving quality of life and promoting sustainable development in rural areas of developing countries. There are proceedings for the papers, and CD covering technology profiles of successful appropriate technologies developed by various organizations, which were distributed among the participants.

Contact: S. Khuntia <<http://www.rrlbhu.res.in/isdtrd>>

Grove Fuel Cell Symposium

The Eighth Grove Fuel Cell Symposium - ‘Building Fuel Cell Industries’ - took place 24-26th September 2003 in London – with particular emphasis on the importance of innovation and new ideas in advancing fuel cell technology.

A large exhibition area – new for 2003 – included fuel cell and component manufacturers and featured a dedicated Fuel Cell Demonstration Area housing both fuel cell-powered vehicles and stationary hardware.

To ensure you keep pace with developments in both the next Conference Programme and the upcoming exhibitions please sign-up for the Grove Fuel Cell Email List at <<http://www.grovesfuelcell.com>>.

Delhi Sustainable Development Summit 2004

This year’s Delhi Sustainable Development Summit was held during 4 – 7 February 2004 . Overall subject was, in the follow up of the Johannesburg summit: WEHAB (Water, Energy, Health, Agriculture and Biodiversity).



Figure 3.5: Participants of PPRE Alumni-Workshop 2003 in Nairobi, Kenya

ergy meteorology were discussed.

Seminar Report

Following the end of the seminar, a compilation of the many papers was made. And efforts are being channelled towards production of seminar publication containing all the presentations, papers and even the field visit to Olkaria Geothermal power plant. It is hoped that at some point the same will be available at the PPRE website <www.ppre.de>

Conclusion Above all things this seminar demonstrated the need of partnerships between not only countries but also institutions especially amongst the developed and developing nations. Key among the recommendations of this PPRE seminar is that more of them be held in developing nations, and they be oriented towards sustainable energy systems. It is only within such contextual interactions that sustainable development can be achieved and the interactions that the PPRE alumni have gained shall not be laid to waste.

The following resumé was sent by Ainea Kimaro, Tanzania (PPRE 88/89), who par-

ticipated in the seminar:

Dear Edu and the organizing team of the 2nd follow up Seminar in Nairobi: 4 – 8/08/03, this is in much appreciation for the seminar which ended in Nairobi a week ago. Like it was clear in the Seminar, everybody was satisfied and found the gathering you organised very important. Not because we exchanged business cards, but because we learnt a lot more from each other; from the alumni, other invitees and from the former lecturers. In deed, it was a source of more inspiration and conviction on the path we are walking, that, it's correct, and we should do that faster given half a chance. As yourselves realized, the African people are very hard working, purposeful, and with ambition to make a difference in our situations. But why you had to travel all the way down here to motivate us and not in the first place from political leadership here, is because in part, the current regimes have not yet realized that the wealth of a nation lies within its people, and not on political platitudes in the first place. If Africa, and really sub-Sahara! gradually gets out of the jail of poverty, we shall have a substantial purchasing power, and it means our people can buy more from Germany which is not a bad idea. In other words, it makes sense for your country to

And though I like the music a lot — the harmonies are rather unusual — I was always kind of unsatisfied with these words, because I felt that dreams are not enough. And this is precisely where PPRE comes in, because PPRE is about doing something, PPRE is about making that dream come true.

In our case, “doing something” means spreading the knowledge about Renewable Energies around the world. This kind of teaching is, of course, quite important for securing the energy supply in developing countries. But this statement alone does hardly do justice to the full meaning of PPRE. We are now facing the danger of a global climate change, and it has become quite obvious by now that renewable and sustainable energies are quite essential for the developed countries as well. Thus, PPRE is not only about transferring knowledge from developed to developing countries — what is far more, PPRE is about working together in order to equip ourselves with what is required to face the global challenges that lie ahead of us. That is why you, with the particular expertise you have acquired in Oldenburg, are important for our common future, and that is why the Institute of Physics of the University of Oldenburg is proud that you have been here.

I should also take the opportunity to say thank you, on behalf of the Institute of Physics, to all those who put a lot of energy and enthusiasm into the organisation and the teaching of the PPRE courses. We all know that this is a hard job, certainly not funded as well as it ought to be, but this work is highly appreciated.

I would like to end this short note with two wishes. First, I wish good luck to all of you, wherever you may go from here, and I hope that you will find what you have learned in Oldenburg helpful for your personal career, and for eventually finding a good job. And second, I wish to all of us that your expertise

in the field of Renewable Energies will contribute to the well-being of our world-wide society, a well-being based on the responsible and sustainable use of energy, so that one day, perhaps, John Lennon's dream may come true.

Thank you for your attention.

Fernando Vega's speech

It feels like just last week when we first came to OLDENBURG. We got out of that train station and looked around like if it was a completely new world. For some of us it was. At least the looks people gave us made us feel that way.

Nevertheless Oldenburg received us with a lot of joy and friendly people. All those stories about Germans being bad tempered or grouchy or unapproachable were soon discovered to be not true. You can actually joke with them!!

Amazingly soon enough words like ALDI, TSCHÜSS, KARTOFFELN were part of our daily life.

Our studies began and with this a lot of experiences were lived.

I would say some were good and some were not so good. But if we weigh the whole it would definitely be considered a worthwhile learning experience. With the help of the staff things became easier and we thank you again for that. We know that you are eager to get on the next batch.

For these new lucky ones I say: *Viel Glück* and try to live every day to the fullest, this is a beautiful environment, get to know it. Know this people, their culture, etc. Experience is like a sharp knife, it can harm you or help you depending on whether you grab it by the blade or by the handle. After all this is over all you can do is relax and enjoy the memories. That is what we are doing now.

Today, 14 months later I have many more

special friends from Nepal, Cameroon, Ethiopia, Colombia, Bangladesh, Indonesia, China, Germany, Spain, Pakistan, South Korea and Italy.

We all came with different expectations and hopes. We take different things back, but we at least take one asset back in common. All the good moments and friendships we had together IN and OUT of the classroom.

I want to quote my good friend and colleague Gianpiero Nacci, who is now in London making arrangements for his new job. He sent an email to say good-bye. In his e-mail he said:

Eventually, I have discovered that friends and human relationships are the most valuable renewable energies.

As I Stand Before You, Class of 2003, I congratulate you for this accomplishment and wish you all an exiting, fruitful and successful career in the field of Renewable energies.

Speech of Ihtsham Farooq Choudry

Honorable Guests, Friends and PPRE Staff, on the behalf of our group, I would like to express our feelings, experience and opinion about the one-year programme of renewable energy in Oldenburg. It is a dream for every person to get higher and better education abroad. This dream becomes the wish of life especially for those people belonging to developing countries. We are thankful to our God, and families that we got that opportunity and came to Germany to avail this chance for a better future. We came from different countries, belonging to different cultures, different languages, and had different expectations. None of us ever knew each other before starting this course, so we were not only strangers to each other but also stranger with respect to this system and the culture of Germany. But it was very nice experience to get to know all the differ-

ent people, their languages and culture from different countries.

During this period of MSc there were some problems, which we had to face, like the German language and the cold and rainy weather. Yes, we had to cope with the strange weather of Oldenburg. With the help of our language teachers we were able to solve some of our language problems, and now after this course we know *Wie geht's dir* and *viel Spass!*. It was really good to learn the German language, culture and environment. As we knew that we had a very tight schedule and narrow timings, we started our lectures in winter. It was surprising to have daily lectures from 8 pm to 6 pm. We used to come to university and go to home in darkness. We used to spend the whole day in energy lab and we never knew what is going on outside of the energy lab and around the world, except how to make energy from biomass, what is the I(V) characteristics for solar cells and what is the required wind speed for wind energy.

The only enjoyment during this period was some field trips and some power plants, which we visited. Prof. Bauer gave us knowledge about solar cells, which was very interesting and very difficult as it was quite theoretical and we had to imagine many things. Lectures with Dr. Blum were new for us as he introduced e-learning and virtual class for biomass and energy systems. It was very new experience for all of us and we were amazed with these lecture methods of teaching – even it filled the hard disks in our computers.

Our ex-director, Dr. Schumacher delivered nice lectures on solar energy but unfortunately he left us at the end of the first semester and we missed his lectures in the second semester. Luckily Mr. Holtorf took this responsibility and he did hard work for us. With his help we really got to know about all the practical aspects of solar energy and solar components. The indispens-

(ii) Training and Research in Renewable Energy

- * Resource mapping (solar, wind, hydro, geothermal)
- * Distance learning and advancement of RE education
- * Curriculum development - KU/University of Zimbabwe
- * Capacity building, student exchange and staff development
- * Research funding, local regional, public private

(iii) Networking and Cooperation

- * International Cooperation
- * Regional cooperation and programme exchange
- * North-South cooperation PPRE (Arica, Zimbabwe)
- * Regional networking - West African experience
- * Local Networking in RE

(iv) Career And Opportunities For Re Graduates From The African Region

- * Analysis of Employment opportunities in RE
- * Business opportunities and self employment
- * Career advancement in RE

(v) Emerging Issues In RE Development In Africa

- * Poverty alleviation and RE systems in Africa - ITDG
- * Sustainable energy systems (Affordability, sustainability)

* Comparative energy technologies (conventional systems)

* Emerging technologies (fuel cells, technology leapfrogging)

Participants A total of more than 60 participants physically attended the seminar. They were mainly drawn from PPRE graduates of Eastern and Southern Africa and alumni from the PPRE partner program at University of Zimbabwe. Additionally International renewable energy experts, practitioners, academics and local companies attended the Seminar. In terms of number of participants who physically attended, Kenya had the highest share with almost 50, Zimbabwe 15, Ethiopia, Sudan, Uganda, Tanzania, Ghana, Malawi and Rwanda. The nature and diversity of the participants who attended ranged from PPRE alumni to renewable energy experts, practitioners, academics. Beside the 35 Alumni from PPRE Oldenburg (23), RE-Programme from University of Zimbabwe (11) and SESAM, Uni Flensburg (1), staff from PPRE- Oldenburg, REP-Zimbabwe and Kenyatta University also participated. Additionally representatives from DAAD, UNEP and various local organisations (e.g. Solarnet, Energy Alternatives Africa, ITDG-EA, NEMA, etc.) completed the participants list.

The Seminar Programme The seminar programme was divided into 2-3 daily sessions for the first three days to cover the thematic areas earlier indicated. The fourth day was spent visiting the probably biggest Geothermal power plant in Sub-Saharan Africa the Olkaria geothermal power plant in Naivasha, some 2 hours travel from Nairobi. The fifth and last day was spent in an informal meeting that sought to seek ways of further strengthening the PPRE alumni network. Of which issues of the currently on-going Distance education module in energy economics and en-

at NIE, Mysore. (Accessories include, coconut shell crusher, wood cutting machine)
3) Investigation on activated carbon recovery and cooling tower design for gasifier plant at N.I.E., Mysore.

A Memorandum of Understanding (MOU) has been signed between IISc, Bangalore and CART- N.I.E., for the purpose of technology dissemination. With this, the institute can work as a consultancy agency to establish gasifier power plants.

Seminars workshops and awareness programmes

CART - N.I.E., Zilla Panchayat (ZP) - Mysore, India and Organisation for Development of People (ODP) organized a 2 day workshop on the "Efficient use of renewable energy sources for sustainable development" on 12th and 13th August 2002, during this seminar, resources persons from IISc, Bangalore, highlighted the technical aspects and economics of the technology to the participants. This was followed by a visit to gasifier plant.

Participants of National Service Scheme (NSS) officers workshop, members of Krushi Vigyan Kendra - Talawadi, T.Nadu, India, alumni of our institute, participants of "Best Practices in Electrical Trade workshop", conducted at NIE, Mysore, India, technocrats in and around Mysore, environmentalists, energy conscious citizens of our city, industrialists from local industries are some of the visitors to the plant.

CONFERENCES & EVENTS

PPRE held its Fifth Follow-Up Seminar in Nairobi, Kenya

by

Francis Xavier Ochieng, Kenya (PPRE 2001/02) & Edu Knagge

Under the blazing Kenyan tropical sun the Postgraduate Programme Renewable Energy (PPRE) of Oldenburg University, Germany held its fifth follow-up seminar on Renewable Energy from August 4th to 8th 2003. This is after earlier seminars in Nairobi 1993, New Delhi - India 1996, Oldenburg 1997 and Arica Chile 1999. This Seminar was held jointly by Kenyatta University's Appropriate Technology Centre at the AVU Complex Conference Hall with support from DAAD. The seminar was appropriately entitled 'Opportunities for sustainable energy systems in Africa' and sought to explore renewable energy as a means for poverty alleviation and a vehicle for environmentally sound energy development path for Africa. Within this context presentations were made along the following five thematic areas:

- Policy Constraints and Development of RE in Africa
- Training And Research In Renewable Energy
- Networking And Cooperation
- Career And Opportunities for RE Graduates From The African Region
- Emerging Issues In RE Development In Africa

Detailed Programme

(i) Policy Constraints and Development of RE in Africa

- * Liberalisation of electricity markets
- * Integration of RE in energy planning
- * Regulatory framework for RE systems
- * Financing mechanisms for RE systems (CDM)
- * Specific technologies including project case studies (Biomass, PV, Wind, SEGs, SWHs)

able thing of this course was two months practical training in renewable energy industries. With the help of our faculty there were places in different industries in order to get to know the developed technologies in renewable energy. In the second semester we had some interesting labs that were always dependent on nice weather and we enjoyed tasty and delicious solar lunches.

During this period we realized that this course is not only for studies but also favorable for building strong intercultural relationships. During our case study it was really nice to get to know practical things of renewable energy and with the help of Hans Holtorf we did quite well.

Diana Barbu made economics very easier for us even it was not so easy, but with her help we acquired some knowledge of economics of renewable energies. The last part of our course was thesis writing and everyone disappeared from the screen. Days and nights, Saturdays and Sundays all were deadly busy for their thesis project.

But today this gathering shows our success after sleepless nights and many days of hard work. We would like to give some suggestions for this course, as not everything is perfect in this life and we should learn from our mistakes. This program is very nice and well managed but still there are some deficiencies like in our second semester we had some problems in our lectures. There are very intelligent professors but they are busy in their research work so it is our wish that they should give more time to this course.

For the practical training no doubt our management did well to get places for us, but unfortunately some of our colleagues were not able to get a place. In the future it should be organized that everyone can get place in the industries.

For the new PPRE students we would like to say that do not only concentrate on your studies but also try to mix with this intercultural

group of people. We are grateful to our professors and the staff of PPRE for helping and guiding us in the whole last year during this course. At the end we would say that we started this course as a homogeneous group of people, but we shared our studies, encouraged each other, helped each other, spent a very nice time together and now when we have finished our degrees, going to our destinations, and leaving this place, we have come so close that we will miss this time in Oldenburg and each other quite a lot.

I would like to quote the sentence from our friend Gianpiero that *Human relations and friendship is the most valuable renewable energy.*

Thank you.

Present PPRE 2003/04

The present PPRE batch started in October 2003 with 19 students, eleven from Asia, four from Europe, three from South America and one from Africa. Their names and country of origin are given below (see table 1.2):

Their practical training was quite international: Australia, India, Nepal, South-Africa, Mali and France – of course some stayed in Germany, in cities like Bremen, Duisburg, Wuppertal, and Oldenburg — nobody remained without a nice training placement. The Students are right now busy in doing their thesis project. On 10th September they will be graduated. Maybe some of you could see them at their graduation ceremony.

Practical Training Experience

by Iresha S. Palle B., Sri Lanka (PPRE 2003/04)

Björn Kuntze is PPRE alumini (1994/95)

Table 1.2: PPRE 2003/04

Name	Country	Ext. Training
Veneranda M., Nicolás E.	Argentina	JUWI, Mainz
Ahmed, Firoz Uddin	Bangladesh	GTZ, Eschborn
Aman, Julia	Bangladesh	GTZ, Eschborn
Ajah, Ferdinand	Cameroon	SSD-EN, Mali
Sanchez C., Julio	Colombia	Garrad Hassan , Ol
Mitra, Indradip	India	ISET, Kassel
Lawless, Richard	Ireland	Env. Consult., Copenhagen,
Han, Seong-sook	South Korea	Wuppertal Institute
Trinh Viet, Hieu	Vietnam	Bremen Energy Institute
Sarran, Mathieu	France	Wind Consultancy, France
Bröer, Torsten	Germany	Rural Elektr. Proj., India
Michel, Andreas	Germany	GTZ, South Africa
Bandlamudi, George C.	India	ZBT, Duisburg
Husainova, Farida	Kyrgyzstan	Univ. Canberra
Dosmalinov, Meirzhan A.	Kazakhstan	EHF, Oldenburg
Possamai, Everson	Brazil	Project GmbH, Oldenburg
Palle B., Iresha S.	Sri Lanka	MasterGas, Bremen
Bajracharya, Prashun R.	Nepal	Biogas Project, Nepal
Yandri, Erkata	Indonesia	Planet, Oldenburg



Figure 1.3: PPRE 2003/04 in a traditional harbour town during the wind excursion.

to 2" procured from local dealers at a cost of around Rs.1800 / ton (1\$ = Rs.46/-).

Waste wood pieces generated in our carpentry shop, is also used as fuel for the gasifier plant after cutting it to the required size.

Infrastructure

The gasifier plant is housed in a well ventilated structure of 90 m² area adjacent to the diesel generator room of the institute. A storage space is also provided to stock the coconut shells when purchased in bulk.

Performance of the gasifier plant

With the technology from IISc, M/s. Energreen Power Limited., Chennai, fabricated and installed the plant. The plant was commissioned in November -2001 and immediately the plant started operating on trail mode. Also, there was an initial delay in identifying a good supplier to supply the specified type of biomass at the right price.

The test phase of the plant was successfully completed after incorporating the suggestions from IISc, Bangalore as detailed below.

- Some modifications were done to the ash extraction unit of the plant to improve the gas cleaning process and also to optimize the efficiency of the plant.
- The cooling system was modified to improve the flow rate of water.

The gasifier plant was formally inaugurated on 25th May 2002 by Dr. Shivalingaiah, Director KREDAL, (Karnataka Renewable Energy Development Authority Limited), Bangalore and Dr.H.S.Mukunda, Chief Executive, ABETS (Advanced Bio-residue Energy Technologies), IISc, was the chief guest.

After modifications and fine-tuning the plant is currently working with a diesel re-

placement of around 70 to 75%.

Further improvement and optimisation of the plant could be done to enhance its performance. Semi-automation, improved gas cleaning and cooling system, treatment of wastewater, byproduct recovery, noise reduction from the diesel engine sets, are some of the immediate tasks that need to be done.

Byproduct recovery

Activated carbon is one of the byproducts generated from the plant. A student project was done to find ratio of input biomass to activated carbon generated and to evaluate its iodine number. Based on the experimentation and analysis, about 4 to 6% of the input biomass are recovered as activated charcoal and it has an iodine number in the range of 400 to 500 .

We have started using activated coal to fuel the open hearth furnaces in the smithy/forging section of our institute. This has resulted in stopping the procurement of coal from outside. Based on the information provided by the Mechanical Engineering Department of our institute, 1250 kg of coal was being consumed by this shop annually. All this has been completely replaced by about 600 kg of activated carbon residue.

Research and consultancy

One of the major activity carried at the gasifier power plant is the research and student level project works. Students and the faculty members of the institute are actively involved in many ongoing projects. The titles of student projects that have been taken up till date:

- 1) Performance study of 75 KW biogasifier plant at N.I.E., Mysore and development of gasifier performance evaluator software.
- 2) Design of accessories for the gasifier plant



Figure 3.4: View of 75 kW gasifier at CART

Mysore. Since the past 10 years, this centre is addressing issues pertaining to sustainable development, Appropriate technology, and Renewable energy in the Mysore region. CART has established a 75 kg/h capacity biomass gasifier plant in the institute premises. About 30 to 40% of the energy requirement of the institute can be met from the electricity generated by the gasifier plant. Coconut shells and waste wood are currently used as fuel. The plant is sponsored by Department of Energy, Government of Karnataka. The technology provider is the Indian Institute of Science (IISc), Bangalore.

Objective of the project:

The plant is currently in operation for 6 to 8 hours a day, meeting the following objectives:

1. Checking the viability of the biomass gasification technology both technically and economically.

Table 3.1: Specifications of Gasifier plant in N.I.E.

Parameter	Specification
Type	Open top down draft
Rating	75 kWh
Feed stock	solid biomass
gas composition	CO: 20%; CH ₄ : 3%; H ₄ : 20%; CO ₂ : 12%; and rest N ₂
calorific value of gas	4.5 MJ/kg
Generator	100 KVA, 1500 rpm

2. Disseminating the technology among public, student community, educators, industries, administrators, and farmers.
3. As a research initiative and as project work at both faculty and student level in the area of gasification technology.
4. Reducing load on local electricity grid.

Working principle

The main elements of the system are:

1. Reactor
2. Cooler
3. Filter.

The reactor receives air through air inlet. Woody biomass (coconut shells) is fed to the reactor from the top. After ignition, gases are released due to pyrolysis. This gas goes through the cooler for reduction of temperature to near ambient levels. The gas is then passed through filters to clean off the dust particles. The output from the filter is taken to the existing 75 kW engine or to a burner.

Fuel for the gasifier plant

Coconut shell is currently used as main fuel. Cleaned, dry and broken shells in sizes of 1"

and he is one of the owners of a gasification technology company called MasterGas GmbH (www.mastergas.de). I was fortunate to do practical training with him. During my practical training, we were able to design a complete gasification plant. The design is for a galvanizing plant in Sri Lanka and the price of complete system is quite attractive, because parts of gasifier will be fabricated in Sri Lanka and the rest of the components will be imported from Germany.

It is a multistage low-tar gasifier. In the multistage gasification process, the pyrolysis and the gasification process are separated into two different zones. In between the pyrolysis and the gasification zones, the volatiles from the pyrolysis are partially oxidised. Hereby, most of the tars are decomposed into gas. So the percentage of tar in syngas is very low.

Operation is completely controlled by a PLC based control system and it is designed for continuously running operation.

PPRE Web Site

The PPRE web site has been refurbished and is now under further extension & renovation.

You will find a new PPRE brochure online at <http://www.ppre.de/about/>

NEWS FROM PPRE ALUMNI IN BRIEF

Ramon Gómez Vilar, Spain (PPRE 1997/98) Ramon wrote: "since long time ago, I have the intention to write some lines for the PPRE newsletter. Since I came back from Oldenburg, I have been working on solar thermal and PV. I changed job place once, from a limited company to a cooperative, but I do similar kind of job. Besides technical issues, I participate in the cooper-



Figure 2.1: PV System at Bus Stop in Mallorca / Spain

ative organisation. It is something related to "sustainable development" as I understand, because our funds do not belong to a capitalist who does not work, and our profit remains in the cooperative to assure working places (I hope).

Here is an example of what we can do: together with three partners we realised a PV grid-connected system in the new central bus-stop of Palma de Mallorca. There are 235.98 kWp, and 74 inverters. PV modules have a secondary function so they protect busses from sun and rain. (See the pictures in fig. 2.1)

You can connect on-line to the pv central, at: <http://www.solaria.com/emt> and see if the sun is shining in Mallorca."

<mailto:ramongomezvilar@gmx.net>

Sham Sundar Subbarao, India (PPRE 1999/00) I like to inform you that we, Centre for Appropriate Rural Technologies at National Institute of Engineering, Mysore, India (CART-NIE) have an tied up with Indian Institute Of Science (IISc), Bangalore, to disseminate gasification technology. The patented down draft gasifiers for power generation from IISc, Bangalore is currently available from 20kW up to 500kW.

Local manufacturers have been assigned to fabricate and commission the downdraft gasifiers by IISc in India. Some gasifiers

have been shipped to European countries (e.g. Switzerland).

A 75kW wood gasifier is currently functioning at our Institute to meet the base load, power requirements (see p. 35).

You can contact us for further information on these gasifier systems: Sham Sundar Subbarao, Co-ordinator, Centre for Appropriate Rural Technologies (CART), N.I.E., Mysore- 570008, India.

<mailto:sham_india@yahoo.com>,

<mailto:cart_nie@yahoo.com>

James Wafula (PPRE 1992/93)

ALIVE AND KICKING IN THE SUN — Hi, yes I am still alive and kicking. I am still very much in the field of RE. I am very much rooted in the Kenyan countryside installing PV systems for homes and schools, running a battery charging station, and offering computer literacy packages amongst other services to members of my community. I moved from Nairobi about three years ago and therefore do not operate my post box there any more. My current postal address is box 4256 Kitale, Kenya. So James is running his own PV-company, called Solar Home Power in Kitale, Kenya. He informed us that he just completed one of his biggest PV solar home systems in December 2003, which has 150 Wp. He promised to send some pictures of the installation in due course. James also took part in the PPRE-Alumni workshop in Nairobi in Summer 2004 (please see respective article on page 38) and in April-June 2004 James stayed with ZSW (Dr. H. Gabler – former PPRE staff member) in Stuttgart and also visited Oldenburg.

<jwcheselemi@yahoo.com>

Marco Peter, Germany (PPRE 2002/03) joined RALOS-company, Germany, right after his studies in Oldenburg. He was in charge of PV system

installation. Since early November Marco is working for a company called Grammer Solar, which is located in Amberg near Nürnberg, Germany. Grammer-Solar is thought to be Germany's leading company in the field of solar air collectors. Grammer also deals with solar-thermal and biomass co-gen sets and the company is placed in a so called zero-emission building. Further info you might get from: <www.grammer-solar-bau.de>

Bahy Saad Ab-del Mesih, Egypt (PPRE 2001/2002)

was sent by his employer to visit Ulm, Germany for several weeks in November 2003. Bahy joined the brand new German University in Cairo as physics lecturer recently. Among others he has to give physics tutorials (exercises, labs) for 180 students who are majoring in engineering and pharmacy. In addition, he will be responsible for the demonstration and practical lab that started Feb. 15, 2004). Actually he used the visit to Ulm as kind of preparation for his teaching position.

Shao Jie, China (PPRE 2002/03)

wrote: 'It is a long time not hearing from you and I hope you are fine. I am very sorry for contacting you so late. I have safely returned to China at the end of September, but unfortunately, I was ill after my arrival at Hainan and now I am recovering.

Like what you have told us that the time passed very quickly, one year is a very short period in one person's life but it moved me so much and I have gained not only the technologies and acknowledges in renewable energy but also the friendship from all of our friends and colleagues and the spirit of the German, rigorous and sincere. I will keep them forever. I would like to say thanks a lot to you for the past whole year and good luck for the coming future. Keeping contact'

through a common platform will help fostering sustainable energy projects and spreading good-practice-examples. With this view point, a new initiative called WISIONS⁷ is taken up by the Wuppertal Institute for Climate, Environment and Energy with the support of ProEvolution, a Swiss-based foundation. The project aims at fostering and communicating sustainable development through two different approaches. It supports the realisation of new project ideas on one hand to spreading knowledge about existing successful projects on the other. Internationally accepted criteria such as technical and economic feasibility, replicability and, environmental benefits form the guidelines for selecting promising and innovative projects. One approach of WISIONS, the Sustainable Energy Project Support (SEPS), aims at supporting strategically important projects still waiting for being implemented in the field of renewable energy and energy efficiency. The Wuppertal Institute will select promising ideas and support them with its expertise, decisive contacts or by financing incremental costs for overcoming the final barriers that hinders the process of implementation. The other approach of WISIONS, the Promotion of Resource Efficiency Projects (PREP), primarily focuses on fostering means and concepts for sustainable energy and resource efficiency optimisation. The project intends to build a platform and invite people across the world to share knowledge and highlight "good practice"-examples. The most convincing approaches will be selected and communicated to different target groups, multipliers and decision-makers through a brochure and the Internet. The project focuses on one topic in the field of resource efficiency over a selected number of months. The topic and the target groups thus will vary with the objective of addressing a wide range of issues and stakeholders. The first

⁷<http://www.wisions.net> provides detailed information about the project

subject deals with "energy-efficiency in the construction sector", a field where efficient use of resources is needed that influence the resource and energy demands of tomorrow. WISIONS addresses actions and people in the whole world in fields that are crucial for building a more sustainable world. Through the publication on the Internet and the brochures the projects will obtain the deserved publicity and also provide certain ideas for more people in other countries to improve the efficient and sufficient use of resources. An exchange of ideas and concepts thus is promoted on a wide scale. Finally, with the combination of supporting not yet realized project ideas and already implemented successful projects, WISIONS enhances chances of knowledge transfer from practical experience to action. I hope the project brief shows enough clarity and is able to convince readers with its objectives. Being a member of this project, it is a kind invitation for all to approach WISIONS for your standing concepts in the specific field of sustainable energy and resource efficiency and share good examples in the specific fields that needs exposure to adopt in other part of the world⁸.

Biomass Gasifier Plant at National Institute of Engineering, Mysore

by Sham Sundar Subbarao⁹

The "Centre For Appropriate Rural technologies" [CART], is established at The National Institute of Engineering (N.I.E.),

⁸Your proposal and good practice examples can be submitted at <info@wisions.net>

⁹Address of Author: Mr. Sham Sundar Subbarao, Operations, Biomass Gasifier Power Plant, Co-ordinator, CART (Centre for Appropriate Rural Technologies), The National Institute Of Engineering, Mysore-570008, Karnataka / India. e-mail: <Sham_india@yahoo.com>, <cart_nie@yahoo.com>

users and individual owners will require information regarding how to design a system where to buy wind energy equipment, maintenance requirement and user support among others.

Research coordination and dissemination

Useful output from wind research conducted by universities and other research centres is not shared comprehensively with government planners and private sector businesses for the benefit of development. To effectively develop the market large investments will be required for awareness and promotion of the technology, the development of credible wind databases, training, and businesses infrastructure for wind. This undertaking is beyond the budget of the private sector and will require public support from governments, donors and development partners.

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VISIONS: Fostering sustainable energy projects and spreading good-practice-examples of resource-efficiency

by Anand Shukla (PPRE 2001/02)⁶

Fossil fuels and conventional technologies have led to deteriorating environmental conditions and changes in the world's climate. It is a global agenda of adopting policy measures for emissions reduction and practice sustainable development strategies. The concept of sustainable development has been widely accepted, which includes emissions abatement as one of the important parameters among others such as efficient use of available resources and application of clean energies and fuels. Experiences have shown the broad use of fossil fuels and conventional technologies lead to climate change and exert health and environmental hazards through dangerous emissions, leading to high social and economic costs. The concept of sustainable development has been formulated, which considers emission reduction as one of the factors among others such as efficient use of available resources and application of clean energies and fuels. Increasing attention is being paid globally on 'renewable energy' for restructuring the global energy systems. One important example of it is the International Conference for Renewable Energies (renewables2004), which was held in June 2004 in Bonn, Germany. This conference is expected to speeding up the process of increasing the share of renewable energies in total primary energy consumption and, more important, bring policies into local action. Wearing promising ideas and approaches from local actions is relevant for its replication. Therefore, creating a knowledge-base and sharing promising ideas and innovative approaches

⁶present address: Wuppertal Institute for Climate, Environment and Energy, Döppersberg 19, D-42103 Wuppertal, Germany.



Figure 2.2: Orlando Perez, 2nd from left

Orlando Perez, Bolivia (PPRE 1996/97) became President of Directorio del Capitulo PES IEEE Bolivia (see fig. 2.2).

The IEEE is a non-profit, technical professional association of more than 360,000 individual members in approximately 175 countries. The full name is the Institute of Electrical and Electronics Engineers, Inc., although the organization is most popularly known by its acronym.

Through its members, the IEEE is a leading authority in technical areas ranging from computer engineering, biomedical technology and telecommunications, to electric power, aerospace and consumer electronics, among others.

Bernard Osawa, Kenya (PPRE 1996-97) wrote, that the consultancy he is employed for did change their name after 10 years of service from former Energy Alternatives Africa (EAA) Ltd. to nowadays Energy for Sustainable development Africa (ESDA), which reads similar to the name of their partners in the UK.

Mzumbe Musa, Tanzania (PPRE 1999-2000) became representative of

the International Association for the Exchange of Students for Technical Experience (IAESTE), which is a confederation of National Committees representing academic, industrial and student interests. Each National Committee is responsible for the administration of the exchange in its own country. In Tanzania IAESTE was founded in 2002 and during the first year they were already able to send 10 trainees abroad and managed to arranged 2 training places for students from abroad.

Enhbold Ulziisuren, Mongolia (PPRE 1999-2000) joined the Energy Department of MCS International Co.Ltd as Renewable Energy Expert, where he is in charge of importing of RE systems and supervise installation.

Some time later he wrote: 'Hallo friends—how are you? I am very interesting CHP (combined heat and power) with a Stirling engine fired with coal or wood – from 1.5 kW_e to 200 kW_e power. Please send me a manufacture website adresse.' Enhbold tells that he now works with Intersolar LLC Ulaanbaatar Mongolia.

Jordi Avellaneda de la Calle, Spain (PPRE 2001/2002) joined INNOVA SCCL, Mataró, Spain after his studies with us in 2002 and he informed us that he finished his first two PV grid-connected installations (each 3.8 kWp), on the roof of two schools in a village near his home town. Info about his company: <www.innova.coop>.

Later Jordi did move from INNOVA to an even bigger consultancy, called SOLARING, which is located in Castelldefels and also informed us that he will start his MBA studies in October 2004 at IESE (Barcelona).

Alemu Tadesse, Ethiopia (PPRE 1999/2000) became member of the Deutschklub and African Club, while doing his PhD studies at University of Connecticut in the USA.

Quockhanh Nguyen, Vietnam (PPRE 2000/01) who is doing his PhD at Bremer Energie Institute, Germany, was invited to PPRE to give a lecture on "Application of GIS for renewable energy resource assessment" for the present students in early December 2003.

Wisdom Ahiataku-Togobo, Ghana (PPRE 1997/98) who is still working with the Ministry of Energy in Ghana, took part in a conference on Energy for Poverty alleviation in Africa, which was held end of November 2003 in Nairobi, Kenya. During the conference he met Bernard Osawa, Kenya. He also attend the recent Alumni Summerschool in Oldenburg.

Ramesh Muthya Praneshrao, India (PPRE 1988/89) who is employed at Centre of Wind Energy, India informed us that they organized an international training workshop on wind energy in early December 2003. Details are downloadable from their web page <www.cwet.tn.nic.in>

Manoj Khadka, Nepal (PPRE 2002/03) is presently working in the field of solar energy in Nepal in a private company (called Lasersun Energy Pvt Ltd) dealing with institutional and solar home systems. For instance Manoj designed a system of about 2 kW providing electricity to communication system, computers and lights. Additionally Manoj is working as freelance consultant in Kathmandu organising training and taking classes in

that training. He considers the job very interesting most of the times, but the general conditions in Nepal not so good at the moment.

Karsten Woelk, Germany (PPRE 1995/96) after a long period of silence Karsten informed us recently that he is working presently with a big solarthermal company, called Solvis-Solar¹, which is located at Braunschweig. He enjoys life and his job very much. Further info of Solvis-Solar are available at <www.solvis.de>

Cesar Rivasplata from Peru (PPRE 1988/89) informed us briefly that he is still working in the field of Renewable energies and at the same university in Peru, which is Universidad de Tacna, in the very South-West of the country. They doing projects on PV and solar thermal: heating water, swimming pools, cooking, etc.

Binu Parthan, India (PPRE 1997/98) went for a couple of days to Ghana in February 2004, where he conducted a two days workshop on of RETScreen (please see fig. 2.3). The workshop was aimed at introducing participants to RET cost-benefit analysis, performance analysis and GHG emission analysis and to course materials developed by the CANMET Energy Technology Centre. Further details of the workshop: <http://www.retscreen.net/-ang/11_form1.php>.

Binu was actually quite impressed by the level of energy expertise in Ghana and also the popularity and influence of *Wisdom Ahiataku-Togobo* (PPRE 97/98). Of course the two PPRE fellow students had a good time in Ghana together and also used the

¹present PPRE batch visited this company last fall guided by Mr. Hans Holtorf

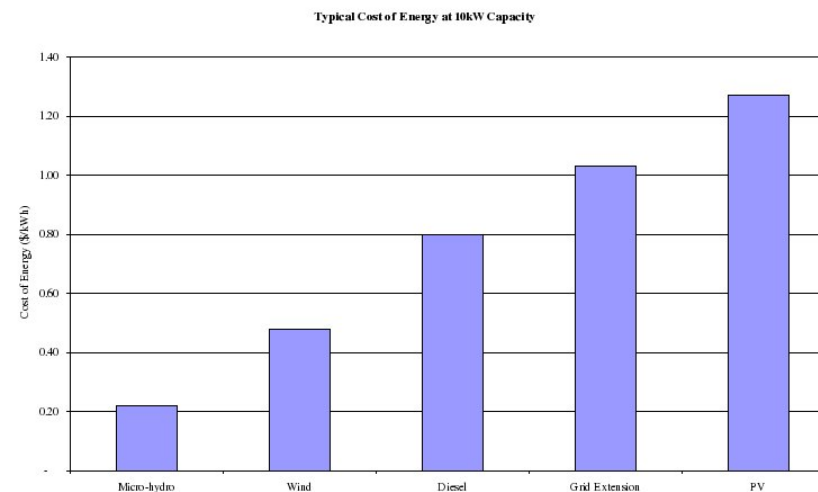


Figure 3.3: A Least-Cost Option for Small Power: Typical Costs at 10 kW Capacity

production volumes and historical lack of subsidies), reliability problems, inadequate designs and lacking capacity to install and maintain systems have led to an extremely low uptake. In contrast PV has over time and with plenty of private sector support gained credible awareness levels and is increasingly becoming a household article in Kenya, Tanzania and Uganda. Thus other technologies have received a limelight and more private and public investment. A high level of awareness needs to be developed for small wind systems.

Policy directive and incentive

In the early 20th century electricity generation and transformation and transmission technologies supported the idea that 'big is better' a view that is still held by many African governments. Over the last 10 years the technology dynamic is being reversed in favour of distributed power generation. The challenge now is to develop policies to

encourage consumers to become producers through use of wind and other renewable sources. The wind energy boom in Europe happened as a result of specific policy directives and incentives. Policies that support and cross-subsidise wind and other distributed energy sources need to be put in place.

Wind energy data

One of the most crucial pieces of information needed when elevating wind energy potential of any given area or site is reliable wind data. Unfortunately and for unclear reasons, wind resources have been systematically underestimated. Maps of the spatial patterns of the average wind speed and wind power densities prevailing wind directions frequency distribution of the wind speed including seasonal variability are imperative. Investors and developers require access to such information before any meaningful investment can be made. On the other hand,

the process of developing regional and national maps that will include wind energy resources. This is a good first step towards establishing the wind potential, which is essential for future development and planning of wind energy system.

Comparing costs

Although small wind systems involve a significant initial investment, they can be competitive with conventional energy sources on a life-cycle basis. The Economics of remote wind systems is dependent on choice of system including storage technology, the wind resource at site, electricity tariff and available financing and incentives. These issues are very user and site specific thus making the discussion of remote system economics non-generic. The cost effectiveness of wind system relative to PV or gensets cannot be determined solely by comparing the initial and annual operating costs. This is because these systems rely on different fuels that are available at different times. For example a solar system without a battery cannot work at night. Therefore a careful analysis of energy needs is essential to design an optimal remote energy system. With reasonable assumptions concerning discount rates, capacity factors and fuel cost, micro-hydro and wind turbines can have the lowest life cycle costs in locations where the resource is sufficient. (Figure 3.3)

The future: addressing impediments as much as solar home systems are convenient and appropriate, they are not a silver bullet for distributed low energy rural electri-

information tool for energy planners and project developers, including regional and national maps of solar and wind energy resources. SWERA is also developing a geographical information system (GIS) interface that will allow easy access to data and thus help the screening and pre investment evaluation of wind and solar energy-base renewable energy project.

fication. There is a large bracket of rural consumers that often want more than 200Wh per day. For low load applications (< 10kWh/day), wind-PV hybrid systems are very attractive while for larger applications wind diesel-hybrid systems are suitable. The utilization of small wind electric converters within the region is being impeded by several barriers despite the high demand for increased access to electricity and modern energy services in off grid areas and a huge potential for income generation through businesses. However with targeted and concerted efforts these barriers can be overcome resulting in a wider adoption of small wind electric systems.

Key measures to accelerate the use of wind energy that could provide a model for further development include:



*Next Generation PPRE Students
During Field Trip On Wind Energy*

Awareness and technology availability

Government planners, developers, investors and private sector businesses do not seem to be aware of the potential for and capability of small wind electric systems. Relevance, functionality and suitability of small wind electric systems as means of improved access to electricity in rural or off grid settings are still not understood by many players. The low awareness and understanding of the technology, coupled with poor product availability (i.e. high costs; low



Figure 2.3: Binu lecturing RETScreen in Ghana

time to see the rural area and some renewable energy installations in the countryside as well.

Ernest Mazimpaka, Rwanda (PPRE 2001/02) returned to his duties at Universite Nationale du Rwanda, Faculty of Sciences and Technology, Department of Environmental Physics, where he continued lecturing right after his return from Oldenburg in 2002.

Dr. Gabriel R. Kassenga, Tanzania (PPRE 1992/93) wrote: Hi! Edu, I hope that you are doing fine. I finished my PhD program in Environmental Engineering at Louisiana State University in USA in May 2003. My area of research was Treatment of Chlorinated Volatile Organic Compounds Using Wetland Systems. I am back in Tanzania teaching undergraduate and post graduate students of Environmental Engineering Department at the University College of Lands and Architectural Studies in Dar Es Salaam, Tanzania. Next semester, I will teach a subject on Renewable Energy Resources and Technology to students pursuing MSc Programme in Environmental Management and Technology. I am also doing research and consultancy services in environmental engineering and

management field. My regards to everybody.

Ainea Kimaro, Tanzania (PPRE 1989/90) wrote us earlier this year, that he is still very active in the Biogas field. Last December for instance he built a biogas unit for his parents and in the new way of his inoculation theory (he developed). The old design he constructed first already in 1991 under his own house and its still doing fine. This year Ainea is tasked to manage installation of 4 systems with the new design, each with a capacity of 700 cubic meters, which will be implemented at local prisons. Ainea promised to keep track on his projects.

Fernando Vega, Honduras (PPRE 2002/93) joined a wind energy consultancy called Windguard in Varel (near Oldenburg) after finishing studies with us. He started as trainee and is facing a great practical learning experience. In fact Fernando is involved in wind farm analysis and determination of power curves of existing turbines. He most probably will stay with this company until end of this year.

Bekala Ibrahim, Ethiopia (PPRE 1997/98) wrote last year: 'I just received your wonderful Newsletter 1/2003. It is really wonderful that will keep us in touch by sharing lots of information what is up there and about the activities of the PPRE students. Thanks a lot, I am always happy to receive it. It has been a long long time since you heard from me. As for me, every thing is going well here. Presently I am working at the Ministry of Infrastructure in the Strategic Planning Department as a senior energy expert. The Ministry of Infrastructure is a newly structured government body. Under the Ministry, there are fourteen supervisory institutions: That are directly involved in the development, expansion and

provision of infrastructures and services to the public and regulatory bodies responsible for implementing government policy by issuing licenses, setting tariffs, etc. The Ministry, being at the top, is the one who undertake policy matters and sectors plans, set overall direction, monitor development activities, and develop administration systems (identifying investment priorities, preparing and reviewing of sector policy, strategy, directives, and guidelines). Besides I am a mother of a girl (three years old) and a boy (only five months old).'

Tang Hui, China (PPRE 2000/01)

is still employed at WindSolar Company in Beijing, China. After his PPRE-studies Tang Hui started a practical training at WindSolar, Germany from where he went directly to his present duties at the chinese office. He wrote us: 'I am fine, and still continue my job with WindSolar. People here are fighting against SARS, and I reduced my activities also. However, I am still fine. Take care of yourself, and please take my regards to all!'

Milorad Nikolic, Germany (PPRE 1995/96)

by mid of last year he left Alberta, Canada to join the University of Victoria, where he joined the Dept. of Greek and Roman Studies. Milo is continuing his PhD studies there.

Muiruri J. Kimani, Kenya (PPRE 1989/90)

is living in Austria these days, where he moved early 2003 to undergo a postgraduate Programme on 'Peace and Conflict Studies', which he finished in May 2004! Kimani hopes that he can help all those deadly conflicts back home in near future. Furthermore he thinks about taking it even to the next higher level in terms of studies since the conflicts are becoming more complex.

Dr. Kedar Shanker Shrestha, Nepal (PPRE 1992/93)

who is living with his family in Japan, joined a new company about one year ago. His is working for NSK-Warner K.K, Core Material Group, Engineering Department in Shizuoka, Japan. His duties are related to ATF (automatic transmission fluid) and CVT (continuous variable transmission) of vehicles, which is actually similar to his previous tasks at his former employer Exxon-mobile, although the research approach is little different.

Richard Morris, Australia (PPRE 1996/97)

left his previous employer Alstom, to start his own company, called *Zebotec* - <www.zebotec.de>, here in Germany. One of their new products is a 1.2kW fuel cell demonstrator for laboratories, which Zebotec is offering to Universities and other educational institutions. Just recently Richard moved with his family to a small town located directly at the shore of the Bodensee (Lake Constance) in the very south of Germany. Richard also gave a presentation during the Alumni Summerschool 2004 (see page 5).

Alger Gil Guerrero, Mexico (PPRE 2000/01)

moved in January 2004 permanently to Montréal, Québec. He wrote: "I am still working in wind energy projects in México and Latin America in general and in this case partially for Québec region, all of this for a Canadian company. The company is GPCo inc. They recently started to have some interest to expand their business possibilities to the south of our continent. More info about the company you find under <<http://www.gpco.ca>>. At the office the working environment is completely bilingual and multicultural (personnel from England, France and Algeria work there, some of them even speak Spanish) so in my first stages I will be reporting results in English."

able Development Africa (ESDA) Ltd describes the current potential and uptake of this technology in the Eastern region. Small wind systems can supply energy to households and businesses through hybrid or battery based systems. Rural households require modern energy for lighting, radio and TV, while businesses require electricity for lighting, entertainment, and refrigeration. The incidence of lead-acid battery charging stations and battery systems in house holds and businesses in Africa provide clear indication of this demand. Although there are many examples of wind powered water pumps projects even in the remote parts of Africa, there are few examples of projects to produce electricity from small wind systems. Where wind electric systems exist, these have in the past been driven by settlers, missionaries and donors especially for health facilities, community and education centres.

Though technically successful, the infrastructure to sustain ably deliver and support them in the long term has not been developed. Lack of data on wind source, poor availability and low awareness of the technology has led to a situation where energy planners recommend tried and tested technologies like PV and gensets thus pushing wind to the periphery especially for small amounts of electrical energy. Micro and small wind energy converters can be used in stand-alone or hybrid configuration to supply power and charge batteries are available in the international market and range in size from 100W to 50kW and typically require lower wind speeds of approximately 3 to 4.5m/s. Even though a comprehensive wind data is not available for most of the region, there are many suitable sites in Eritrea, Ethiopia, Kenya, Somalia, Tanzania and Uganda⁴.

While in general East Africa's location

⁴From personal work and travel experience within east Africa



within the equatorial region does not favour strong and persistent winds like those experienced in the extra-tropical regions, many locations possess relatively strong and persistent wind with considerable wind power potential throughout the year. Complex topographical features and the varying nature of surfaces including large inland water bodies have marked influence in modifying wind speed profiles thus making many locations possess substantial wind energy potential. In comparison to develop wind sites in Denmark where the annual average wind speed (at 10 meters height) was 4.7 m/s over a 10 year period (Danish Energy Agency, 1999) for example, the wind source in east Africa is substantial, especially for countries with long coastlines and mountain ranges. Studies conducted in Kenya show that the north-eastern and the coastal areas have wind speeds greater than 4.0m/s and wind power densities greater than 150 W/msq while the Marsabit region has the highest wind speeds of more than 10.0 m/s and wind power densities of more than 1000 W/msq.

While avcomprehensive wind atlas is non-existent, wind data are however not completely missing. Bits of data are available from meteorological stations and can be analyst to give very good indications of wind potentials. The SWERA⁵ project is in

⁵UNEP's Solar and wind Energy resource assessment (SWERA) aims at developing new

matured and proven in Nepal. There are many companies in Nepal doing the manufacturing and installation of these plants in Nepal. The water from the river is diverted to get required head and it can be used to drive the turbine bringing the water from the forebay tank through penstock pipe. The turbine in turn drives the generator to generate electricity and it can be distributed to the load centers through the transmission and distribution networks. This electricity can be used for the domestic lighting as well as to run small scale industries like agro-processing, poultry, saw mill, bakery etc. The construction of this isolated grids not only decreases high transmission cost but also fulfils the requirements of rural people in the rural community. One of the major benefit of the electricity in the village could be the reduction of the drudgery of the women and some level of entrepreneurship will also be established in the village due to which several employment opportunity will be established in these rural areas.

While talking about sustainable development, it is the right of people to get electricity in all parts of the country. The urban load centers could benefit from the national grid whereas rural areas could benefit from micro-hydro plants. Realising this fact HMG has also given high priority to this sector and now it is also included in the planning documents. For the promotion of the alternative energy, HMG has formed an Alternative Energy promotion Center (AEPC) under the ministry of Science and Technology. In this sector the Danish Government is providing financial and technical support and an Energy Sector Assistance Programme (ESAP) has been signed between HMG and DANIDA. For the development of micro-hydro, Mini grid Support Programme(MGSP) is established under ESAP and is providing financial subsidy adhering to the government policy for the construction of micro-hydro plants. For this micro-hydro area center is established

in the regional level and for the eastern region Namsaling Community Development Center (NCDC) has been selected by MGSP to work as an area center. Through the area center technical as well as financial support is provided to the interested community. From this program more emphasis is laid on the sustainability of these plants by the promotion of end-uses and proper operation and management of these plants. In Nepal about 1000 micro-hydro plants with output capacity of about 9 MW are already installed for electrification and milling purpose. But 70% of them are not in working conditions due to the improper operation and management of these plants. Electricity thus generated is only used for lighting purposes without any other end-uses.

Hence considering all these facts, the construction of micro-hydro plants could be a milestone for the development in a mountainous country like Nepal. There are many perennial water sources, which are unused and have the potential for micro-hydro. If this potential would be tapped, then it could be used for the benefit of the rural people to be a tool for the balanced development.

Small Wind Being Ignored In Eastern Africa?

by *Bernard Osawa, Kenya* (PPRE 1996/97)³

Experience with wind systems in many regions of Africa has largely been in the water-pumping sector. Whereas water pumps can be found in the remotest parts of Africa, very few wind electric systems exist. Bernard Osawa, Energy for Sustain-

³About the Author: *Bernard Osawa* (PPRE 1996/97) is a renewable energy engineer and consultant with Energy for Sustainable development Africa (ESDA), a consulting firm based in Kenya with partners in the UK. Email: <bosawa@esd.co.ke>.

Santiago Sanchez, Ecuador (PPRE 2001/02) informed us at the end of last year, that after a year of waiting he finally got involved as General Manager on the Renewable Energies Project for the Galapagos Islands sponsored by KfW, E7 and UNDP, as a consultant for UNDP. Besides he also prepared a sustainability model for the introduction of PV Solar Home Systems for the Amazon region, where he achieved to have the compromise of the users to pay for a sustainable tariff for the service involving the community. During the last year Santiago was also busy finishing the book about Renewables 'Energías Renovables - Conceptos y Aplicaciones', which is available in Spanish language (pdf-format).

You may contact Santiago directly: <tatago@quik.com.ec>

Dr. As'ad Tubail, Palestine (PPRE 1993/94) has finished his PhD dissertation and discussed it last year July in the Islamic University. The PhD-Title was entitled "Computer simulation and modelling of Hybrid Systems to meet the Energy Demand for remote and rural areas in middle east countries". Thereafter As'ad started working in the Islamic University in Gaza as a lecturer for 6 hours per week beside his work in UnRWA and he even managed to visit Germany and Oldenburg university briefly during Christmas period last year. During his Germany trip As'ad was trying to gather some information on the latest version of PV panels, new characteristics, parameters, size of output and prices. He needs these data to prepare an economical feasibility study for installations of stand alone systems in Gaza and West Bank. He also showed us plans of interesting projects, which he has supervised in the last years.

Noel Ally, Guyana (PPRE 1991/92) sent us a brief note after a long time of si-

lence last year informing us that that he is presently working at a Shipbuilding / Ship-repair Facility in GUYANA . Although not involved in RE these days, he really fancies to read the PPRE newsletter to see what PPRE alumni and specially his former fellows are up to at the moment.

Augustus Leon, India (PPRE 1993/94) who is working as Senior Research Associate at Asian Institute of Technology in Bangkok, Thailand informed us about his present activities as follows: I am working as a Consultant, and simultaneously doing my PhD. My Consultant work is mainly on research related to solar drying and biomass briquetting/improved stoves. Proposal writing, report writing, preparing research papers/ PowerPoint Presentations/training materials/documents etc. are inherent to this kind of job. I am also doing project management, running the day-to-day handling of project activities. Some travelling is also involved, to the countries participating in the project. My doctoral research is on a 'Renewable Energy-based Air Heating System for Drying Applications'. The proposal is to design and develop an air heating system integrating an Unglazed Transpired Solar Collector (UTC), a pebbled thermal storage and a biomass gasifier stove to deliver a steady stream of hot air at a required temperature and flow rate, irrespective of weather fluctuations. My main research in this whole set-up is on the UTC. I am currently experimenting with a UTC and trying to characterise its performance. Augustus also participated in the Alumni Summerschool 2004.

Mazharul Islam, Bangladesh (PPRE 2000/01) moved to Canada to start his PhD studies there. Last year Mazhar was working on 'Vertical Axis Wind Turbines'. Of course it would be nice to get more info about his PhD project...

THE COWBOY AND THE LESBIAN

An old cowboy went to a bar & ordered a drink. As he sat sipping his whiskey, a young lady sat down next to him. She turned to the cowboy & asked "Are you a real cowboy?" He replied "Well, I've spent my whole life on the ranch, herding horses, mending fences & branding cattle, so I guess I am." She said "I'm a lesbian. I spend my whole day thinking about women. As soon as I get up in the morning, I think about women. When I shower, I think about women. As I watch TV, or even eat, I think about women. Everything seems to make me think about women." The two sat sipping in silence. A short time later, a young man sat down on the other side of the old cowboy and asked "Are you a real cowboy?" The old cowboy tipped back his hat & said "I always thought I was, but I just found out I'm a Lesbian."

these days. Not like yours in Oldenburg!

By the way, I had an opportunity to participate the Asia-Africa Regional workshop on Small Hydro. The seminar was held at Trivandrum, the capital city of Kerala, India, from 11 – 15, November 2003. The main objectives of the seminar were to

(i) to exchange views on small hydro power development in Asia and Africa and its potential for the meeting the current and future rural electrification needs,

(ii) to study, through case histories, the various models of small hydro power development in the region,

(iii) to examine the potential for development of Pico, Micro, Mini and Small hydropower development in the countries of the region,

(iv) to take note of the financing options and policies for small hydro power development in the region, and

(v) to explore the opportunities for local user participation from concept to completion of small hydro projects.

I presented a paper on Microhydro Power development, an experience of Alternative Energy Promotion Centre Nepal (my organization). I met many people from Asia and Africa including Mr. Binu Parthan and we had a very good time there.'

Samudragupta Patil, India (PPRE 1998/99)

gave us a small note that he is still working at Maharashtra Energy Development Agency (MEDA), but was transferred to Pune on promotion end of 2002. He was working as a Project Manager for 'Biomass based Power Generation Projects'. MEDA wanted to gear-up the implementation of this project and they organized a business meeting in Pune on 27th January 2003. Info about MEDA available at <www.mahaurja.com>.

MHP in Nepal — An effective Tool for Development

by Manoj Kumar Khadka²

Development of a country or a region means to facilitate all the people with adequate facility for the comfortable life and availability of physical infrastructure within all regions of the country. Balanced development is the ultimate goal of any country and the fruits of development should be distributed equally to all parts of the country. Electricity is also an essential thing for human kind in the modern world. It is almost impossible to imagine modern world without electricity. But the context of Nepal is very different.

The stage of development of any country can be characterized by per capita energy consumption. Nepal's per capita energy consumption is only 12.7 GJ that is one of the lowest in the world. This is due to fact of low economic growth and dependence of people upon the traditional forms of energy sources and also unavailability of energy in the rural mountainous areas. The main feature of energy sector in Nepal is the growing imbalance between energy resource endowment and its current use. Dependency upon traditional forms of energy fuelwood is excessive which is also causing great threat to the environment where as in other side the large hydropower potential is virtually unused.

Despite the importance and necessity of electricity, only 15% of the total population has access to the electricity. Nepal's energy use pattern is dominant with the traditional forms of energy like fuel wood, agri-residues, animal wastes etc and it constitutes about 90% of the total energy consumption. Only 10% energy is available

²Mr. Khadka is an Engineer in Micro-Hydro Area Center, NCDC and is PPRE alumni of 2002/03.



from the commercial sources of energy like coal, petroleum products, electricity etc. In this figure the contribution of the electricity is only 1%. The major source of electricity in Nepal is hydropower. The estimated hydropower potential in Nepal is 83000 MW out of which 25000 MW is technically and financially viable. Till now only 350 MW has been generated; so there is a lot of scope for hydropower development in Nepal. The major constrains for the development of this hydro electricity is the huge initial invest for the construction of these plants and environmental problems associated with it. The electricity from these large hydropower plants is connected to the national grid and distributed to the urban centers and largely populated areas where the energy demand is more and consumption is more. Due to the high transmission cost and lower energy consumption in the rural areas, this electricity could not be distributed to these areas especially in mountain parts.

In this context to electrify these rural settlements is the construction of isolated grids through the construction of micro-hydro plants. The major demand of electricity for these areas is for domestic lighting purpose and to run small-scale industries in the village. There are many perennial water sources in mountainous region from which electricity could be developed in efficient and economic way. This technology is very

Alejandro Umana, Columbia (PPRE 2001/02)

started working with one of the biggest independent Wind energy consultancy in the world, namely Garrad Hassan & Partners Limited, Bristol, UK right after his PPRE studies in Oldenburg.

Ibrahim Odeh, Jordan (PPRE 1997/98)

started in 2002 his PhD studies at Ulster University, UK. Ibrahim has got a full scholarship for his PhD project on 'Integrated photovoltaic water pumping and reverse osmosis water desalination system for remote applications'.

Ram Prasad Dhital, Nepal (PPRE 2001/02)

has joined Alternative Energy Promotion Center (AEP) under ministry of science and technology in Nepal as an energy officer in Mid 2003. AEP is the apex government body responsible for planning and implementing alternative energy technologies in Nepal. He is given the responsibility of micro-hydro section for which he has to coordinate the donors and appraise the individual projects. See also his article at page 42.

He wrote us: 'Yes, everything is going well and weather is really good in Kathmandu

Solar Ironing

by Mohammed Mozammel Hoque¹

To iron cloth and dress utilizing the solar energy is a good alternative for remote areas or those communities whose electrification is not possible by the grid connection. To keep hygienic, germfree and to make comfortable, beautiful and longevity, after washing, cloth or dress must be ironed. But in the remote and those areas where electricity is not available, to iron the cloth and dress is a great problem. In ancient days in Bangladesh, charcoal was used for ironing and nowadays, kerosene stoves are used in remote areas. These methods are expensive and sometimes, during the ironing period, ash or soot thicks and causes black spots on the cloth or dress.

On the other hand, to iron the cloth and dress utilizing solar energy is completely ash- and dust-free and reduces ironing cost. By a study it is found that solar ironing is the cheapest compared to electric and kerosene stove ironing systems.

For marketing, the products of the rural cottage textile industries in the remote areas, can be ironed using the solar energy. Solar ironing requires a very simple design and construction and it comprises only a parabolic dish concentrator and two irons, made of white cast iron.

(A detailed article was submitted by the author for forthcoming second PPRE publication.)

¹Jr. Instructor (Mechanical), Kushtia Polytechnic Institute, Kushtia, Bangladesh – and – Ph.D. Fellow, Department of Electronics and Applied Physics, Islamic University, Kushtia, Bangladesh — also PPRE alumni of 2000/01.

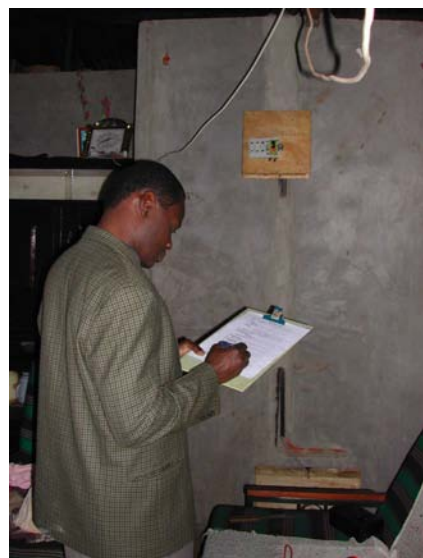


Figure 3.2: James Wafula filling inspection-sheet

use an Inverter and retain the original wiring.

- In either case, i.e. 12 V dc or 240 V ac use energy saving lights throughout the house.
- Consider replacing the 75 W color TV with 15 W B/W TV.

Actually James gave this example already in September last year, but since its a good example of real practice, its published here!

James also expects some more contracts and business coming from this consultancy he did, since the SHS-owner has many friends who are also interested in a SHS, but are a bit hesitant because of her experiences.

Butchaiah Gadde, India (PPRE 2001/02) mentioned that after his studies in Oldenburg he joined IT Power India as Environmental Engineer early last year. Half of his work is related to renewable energy and half on environment-related things such as Clean Developmental Mechanism (CDM) and phase out of GHG such as CFCs and HFCs in India.

Mesbah Khan, Bangladesh (PPRE 1999/2000) some time ago Mesbah wrote: 'I am in a problem of finding the mathematical/technical derivation or proof of finding difference between 1-bladed, 2-bladed and 3-bladed wind turbines. 3-bladed turbines are preferred over 2-bladed ones. I remember it is associated with the stability, solidity effects and more but forgot how to figure it out in mathematical form. Can anybody help me by sending any worksheet, files (PDF or DOC) or any source? It will be a great assistance to me.'

Oo Abdul Rosyid, Indonesia (PPRE 1995/96) 'Hallo, I had just received the Newsletter from you. Even I had already read it in the <<http://www.ppre.de>>, but I'd love to read it. It looks a nice printing, efficient, and complete information. I know that it was a hardwork, but it's very nice job.

Again, thank you! Have a nice time to you all in the spring season with a nice weather.

With my best regards,

Oo AR'

Aravind PV, India (PPRE 2001/02) send us a message: 'I have received the last PPRE news letter. It is quite interesting except for a mistake I found!! I am doing my PhD at University of Delft and *not* at Indian Institute of Science Bangalore (I still have contacts with them and some students from

Delft go there for thesis work). It will be nice if a correction is sent by mail so that nobody in India will try to contact me at Combustion Gasification and Propulsion laboratory at IISc Bangalore!

Here life is interesting as it is always. I am about to start my experiments at ECN (We work in collaboration) from this month.'

Patrick Mugisha, Uganda (PPRE 1991/92) 'Thank you very much for the newsletter 1/2003. It was nice hearing from you and the varied news contained in the newsletter. This way, things have not changed much. I am still at Makerere University. As you remember, I promised to update you on some of the activities about Solar PV in Uganda. Soon, I will sent you a write-up about the status of the Solar PV in Uganda today with the on-going activities.

Otherwise, not much for now. Greetings to all.

Yours sincerely, Patrick Mugisha.'

Maïga Alhousseïni Issa, Mali (PPRE 1988/89) 'Thank you for the Newsletter N° 1/2003 vol. 22. Thank you for the informations given. I will be interested to have more information about the status of the Art in the field of : PV, Wind Energy and bio-energy.

I would like to inform the PPRE Newsletter that Mali is going to experiment a very large programme of rural electrification. For conducting this project an Agency named 'Agence Malienne pour le Développement de l'Energie Rurale (AMADER)' is going to be created. This AMADER is going to work mainly in tow sectors:

- 1) Rural Electrification with the appropriate technologies
- 2) Domestic energy based mainly on wood and associates.

For the rural electrification, the system as



Figure 2.4: Debossai G. at work in Eritrean stove extension programme (right)

based on the energy production. The rural people are going to pay for energy services (kWh consumed). The private sector is going to be involved to conduct the electrification to the very remote areas.

As you can see, there will be a production of electricity from various sources like hydropower, diesel engine, PV, Wind, biomass etc...

As we are just starting the Malian program, it will be interesting to have experiences and exchange from other countries and institute. Please kindly give us your own experience for conducting a very good rural electrification project for a country of 1,240,000 km² with a population of 12,000,000 with 90% of the population considered as rural.

Alhousséini Issa Maïga, CNESOLER, B.P 134, Bamako, MALI

Debossai Ghebrehiwot, Eritrea (PPRE 1994/95) 'The Energy Research and Training Center, Asmara, want to renew the relationship between ERTC and The University of Oldenburg. Please also forward me the e-mail of Kenyatta University who participated in the meeting held in Kenya organized by Oldenburg University for PPRE alumni.'

Bidzina Kekelia, Georgia (PPRE 1998/99) Bidzina stays in Freiburg for couple months already, accompanying his wife (she received one-year DAAD post-graduate scholarship) and thinking to apply for Integration Consulting job opening. He also joined the DAAD sponsored PPRE Alumni Summerschool in May 2004 in Oldenburg.

Jan Lam, Netherlands (PPRE 1998/99) Sent us 'questions from the bush' and wrote: "We are a company engaged in rural electrification in Mali by means of SHS on a fee for service basis. At the moment we are preparing tender documents for the procurement of solar kits (SHS) with a capacity between 40 and 120 W_p for a daily energy consumption between 100 and 400 Wh. We have to decide now on the type of battery we want to use. The normal 'open' lead-acid batteries we have in use so far are asking a lot of maintenance because of the high ambient temperature for 10 months a year (between 36 and 44°C). This causes a level of water consumption which makes monthly service intervals necessary. This is very costly and therefore we are looking for alternatives.

Questions:

Can sealed 'maintenance free' batteries withstand these temperatures? Is a boost function on the charge regulator required?

We are of the impression that when the batteries come to the upper cut-out level there is enough movement (boiling) in the cells to prevent stratification.

With an average expected battery lifetime of 3 years we will have the coming years a large number of old batteries on our hand. We expect this figure to be at 2500 batteries/year in 4 years time.

Where can we find information on environ-

THE COWBOY AND THE MINISTER

A pompous minister was seated next to a cowboy on a flight to Oklahoma. After the plane was airborne, drink orders were taken. The cowboy asked for a whiskey and soda, which was brought and placed before him. The flight attendant then asked the minister if he would like a drink. He replied in disgust, 'I'd rather be savagely raped by a brazen whore than let liquor touch my lips.' The cowboy then handed his drink back to the attendant and said, "I didn't know we had a choice."

PROJECTS OF PPRE ALUMNI

Solar Home System Inspection

by James Wafula, Kenya (PPRE 1992/93)

James, whom staff of Oldenburg visited at his Solar Home Company in Kitale, Kenya after the Nairobi-Seminar last year wrote us the following about a typical SHS-Inspection we did together:

I have just come from the home we went to the other day. The homeowner is Mr. Nyongesa Wafula (no relation) who works in Nairobi. His wife is Mary Wafula (a local Agricultural Officer). They purchased the PV-system from Kenya Credit Traders (KCT) about a year ago. It comprises of a 60 W panel, 100 Ah battery, 2*18W fluorescent lights, 8*15W incandescent lights, a 75 W Sanyo color TV, and the normal ac wiring. The system was installed by a local electrician recommended by KCT.

My inspection revealed the following:

- The house had been wired for ac in anticipation for grid electricity (grid is nearby >400 m)
- Because of heavy use of dc incandescent lights and color ac/dc TV, charge controller was disconnecting loads early.

Actions taken before by other company:



Figure 3.1: James Wafula (left) with his employees in front of his Solar Homepower Company

- Charge controller was thought to be faulty. Therefore electrician was called to rectify it. Charge controller developed more problems.
- Electrician recommended removing the controller and inserting a diode in the PV-Battery +ve line.
- Battery continued to be deep discharged thereby leading to under-performance of the entire system and gradually shortening the battery's life.

Other problems indicated during my inspection:

- All dc loads using the original 1.5 mm² wire from the main switch.
- Battery clips used instead of battery clamps.
- Shading on panel caused by the design of the panel frame.

My major recommendations to the SHS-owner included:

- Either replace load wires with 2.5 mm² wire for 12 V nominal system or

Saiful Islam, Bangladesh (PPRE 2000/01) Saiful answered an info request (on PPRE-L) by Johnny Nahui Ortiz, Peru:

'Re: PV Systems / Wind Power Grid Connection

Hello,

You can look into the following standards for PV systems:

[1] 'Recommended Practice for Utility Interface of Photovoltaic (PV) Systems,' IEEE Std. 929, 2000.

[2] 'Photovoltaic system performance monitoring — Guidelines for measurement, data exchange and analysis,' IEC 61724, November 1998.

[3] 'Characteristics of the utility interface for photovoltaic (PV) systems,' IEC 61727 CDV.

The second standard is for field testing.'

Johnny had written:

'I am presently looking for information associated with:

1. Technical Standards for PV Systems
2. Regulatory frameworks for Wind Power Grid Connection

I would greatly appreciate if someone could suggest any reference'

Edu Knagge, Germany (PPRE 1990/91) this is to announce that our colleague and friend Edu Knagge became a father in March 2003 – see fig. 2.5. Now Edu's family are preparing for a new child – expected for the coming fall.

Binu Parthan, India (PPRE97/98) as a member of the Small Scale CDM activities panel for the Climate Change Secretariat Binu travelled to Germany in June and July last year to attend two meetings of the panel in Bonn. Due to a very tied schedule



Figure 2.5: Father and son

he missed to visit Oldenburg University this time. This summer Binu managed to come to Germany, to attend the Summerscholl in Oldenburg at a *Renewables2004* conference in Bonn.

<bp@itpi.co.in>

Asliddin Komilov, Uzbekistan (PPRE01/02) writes in May: 'There is a new country open for development activities, Afghanistan. But I am sure that most of the people would like to learn the situation there from distance. This is the last news: 'The office of ECOSAN, the Uzbek organization for protecting the environment, was opened at a ceremony in Mazar-e Sharif, capital of the northern Afghan Balkh Province, on April 28.' You know I have a contact with ECOSAN, so I could help interested parties to establish contact and get some information or do something together.'

<a_g_komilov@yahoo.com>

mentally sound, low-tech battery recycling techniques?'

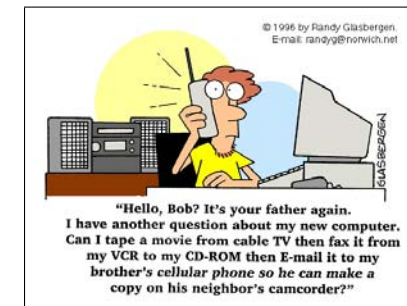
So, that was some months ago. Jan participated in the Alumni Summerschool 2004 and told us that he changed his job and now works for a consultancy in the Netherlands – again with rural electrification.

Juan Roberto Paredes, Colombia (PPRE 1999/2000) who is employed at the German windenergy consultancy, called Deutsche Windguard GmbH, wrote Mid of last year the following:

Wind energy can be successful! The first wind park in Colombia (19,5 MW) is going to be constructed this year, in part due to the help of the German Government (via GTZ) and its program TERNAL for developing countries. The full report can be found at: <<http://www.solaraccess.com/news/story?storyid=4194>> or <<http://www.nordex.de>>. The project was also sold as a CDM project to the Prototype Carbon Fund of the World Bank. My company was involved in the wind measurement and the feasibility study. For more information you can contact me.

Awa Celestine Anyam, Cameroon (PPRE 1996/97) informed us that he became head of the Petroleum sector in the Ministry of Mines and Energy in Cameroon. He is regularly sending us a copy of the departments newsletter about energy matters in Cameroon.

Konrad Lustig, Germany (PPRE 1997/1998) after finishing his PhD at Fraunhofer Institut in Freiburg (Institute of Solar Energy) Konrad joined the PRE Group (Produktgruppe Regenerative Energien) in a big German company, called BOSCH, in Esslingen. His main duty is research in the field of integration of solar components into common heating systems. Also he is involved in the development of



solar systems for foreign markets, specially Spain, Portugal and England. At the moment he is running simulations for optimisation of these systems.

Gianpiero Nacci, Italy (PPRE 2002/03) who joined the *European Bank for Construction Development (EBRD)* in London, UK, right after his studies with us recently told us that he is working mostly on energy efficiency projects but is also partially involved with renewables (a couple of renewable energy credit lines for small/medium projects; EBRD carbon fund projects; etc.). Sometimes he would like to be more involved in the project development side rather than project evaluation. However, it is fine for the time being; He is learning many things and working in a stimulating environment (even if not always as "sustainable"....). Plus, he is travelling sometimes (mainly Russia) which add an interesting upside to his activity. <www.ebrd.com/country/sector/energyef/>

He wrote in detail: 'By the way, now things seem starting to settle in. Living in London is more stressful that we thought and I am starting only now to get used to the impeccable performances of the London transport system. Job is fine even if I am not involved in RET as much as I would like. However, at the moment, I am involved in the tech-



Reynaldo Reynaldo, Philippines (PPRE 1989/90) resigned from Shell Renewables in Mid 2002 already and started his job at Winrock International, which is also located in the Philippines, as he wrote us last year. Winrock has a project on rural electrification with livelihood projects using renewable energy systems in Muslim Mindanao. The Program aims to energise 160 barangays and Reynaldo acted as Area manager for Tawi-Tawi Province. They had to energise 106 villages by December 2003 and have to generate livelihood projects by September 2004.

Musa Mzumbe, Tanzania (PPRE 1999/2000) together with Elizabeth Kingu, Tanzania (PPRE 1995/96) formed a renewable energy company called RESCO(T) LTD and the company started operation in February 2003. They are dealing with design, supply and installation of PV systems and there office is based in Dar Es Salaam. Last year they supplied some solar modules to rural areas and did an installation for a dispensary in Dar Es Salaam. Further info is available at: <www.resco-tz.com>

Anand Shukla, India (PPRE 2001/02) returned right home to India after his studies with us to re-join his former employer TERI, Delhi. As one of his duties in TERI Anand was heading a project for Jharkhand state where the team has to develop a model and strategies for electrification of rural villages. Jharkhand is the poorest state of the country, bad infrastructure and it is quite difficult to get any secondary data. But in January 2004 he returned to Germany again to start his PhD at the Wuppertal Institute for Climate, Environment and Energy. Right now Anand is involved in a project called *WISIONS*, which is related to energy and sustainable development in developing countries (see ar-

nical due diligence of a biomass boiler and assisting other people working in structuring funds for RE deployment. My main focus now is on energy efficiency in the industrial sector and, as you can imagine, there is a lot of scope in the EBRD's countries of operation. For instance, I am working at the biggest car factory in Russia which I believe is the biggest in the world. It is located in Togliatti and it is simply amazing. It produces 700000 cars/year and employs some 80000 people in a single factory (!!). Anyway, trying to identify possible projects in such kind of facilities is somehow difficult: you do not know where to start. The first feeling is that the best thing to do is simply dismantling everything and building a new facility. But this can be even more difficult due to the environmental and social issues associated. I am still missing Oldenburg and all of you very much (like all the last year alumni by the way). Hope everything is going all right for you. I have got quite a number of useful documents and sources of info related to RE in East Europe and Central Asia, Cogeneration, District Heating, Carbon Financing, and RE/ Energy Efficiency financing. Please, let me know if you require any kind of support related to these topics.

I hope to be able to pop in briefly in Oldenburg sometimes next year. I am looking forward to see all of you.'

ticle on page 34).

Francis Sichali, Malawi (PPRE 1997/98) went abroad in 2002 and joined the Department of Elect. Mech. Services at the Government of Botswana. He is stationed in Gaborone, Botswana.

Mhlanga, Alois P., Zimbabwe (alumni of RE MSc Programme in Zimbabwe) informed us that he moved to Tunisia earlier this year where he joined AfDB. Alois is working on the Finesse project where they are financing RE in small scale enterprises around Africa. Actually Alois is looking for contacts in most African countries, since the project will be implemented throughout the continent. In near future they will need inputs from people like the PPRE-Alumni on the continent when it comes to country consultations, policy and institutional reviews, capacity building, etc. As Alois took part in the Nairobi-Alumni-Seminar (please see article) he was impressed by some of the presentation made there and he is quite positive that some of the alumni can really contribute meaningfully to RE dissemination. They have the technical knowledge as well as the field experience and they are better positioned to contribute towards the above mentioned activities than some consultants who are hired yet they know almost nothing about how things work on the ground. His contact is: <a.mhlanga@afdb.org>

Henry J.M. Tommy, Sierra Leone (PPRE 1993/94) Henry wrote: 'It has been the longest while. How are things with you?

With me, a lot has been going on here in Halifax. I have changed my program a couple of times and worked here and there and have finally settled on trying to complete my PhD program by summer 2004. It is not di-

rectly related to energy. I'm now into fluid mechanics, research turbulent jets.'

And just we learned that he recently became Assistant Professor at St. Francis Xavier University in Halifax, Nova Scotia, Canada – Congrats!

Satish Gautam, Nepal (PPRE 1994/95) joined the Georgia Institute of Technology, Atlanta, US as a Ph.D. student in the School of Public Policy. His area of specialisation is Environmental Policy.

Julius Ntoga, Tanzania (PPRE 1994/95) informed us that he started something completely different in 2001. Actually Julius started doing a course on business administration 'Master of Business Administration degree' specialising in marketing! The course was held at the university of Dar Es Salaam from 2001 to 2003.

Francis Xavier Ochieng, Kenya (2001/02) FXO sent e-mail about his activities and wrote: 'What am I doing? Well a lot of research and presentation. Essentially I have become more or less a consultant in sustainable development, environment and energy. For instance I leave for the lakeside town of kisumu next week to wrap up a month long research on land use in the Lake Victoria basin. Next month I am meant to present a paper in a workshop on research ethic at Maseno University for scholars in Subsaharan Africa. My topic is E-ethics — i.e emerging issues of ethics in internet based research in Kenya.

In December I did another research on how civil society organisations are influencing policy in the environmental and natural resources sector. I present the results on Monday next week and then leave for Kisumu the next day.' — See also the article about the Nairobi Alumni event on page 38.