

YES DC

NEWSLETTER

July
2007

Editorial

In the last few months, the attention for energy and climate policy among the general public has increased further, culminating in the 'Live Earth' concerts. At the same time, the number of initiatives of companies, organizations and governments to meet the CO₂ emission targets has grown. During the YES-DC excursion to the Afval Energie Bedrijf Amsterdam, which is described in this Newsletter, we could see how highly advanced and efficient waste incineration plants can contribute significantly to meet these targets. Furthermore, in the current situation of lively political debate about energy and climate, the Newsletter should also address different viewpoints towards energy policy within our own association. Therefore, you can read the personal opinion of Martijn Vis, BTG-consultant, about the challenges that have to be met for a truly sustainable contribution of biomass to the energy supply. Finally, the report about the activity 'Energy in Emerging Markets' shows that sustainable energy provided by solar cells can not only bring prosperity and a clean environment to western countries, but also to developing countries. The report of IPCC activity couldn't make the deadline for this Newsletter and is scheduled for the upcoming Newsletter.

We hope that this newsletter is informative for you!

Kind regards,
Hans van Kuijk

Chairman's foreword

Dear all,

The visit to the 'Afval Energie Bedrijf' in Amsterdam was a great success. During the tour around the labyrinth of the 'waste-to-energy' plant we learned about background of the plant's forerunner's role. A combination of practical experiences, technical background and socio-economic frameworks: exactly the combination we like to see during a YES-DC activity. The activity on the Fourth Assessment Report of the IPCC, for which we were proud to present two of the lead authors, Prof. Dr. Frans Berkhout and Prof. Dr. Kornelis Blok, gave us attendees the opportunity to discuss the major outcomes of the Report and to hear about the surprising range of formalities required to integrate all the different studies.

Although we consider the first half of this YES-DC year to have been a success, we would like to get your opinion: what do you as a YES-DC member think about the content of the activities and what would you like to contribute yourself?

Our September activity will be dedicated to the communication of the climate problem, focused on the strategy of the HIER-campaign, together with an organization active in the field of marketing and communication. We hope to see you all there.

All the best,
Haike van de Vegte

In this issue:

- 1 Editorial
- 1 Chairman's foreword
- 2 Activity: Energy from waste
- 4 Activity: Energy in emerging markets
- 6 Opinion: Sustainability criteria for biomass

Colophon

The Newsletter is distributed by YES-DC (Young energy Specialists and Development Cooperation) to their members 4 times a year. Subscription to the newsletter is free of charge and can also be downloaded from the YES-DC website. For any further questions or suggestions feel free to contact us.

YES-DC Board 2007:

Chairman Haike van de Vegte
Secretary Gerard Stienstra
Treasurer Jolien Snellen
Activity Co-ordinator Diana Ros & Bart Dehue
Newsletter Hans van Kuijk
Website Co-ordinator Joost van Stralen

Website www.yes-dc.org

E-mail info@yes-dc.org

Editor h.a.j.a.v.kuijk@tue.nl

Graphical Design WingF Kwok

Circulation 150



Energy from waste: A visit to the Afval Energie Bedrijf Amsterdam

Author: Ferdinand Kroon / Photos: Juan Pablo Castro



Do you want to know how waste can be transformed into renewable energy and new materials? You should have joined the YES-DC excursion to the Afval Energie Bedrijf Amsterdam on Monday 18th June! The AEB has been responsible for the processing/disposal of waste for many years. Recently, the company constructed a new Waste Fired Power Plant (WFPP) which we visited. With the construction of this plant, the focus of 'traditional' waste-to-energy plants has shifted from waste processing to energy generation.

On Monday 18th June, a group of YES-DC members visited the Afval Energie Bedrijf (AEB) Amsterdam. Not only did we hear the (technical) background of both the new and the existing waste to energy plant in a presentation, we were also shown the new installation during a guided tour. We were welcomed by Marcel van Berlo of the AEB, who started with a presentation about AEB and the new Waste Fired Power Plant (WFPP).

Presentation:

AEB is a company, owned by the city of Amsterdam. It produces electricity out of the waste of the city and its surroundings since 1993. The AEB earns its money both at the input (waste) and the output (electricity, heat). It focuses on

maximizing the use of waste. The original waste-to-energy plant is in operation since 1993.

The new WFPP is an improved version of the current waste-to-energy plant and does not use technologies based on new principles. Instead, due to smart combinations of existing technologies, very large improvements in efficiency have been obtained, which means it is one of the most efficient plant designs existing at this moment. The average efficiency of waste-to-energy plants is about 15%, but the waste-to-energy plant of the AEB performs has an efficiency of 22%. The design process took several years, because it was not an easy task to work out the combination of the different technologies. The construc-

tion of this plant began in 2004 and now, the plant is in the start-up phase. The installation hasn't been officially opened yet.

In the past, the concept of waste incineration was quite different. Previous to the existing waste-to-energy plant, the waste was just incinerated in a waste incinerator to get rid of it for hygienic reasons. The main point of concern was the reduction of hazardous exhaust gases.. The electricity that is produced in a waste-to-energy plant was just seen as a by-product. Ashes, also seen as a byproduct, were used in road construction.

The new concept of waste incineration focuses on maximizing the energy obtained from waste by producing electricity.

“Only 1,5 to 2% of the waste remains and needs to be put in a landfill”.

The main point of concern in this concept is a high electric efficiency. The WFPP is capable of processing about 30-35 tons of waste per hour, generating 850 kWh/ton waste. The efficiency of the new plant is 30% compared to the 22% of the old plant. The energy production of the AEB is increased further by a cooperation with the city's sewage treatment plant. This plant is located close to the WFPP. The biogas and sludge resulting from the treatment plant are burnt in the WFPP. In addition, heat from the WFPP is transported back to the sewage treatment plant to be used there. There are also plans to use heat from the plant for district heating.

An important advantage of the 'energy from waste' concept is that the energy can partly be regarded as a renewable energy source, as part of the waste consists of natural materials which are CO₂-neutral when combusted. If the waste is placed in a landfill instead, it would produce a lot of methane due to digestion and methane is strong greenhouse gas. Waste is a very cost- efficient way to reduce CO₂ emissions: the cost per avoided ton of CO₂ is cheaper than wind and biomass. In addition, there is big potential to for CO₂ reduction by waste

incineration: it is possible to generate 8% of the total electricity consumption in the EU by this method.

Apart from the use of waste for energy, it is also used as a source for materials: the use of waste is further improved by collecting some components of the that are reused, mainly metals. Only 1,5 to 2% of the waste remains and needs to be put in a landfill.

Visit to the plant

After the lecture we received a guided tour. We were very lucky to be able to have a look around: not even the regular employees of the AEB have seen the inside of the plant! We were also accompanied by two journalists of the Parool who also wanted to see the brand new WFPP. Our host Marcel van Berlo and

plant engineer Wil Buchholtz explained everything we wanted to know.

The visit of the plant started in the storage bunkers, where trucks continuously deliver waste. From a position high above the waste piles in the bunkers, the waste is picked up with a huge crane operated by an employee and placed at the entrance of the combustion chamber. Some YES-members got the opportunity to operate this crane to try this themselves! Then, we could have a look in the combustion chamber, where the fuel is transported over a large grate while it is being combusted. Through windows in the chamber we could obtain an impressive view of the large grate surface covered by flaming waste. Then, we had a look at the enormous boiler and the turbine. Finally, we visited the site where the gasses were cleaned and the fly ash was collected.

And the end of this activity, our knowledge about waste incineration had increased a lot and our view had changed from waste incineration as being a necessity to get rid of the waste to waste as renewable source of energy. Conclusion: “We should not waste our waste!” ●



Energy in Emerging Markets:

a business approach to provide energy to the poor

Author: Diana Ros Riu

The activity 'Energy in Emerging Markets' on 3 May brought YES-DC members the opportunity to get to know practical examples on how energy business is set up in developing countries, debate on this subject and share their own experiences. We had the pleasure to hear from Jan Willem Langeraar and Martijn Proos their experiences in developing energy markets in the South. Jan Willem Langeraar is the director of NICE International BV and Martijn Proos has extended experience as investment officer of the Netherlands Development Finance Company (FMO). The audience was very motivated – they decided to attend the activity instead of staying outside and enjoying the scarce wonderful Dutch spring weather - and raised many relevant questions.

NICE: "the aim is to set up over 75 network cafes in The Gambia".

NICE International BV: Jan Willem Langeraar

First, Jan Willem Langeraar explained more about the activities of NICE International. NICE International is a company that provides utility services for the people at the lower end of the economic ladder. This group of people is often indicated by BoP: the 'Bottom of the Pyramid', which in global terms consists of the four billion people living on less than 2 dollar per day, typically in developing countries. The utility services that NICE offers comprise internet, education, and battery recharging. NICE is an initiative of the Econcern group and cooperates with a number of partners, among which are Essent and the Energy4all foundation.

Jan Willem Langeraar explained to us how us how NICE International recently set up two pilot shops in The Gambia. The shops have been set up in November last year and have been opened in January. The energy required for the activities of the shops is obtained from both solar cells and the grid. The energy is used to operate around 20 computers per shop, as well as mini-cinema. The NICE shops got already a lot of interest of the local people, which could be seen from the queues of customers who came for internet access.

In the future, the number of NICE-shops

will be extended. The aim is to set up over 75 network cafes in The Gambia, also in rural areas. This growth is facilitated by the franchise concept of NICE, which entails local ownership of the shops. This helps to embed the projects locally and ensures that the founding of NICE shops is replicable throughout The Gambia as well as in other countries.

An important feature of the NICE concept is that the shops are not only used to provide services to local customers but also to non-governmental organizations (NGO's). The NGO's focus on the same target groups as NICE and have as their goal development of the BoP by providing training, creating awareness and providing access to infrastructure. Here, the role of NICE is to provide this infrastructure. An advantage for NGO's of using the infrastructure of NICE is that they can reach their target groups directly for education and information. An example of the synergies that can arise when cooperating with NGO's are promotional items for health care issues that can be aired at the mini-cinemas, for instance during the break of a football match.

The Gambian economy is suffering from high energy prices, but has an abundance of sunlight and a good potential for bio-

FMO: "The lack of financial means for energy investments is not an issue".

diesel production. The Gambian ambition is to introduce large-scale sustainable energy to make the country less dependent on global energy prices and there are plans to turn The Gambia into the Silicon Valley of Africa. NICE fits both ambitions; the first two NICE shops are powered by state-of-the-art solar technology and this year the first bio-diesel pilot project will start. Through ICT courses the country's youth are being prepared for future-oriented jobs. This means that there are a lot of opportunities for NICE to grow in The Gambia. Furthermore, the experiences gained in The Gambia can also be used in future projects in other countries.

FMO: Martijn Proos

In his presentation, Martijn Proos explained how the FMO is involved in financing and setting up energy projects in the South. FMO is a unique public private partnership (51%/49%) and its activities are the support of high risk projects with appropriate and market driven returns. The strategy used for the project is to invest in three key sectors (finance, infrastructure and 2nd tier corporates) in high risk areas making use of local financial networks. The activities of FMO in the field of energy for developing countries are part of the investments in the infrastructure sector. In the strategy, other investors are involved as much as possible. When the market takes over, FMO withdraws from a project. The activities of FMO resulted in a net profit of 134 million Euro in 2006.

With respect to energy in developing countries, FMO sees an enormous potential, as worldwide about two billion people do not have access to electricity or other sources of energy, while at the same time these people want to spend a substantial part of their income to energy. Therefore, a broad range of projects in the field of energy is supported, which include projects in the field of generation (independent and public power produc-

ers, small hydroplants, geothermal power plants and renewable energy projects), transmission (grid connection and extension) and distribution (rural electrification). The projects are supported by equity, loans, guarantees and grants.

In Africa, specific challenges encountered with these projects are the many inefficient state owned power plants in combination with limited private sector participation and the large demand which greatly exceeds supply. The lack of financial means is not an issue, according to Martijn Proos. Despite these challenges, much has been achieved. In Mtwara, Tanzania, a gas to power project was arranged, which took an investment

of over 100 million dollar, which was partly obtained by a Canadian investor. The Sunlabob rural electrification project offers off-grid energy to rural communities. For this project, an investment of 2.5 million dollars was made by the Access to Energy Fund of FMO and Triodos. In Ishasha, Ugansa, a small hydropower project was co-funded by the Access to Energy Fund, which provides energy for 40.000 people.

Discussion

The discussion about the NICE project focused on two main points. First, the audience wondered whether internet cafes are a basic need for Gambian people or just an initiative from the North. Jan Willem Langeraar explained that basic needs and the desire to have access to advanced technology do not necessarily exclude each other: Gambian people purchase mobile phones, also when they have no access to good quality water and food. Secondly, the growth strategy of NICE was discussed in more detail. The NICE goals at mid-term are to have nine cafes at the end of this year, and a network of cafes in other countries in the future. Jan Willem Langeraar explained that the effect of existing development cooperation policies is not always positive for the growth of project like NICE. For example, the present policy on cooperation defines its goals as a number of people who get access to the grid. This is in contradiction with a decentralized and renewable energy model, which would be more feasible and sustainable in many areas in the South.

Martijn Proos was asked on which criteria the Energy Fund decides whether a project will be financed. He explained that the criteria take into account the economic and technical feasibility of the project, as well as the number of people who will get access to energy by carrying out the project. Martijn was asked on the main difficulty to develop project in the South. These are the lack of many resources, such as qualified people to run the projects, and the policy in some countries, which can turn a feasible energy project into an impossible one. ●

The plans of the European Union for further CO₂ reductions contain new targets for the use of biomass. This will lead to an rising demand for biomass on the world market which may lead to unsustainable production and increased food prices. Our member Martijn Vis, BTG Biomass Consultant, expresses his concern about the prevention of these effects by verifying the Cramer Criteria for sustainability with a certification system. Instead, he pleads for a reduction of our energy addiction to limit the demand for biofuels.



Sustainability criteria for biomass:

will the certifiers save our planet?

Source: www.clubmobile.org

Author: Martijn Vis

Somebody told me that you need 4 m² land to grow weekly flowers for your girlfriend, 100 m² to grow decent vegetarian food for one person, 1,000 m² if you like meat and 10,000 m² if you want to drive a car on biodiesel. With more than 7 million cars on the road in the Netherlands, we definitely depend on biofuel imports to meet the EU target of 5.75% renewable transportation fuels (energy basis) in 2010, not to speak about the proposed EU target of 10% in 2020. As a BTG consultant,

working in a company 100% dedicated to biomass related consultancy, project development and R&D, I have the pleasure to be involved in the discussions around the sustainability of biomass import and to do advise work on these issues. This year the discussions on sustainable biomass are a hot issue. Let me highlight some of the key points.

Sugar cane, palm oil, soy oil are biofuels can substitute for petrol and diesel. These crops are gener-

ally grown in large plantations. An increased demand for biofuels will lead to expansion of plantations and more competition for land resulting in higher food and feed prices.

As to prevent negative side effects of biomass production the commission 'Sustainable Production of Biomass' chaired by Prof. Cramer - presently the Dutch Minister of Housing and Environment - developed a number of sustainability criteria, divided into six main themes: (1) positive greenhouse gas balance (>30% GHG reduction for transport fuels, >50-70% for electricity and heat); (2) supply of food, local energy supply, medicines and building materials should not be endangered; (3) biodiversity and (4) local environmental should not be affected; last but not least contributions to (5) local economic prosperity and (6) social well-being are expected¹.

The main idea is to check these themes on company level, using a certification system. Aspects that cannot be checked on company level, like competition with food, or indirect land use change can be studied on a regional or country level. If biomass doesn't meet the sustainability criteria, it should not be taken into account in the obligatory targets for renewable energy and not be subsidized.

Dutch NGO's, industry and industry generally seem to agree with these 'Cramer Criteria' although its implementation is expected to be challenging:

- Biomass covers a whole gamut of materials that are grown or released in different areas with specific conditions. However, certification systems for sustainable biomass do exist, for instance, the FSC and PEFC systems for sustainable forestry are proven and a system for sustainable palm oil will be available within a few months. With some effort it should be possible

to develop a biomass certification system.

- Secondly, implementation of sustainability criteria just in the Netherlands could lead to redirection of biomass fuels to other countries. Sustainability criteria should be best implemented on EU level. Indeed, the EU is considering its position. For instance on 18 June, the European DG-TREN closed a stakeholder consultation on 'Biofuel issues in the new legislation on the promotion of renewable energy'². More than 120 reactions from NGO's, institutes, industry and citizens were welcomed. In the meanwhile the Netherlands can act as a Guiding Country, while action on EU level might follow, who knows based on the actions of early birds like the Netherlands, UK and Germany.

- A third challenge is that obligatory requirements to imported biomass can be seen as the creation of trade barriers. The Netherlands could risk international conflicts that would need to be settled at WTO level. Dutch policy makers suggest avoiding this kind of trouble by introduction of a public reporting obligation without real con-

"How are we going to change our energy addiction"?

sequences when sustainability criteria are not met. It is hoped for that companies will fear the judgments of NGO's and do their best to meet the criteria on a voluntary base³.

The coming months the Dutch parliament will determine how the sustainability criteria will be integrated in the new system for promotion of renewable electricity expected in 2008 and related to the obligation to blend biofuels in petrol and diesel.

As to warm up the politicians, on 29 June, an interesting Debate on the Biofuel Policy and the South was

held, organized by Corporate Europe Observatory and Global Forest Coalition, both international NGO's. Many presentations showed the troubles that present plantations for food already cause. According to these NGO's virtually all Cramer Criteria are actually violated; the unsustainable growth of biofuel plantation should be stopped and prevented. The main message is to introduce a moratorium on the import of biofuels. Instead the West should work on paradigm shift and focus on own plantations and energy saving.

Although I need a good second opinion on the presented abuses of the local communities etc, this first debate in which several foreign NGO's from the biomass exporting countries participated, was refreshing. The paradigm shift is a good point. How are we going to change our energy addiction? Like alcohol, energy is quite accepted as an addiction. I just love my car, and as long as I can obtain LPG for 45 ct/liter, the pedal goes to the metal. It's the freedom to choose your own traffic jam. At some point the economy will correct me.

Hopefully before the fuel for the rich has driven out the food for the poor. Dear Yessers, what shall we do, is it time for idealism and self-control? ●

¹ For more information, see the report 'Testing Framework for Sustainable Biomass', 2007, http://www.mvo.nl/biobrandstoffen/download/070427-Cramer-FinalReport_EN.pdf

² See http://ec.europa.eu/energy/res/consultation/biofuels_en.htm#stakeholders

³ As presented during the 'Sustainable Market Day' (duurzame marktdag) of 18 June 2007, Jaarbeurs Utrecht