

Q001 - Cabrejou (Indonesia): Micro-credits on Savu

Question

Could a micro-credit system function in the isolated economy of Savu?

Situation

Savu (also known as Sawu, Sabu, Hawu), with a population of 62,000, is the largest of a group of three islands, situated midway between Sumba and Roti in Indonesia's eastern province, Nusa Tenggara Timur, the poorest province in Indonesia. The island is part of the newly formed (2008) Sabu Raijuna Regency.

The land, with its poor infrastructure, is mostly covered by grassland and (lontar) palms. The climate is dry for most part of the year. Rain usually falls during the west monsoons during the months from November to March.



Lontar palm trees and a Savunese house

Following the course of the river is often easier than walking along the Savunese roads

From the juice of the lontar palms the Savunese brew a thick, sweet and sticky liquor, called tuak.



Savunese Man carrying the "liquid sugar", taken from the lontar palm, in baskets made from lontar palm leaves



Market at Savu

Savu is characterised by drought and poverty. The typical remote economy of Savu, based on subsistence agriculture, depends on primary production. Agricultural production on Savu includes corn, rice, roots, beans, livestock (meat/milk) and seaweed, which was introduced by Japanese interests, in the early 1990s. Pigs, goats and chickens are commonplace in the villages. Agriculture almost entirely involves smallholders. Those farmers who depend on mixed crop gardens or on mung bean fields are generally better able to manage during times of poor rain but are seemingly less successful when the rains are good. Corn, as a single crop, remains the predominant staple on Savu, though most farmers try to plant several different fields to increase their chances of at least one successful harvest.

Most Savunese women are involved in a thriving ikat-weaving tradition. Their ikat cloth has typical stripes of black or dark blue and is interspersed by stripes with floral motifs.



Savunese women ikat-weaving



Savunese girls in ikats

There is little economic activity on Savu since limited connections to and from the island impede exports. Ferries connect Savu only to the islands Sumba (Waingapu) and Timor (Kupang). Since poverty is concentrated in rural areas where most people live, poverty relief efforts are most effective there. Efforts to improve the situation could be focused on agriculture and associated parts of the economy and on improving yields and marketing. Large Indonesian commercial groups have little interest in Savu, investment in rural areas is minimal. The micro-credit concept could promote the economic development of Savu.

What is micro-credit?

Micro-credits are small amounts of money loaned to clients by banks or other institutions. Micro-credits can be offered, often without collateral, to an individual or through group lending. In 1976, the economist Muhammad Yunus (Nobel prize winner 2005) set up the first micro-credit institution: the Grameen Bank or 'village banking group'. These micro-credits allow a family to buy a hen for example, whose eggs become a source of revenue. Micro-credits are based on the principle of trust and personal responsibility. To believe in people in turn strengthens their self-esteem. However, micro-credits are no charity. They have to be paid back in time and interest is charged. Micro-credits are an incitement for the economy. Currently, micro-credits are offered to more than fifty-five million families all over the world.

Introduction to the assignment

The Cabrejou Foundation would like to improve the quality of life in developing countries. The foundation starts and executes small but strategic development projects. The Cabrejou Foundation was founded in January 2007 in Apeldoorn when it received a request for help from a hospital in East Sumba. This project is now completed and other projects have been initiated. At this moment the Cabrejou Foundation is active on several Nusa Tenggara Timor islands. The foundation has committed itself to developing the island of Savu. On Savu, the Cabrejou Foundations supports education and agriculture projects. In the future Cabrejou would like to investigate the possibility of providing micro-credits on Savu. In the past several years there has been increasing interest in the use of micro-credits as a tool for improving the lives of the poor. The idea is simple: support the business enterprises of the world's small-scale, low-income entrepreneurs by providing them with access to reliable credit on reasonable terms. Micro-credits combines the value of hard work, self-help, free markets and improving the economic situations of the poor. There are now thousands of programmes offering microfinance services to entrepreneurs in developing countries. But are these always successful?

Hernando de Soto, a Peruvian economist, pointed out that the reason why developing countries, in contrast to Western nations, seem unable to make the transition to prosperous market economies, is that they hold resources in defective forms. Property rights, not adequately documented, cannot readily be turned into capital or traded outside of narrow local circles where people know and trust each other or used as collateral for a loan.

Desired endproduct

The Cabrejou foundation would like to receive a report describing a practical, feasible and sustainable way to provide micro-credits on Savu.

The report should include:

- an evaluation of the possibilities of micro-credits on Savu
- an investigation of the state of property rights on Savu
- an evaluation of/ recommendations on the possible approaches that can be used to offer micro-credits, combined with the advantages and disadvantages of the different approaches
- a conclusion/advice if it is wise for the Cabrejou Foundation to provide micro-credits on Savu

Related questions are:

- Is Savu with its closed economy a suitable location for the micro-credit concept?
- Is the legal framework on Savu suitable for the micro-credit concept?
- What could be the impact of micro-credits on households, microenterprises, employment, transactions, education, etc. on Savu?
- What different approaches can be taken to provide micro-credits?
- How should access to micro-credits be organised?
- In which way can micro-finance programmes contribute to poverty reduction?
- Should micro-credits be financed by donor money from the Cabrejou Foundation?
- Should micro-credit be financed by collective Savunese savings?
- Can property rights be linked to trades? If so, how?
- What are the successes and pitfalls of micro-credit programmes?

Some useful sites/books are:

- Tearfund England's The International Learning Zone:
<http://tilz.tearfund.org/Topics/Economic/>
- Hernando de Soto: The Mystery of Capital (Why Capitalism Triumphs in the West and Fails Everywhere Else. Basic Books, New York)
www.knag.nl/index.php?id=640&tx_ttnews%5Bsword%5D=gis&tx_ttnews%5Bpointer%5D=15&tx_ttnews%5Btt_news%5D=926&tx_ttnews%5BbackPid%5D=502&cHash=024a89635c
- Mohammed Yunus: Bankier van de Armen

On Savu, a Christian organisation will start with a microfinance project in the near future. You might want to contact them for more information. Their webstie is <http://www.ytlim.org/>.

Q004 - Hope Alive Uganda (Uganda): Businessplan for crafts production women's group

Question

Investigate the potential for production for the fair trade market. If this is an option, design an eye-catching and attractive web shop or catalogue to promote the women's products. Write a business plan on how the women could develop their talents and make their business stronger.

Situation

Hope Alive Uganda is a registered organization both in Uganda as well as the Netherlands. In Uganda, we provide educational programmes and income-enhancing projects in the sectors education, health, agriculture and empowerment. We mainly work in Kisozi, a small settlement not far from Kamuli. However, we are starting to make our way towards Jinja, a larger settlement near the origin of the Nile River. We have several projects, for instance an HIV/AIDS information and medical centre, a sewing workshop for women, an educational programme for boys ranging from the age of 16 to 20 teaching them about cattle raising (in this particular case, cows) and agriculture. We also provide a microcredit programme for students and women, namely cycling2school and cycling4work. In addition, we are also starting other activities such as setting up a well and organizing Eyecamps.

Hope Alive Uganda works closely together with: Cycling out of poverty, Oxfam, Impulsis, NCDO, Wilde Ganzen, Simavi, ASN Foundation, Share4more, the 1% Club, and many others. We love to work with volunteers and the collaboration with other groups of students via Worldschool has been a great success! We are keen to work with volunteers since we think it is essential to make people aware of the work that Hope Alive Uganda does in Uganda and we firmly believe that volunteers can make all the difference. We are a small Dutch organization but this allows us to have a very personal relationship with Uganda, and the materials provided by the volunteers will actually be used directly in Uganda.

Crafts project

Hope Alive Uganda supports women's groups in Jinja that make arts and crafts products. These are sold in the Netherlands and are part of the product range of the Afrika museum (www.afrikamuseum.nl) and the Tropenmuseum (www.tropenmuseum.nl) under the (unofficial) name Amayinja Crafts. Amayinja is a Baganda word that means 'the place of the flat stones', designating the stones that once formed a crossing in the Nile. The products are also sold at fair trade (web)shops and fairs (at Christmas fairs, for example). The women's groups in Jinja make paper beads and use these to make necklaces, earrings, bracelets, bags and wallets. They also make fabric bags, toys, placemats and paintings using things like banana leaves. The women that participate are single mothers, women with HIV/aids and widows. By selling their products they are able to make a little money. Hope Alive Uganda helps these women by selling their products in the Netherlands. However, what these women need is a real market, and many other women's groups in Uganda make the same paper bead necklaces.



What we need

Hope Alive Uganda wants to support women in developing their talents, professionalizing their activities and increasing their chances on the market (in Uganda in particular).

Research is needed into how these women can develop their talents: can this be done by training them or by teaching them new techniques? We would also like to know how we can create a strong market in Uganda and abroad (possibly with the help of Hope Alive Uganda) in which women can carry on their own business independently and create a better future for themselves: for example, by using the Internet? Or by joining a fair trade brand? What are the procedures in this case? How can these women put the name Amayinja Crafts to good use? The women tend to make the same products over and over, and are not aware of the type of product that is popular: how could they adapt a product so that it becomes more attractive to a wider public? Which other products or product lines could be sold? Are there similar projects going on that could be an inspiration to us? And what is needed to support the women in developing and diversifying their talents?

Desired endproduct

- Investigate the potential for production for the fair trade market: what are the procedures and conditions? Which organisations and people need to be contacted by Hope Alive Uganda for a possible collaboration? Are there possibilities for similar partnerships to conquer a Dutch or European market? Try to think out of the box: which new paths can we go down? Products for Christmas hampers? A market intended for young people with products such as fashion accessories?
- If the international fair trade market is an option, please design an eye-catching and attractive web shop or catalogue to promote the women's products, with attention given to the makers of the products. Also design the visual language that is part of such marketing tools.
- Write a business plan on how the women could develop their talents and make their business stronger, enabling them to create a good market for their products, and make products that are unique so that they can distinguish themselves from the other women's crafts groups in Uganda. You could also specify in what way the schooling needed to develop the necessary technical skills can be organized. and last but not least:
- A business plan consisting of a grounded choice for one of the economic projects:

- what are we going to do/how are we going to do it?
 - what raw materials or inputs are needed? Where do we get them from?
 - which materials/machines are needed? Where do we get them from?
 - A financial underpinning for the project:
 - calculation of the intended income
 - calculation of the costs when the project is running
 - calculation of the costs to develop the project
 - a kind of risk analysis for the project: are there any financial bottlenecks?
 - A timeline for the development of the project, and an indication of the different stages, from development to complete operation, including key decision points.
 - A marketing plan to bring the product to customers.
- NB.: photographs of the products and even the products themselves are amply available at Hope Alive Uganda.

Q011 - Stichting Penduka (Namibia): Embroidery without Borders

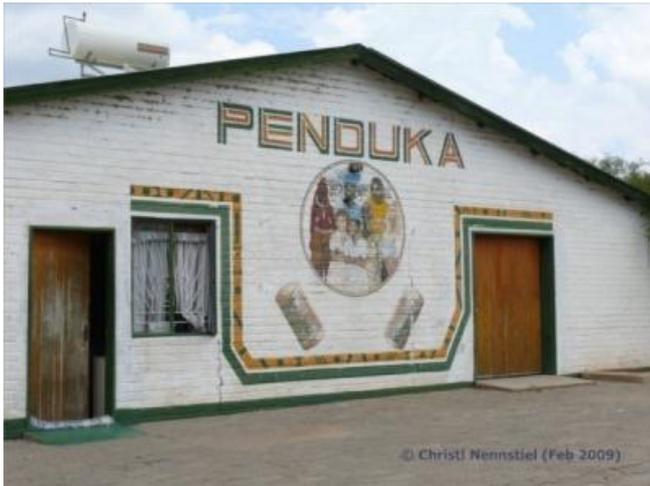
Question

Women doing embroidery work for the Penduka foundation in Namibia need more work and income. How can the embroidery market in the Netherlands be expanded, especially the target group of young people? How can the Penduka product line be modified or expanded to appeal to young people in the Netherlands? How can sale of these products through a web shop linked to the Penduka website be started up?

Situation

Penduka is a local non-governmental development organisation working with women in Namibia. In the Oshiwambo and Otjiherero languages the word 'Penduka' literally means 'Wake Up!' and figuratively 'Stand Up'. Penduka is registered at the Ministry of Health and Social Services and at the Ministry of Trade and Industry.

Penduka was founded in 1992 by Christien Roos from the Netherlands and four Namibian women. The main Penduka centre is situated just outside Windhoek (the capital of Namibia) on the outskirts of the black suburb Katutura.



Women in Namibia suffer from a low social status and often entire families live in poverty. This is often worsened by a physical handicap or by diseases like tuberculosis (TB) and HIV/AIDS. Penduka tries to break this vicious circle by training these disadvantaged women in different fields of income-generating activities.

The objective of Penduka is to empower them through craftsmanship so that they can join the income-generating part of Namibia. These women learn skills, for example fabric design, embroidery, sewing, batik, pottery, glass bead making and narrative art. Penduka women make beautiful products. They are also working on making money out of tourism (they offer accommodations, a conference centre and they have a restaurant) and they organise workshops (e.g., in traditional dancing and drumming) and excursions.

Penduka not only facilitates education, but also promotes the selling of products, for example by means of the web shop. Penduka provides fundraising, requests donations, writes to grant providers, provides micro-credits and fights TB. Nearly a thousand tuberculosis patients are being treated in nineteen clinics. All the women suffering from this disease receive health education and drugs on top of the crafting and tourism education.

In addition, the women are trained to run Penduka independently and thereby provide a structural income for themselves.

Penduka started in 1992 with 4 employees, and now has a total of 150 people on the payroll. More than 460 women throughout Namibia are members of Penduka and doing embroidery work to obtain their only income.

Penduka women need more work! Since they do almost everything by hand, they can work on personalised client orders featuring for example names, motives, and illustrations with their own interpretation.

The products are highly varied: laptop bags, mobile phone covers, sports bags, caps, pimped sports shoes, mini-skirts, funky T-shirts, book covers, bonnets – no limits, no borders!

Namibian women's embroidery specialty has got to be 'Village Embroidery' (VE): a native embroidery style that is about storytelling. The women embroider their life stories, but of course they can also embroider your story on your desired product!



Desired endproduct

A market study giving us starting points for:

- a. product development
- b. insight into our target group and expansion of our customer base
- c. network development and PR (including opportunities for online sales)

This market study into young people in the Netherlands should incorporate:

- a. Insight into the wishes/needs/interests of the target group
- b. Product development of products which can be made by Penduka with personal messages or designs on them. Design a number of sample formats for products that can incorporate custom designs (embroidered life stories, products to celebrate important events like the birth of a child, birthdays, jubilees, an embroidered portrait, an illustration, etc.) What products would be suitable for this sort of African/Dutch cross pollination? What would be a fun way of making these two cultures meet in the product?
- c. Research into what young people are prepared to pay for such a product
- d. A provisional PR plan
- e. A plan to set up the web shop. We need a simple but effective system to let people order their own custom products within the constraints of certain limits in terms of colour, size, etc. based on the rest of the market study. The web shop can be linked to the Penduka website. N.B.: Customers

should realise that it takes a minimum of one month before their order can be sent out. All products will be made by hand and will have the signature of the producer, a slight difference in symbols, etc.

Suggestions for research questions:

- a. What kinds of products are interesting for young people in the Netherlands? Make an overview of Penduka's existing products. Find out to what extent these appeal to tastes in the Netherlands and to what extent they meet Dutch fashion and quality demands. Ask for advice from some of the fashion trade schools/fashion designers in the Netherlands and collect ideas on how to extend the product line.
- b. What outlets on the Dutch market could be interested in stocking the Penduka embroiderers' products?
- c. Find possible partners. Make an overview of what companies, organisations and facilities could be useful in creating a network. Try to find good starting points. These may include young product designers, potential outlets, young entrepreneurs, etc.
- d. Are there comparable projects that we could join forces with or whose experiences we can learn from?
- e. How can we bring our web shop to the attention of potential customers?
- f. Can social media be of any use to us on the PR front?

More information

www.eerlijkwaar.eu

www.africancraft.com

www.theafricahouse.com

www.wereldwinkels.nl

www.fairtrade.startpagina.nl

www.fair21.com

www.modemeteenmissie.nl (a similar project for women in the Netherlands)

www.kvk.nl - Chamber of commerce

www.mkb.nl (SMEs)

S002 - Hope Alive Uganda (Uganda): Reducing HIV/AIDS - campaign for children 6-10 years

Question

In what way can we improve and expand our current HIV/AIDS information campaign directed at the people in Kisozi (both children and adults)?

Situation

Hope Alive Uganda is a registered organization both in Uganda as well as the Netherlands. In Uganda, we provide educational programmes and income enhancing projects in the sectors education, health, agriculture and empowerment. We mainly work in Kisozi, a small settlement not far from Kamuli. However, we are starting to make our way towards Jinja, a larger settlement near the origin of the Nile River.

We have several projects, for instance an HIV/AIDS information and medical centre, a sewing workshop for women, an educational programme for boys ranging from the age of 16 to 20 teaching them about cattle raising (in this particular case, cows) and agriculture. We also provide a microcredit programme for students and women, namely *cycling2school* and *cycling4work*. In addition, we are also starting other activities such as setting up a well and organizing *Eyecamps*. *Hope Alive Uganda* works closely together

with: *Cycling out of poverty, Oxfam, Impulsis, NCDO, Wilde Ganzen, Simavi, ASN Foundation, Share4more, the 1% Club*, and many others.

We love to work with volunteers and the collaboration with other groups of students via *Worldschool* has been a great success! We are keen to work with volunteers since we think it is essential to make people aware of the work that *Hope Alive Uganda* does in Uganda and we firmly believe that volunteers can make all the difference. We are a small Dutch organization but this allows us to have a very personal relationship with Uganda, and the materials provided by the volunteers will actually be used directly in Uganda.

Since 1981, the world has been struggling with the acquired immunodeficiency syndrome (AIDS) and the HIV virus as its cause. *Hope Alive Uganda* provides an educational programme for the community and the youth in primary and secondary schools in Kisozi and the vicinity. In Januari of 2011, we founded an AIDS information and medical centre in collaboration with *Oxfam Novib, the Anton Jurgens Foundation, NCDO* and *the 1% Club*. This educational programme will evolve into a structural programme and in 2011, there will be eighteen workshops on offer. In groups of 6, a total of 60 people will be educated. Adults of the community will also be able to participate in workshops and the AIDS centre will provide the necessary materials which can be consulted as well as professional advice. In addition, the social workers offer support to those who have AIDS in Kisozi.

AIDS has struck hard in Kisozi and its vicinity. There is a need in this community for the education on and the prevention of AIDS.



Desired endproduct

Hope Alive Uganda has experience in educating adolescents and has the materials to do this. However, there is as of yet no educational programme for children ranging from the age of 6 to 10 and therefore this age group has not yet been involved in the workshops. In addition to this, *Hope Alive Uganda* hopes to acquire a variety of materials in the AIDS centre, so these can be accessible for the community.

Our questions:

1. We would like to offer an educational programme to children from the age of 6 to 10. The workshops will consist of three classes. *Hope Alive Uganda* would like to have teaching materials for this age group. It might be a good idea to involve subjects such as music, drama, arts and crafts, or maybe games, such

as the AIDS-cup game. In addition to teaching materials for the students, we also need teaching materials for the teachers.

The question is: is it possible to teach the subject of AIDS in such a way that children of this age will understand what it is and realize what the risks of this disease are?

And can we do it in a motivating, appealing and respectful way that takes the age of the students into account?

What approach could you use to make AIDS a topic that can be discussed with young students of this age group?

Are there any previous experiences?

Are there any other projects that can be used as an example?

Do not forget that many young children in Africa (in contrast to Dutch children of the same age) have been confronted, directly or indirectly, with the consequences of the AIDS epidemic. In many cases, it will not only be a theoretical exercise. To what extent do you need to take cultural differences, such as male-female relations and notions about sexuality, into account when you are designing educational programmes such as this one?

2. In the AIDS centre, *Hope Alive Uganda* would like to provide informative materials to the adults of the community, such as specific information on what AIDS is, how to prevent it, the course of the disease, symptoms, etc.

The languages used are Lusoga and English. Many adults in the community cannot read, therefore posters, flipcharts, images, PowerPoint presentations, YouTube videos, and stickers, should be the most important source of information in combination with clear language (short and brief sentences, etc).

Perform a thorough investigation on the disease AIDS.

What would be important information to the visitors of our information centre?

What would be absolutely critical information?

What is AIDS exactly?

How does the virus work?

How fast does it spread?

How does it get transmitted?

What are the symptoms once you are infected?

How do the tests to determine whether you have AIDS work?

How did AIDS develop?

What worldwide trends are there in the HIV/AIDS epidemic?

Why is there, 25 years after the discovery of the HIV virus, still no vaccination available?

What medication and treatments are presently in use and what are the benefits and drawbacks?

Are there examples of successful information campaigns?

What strategies are recommended by UNAIDS to stop and turn the tide on the epidemic?

Is there hope of a possible cure in the future?
Etc, etc.

Also perform an investigation on the most efficient ways to support young children with AIDS. Use arguments in your research from interviews with 'hands-on' experts and results from looking up example projects.

The materials you provide will be used in the workshops and in the HIV/AIDS information centre. We hope to copy the material so we have multiple copies to distribute.

More information

www.stopaidsnow.nl
www.unaids.org
www.greenfacts.org/en/aids
www.portal.unesco.org
www.artsenzondergrenzen.nl
www.who.int
www.nl.amref.org

S031 - NBCA (The Philippines): Healthy Lifestyle

Question

How can health workers educate and train youth and adults in remote villages in the Philippines to make them adopt a healthier lifestyle?

Situation

In the Philippines, people do not have healthy lifestyles. They mainly eat meat, sugar and rice (no vegetables or fruit). Smoking, drinking, drug use and unsafe sex also pose considerable health risks. This unhealthy lifestyle has a huge effect on society. Life expectancy is low and many lifestyle-related diseases occur such as diabetes, cancer, cardiovascular diseases, STDs and HIV/AIDS.

There are general health centres, where people can go if they are worried about their health. Most people are uneducated, and the only skill they have is cleaning a wound. The National Business Coalition for Aid Philippines was founded in 2010. The NBCA wants to focus on giving health and lifestyle training to youth and adults. The NBCA wants to visit 25 remote barangays, which are far from main roads, and educate the health workers there in order for them to have more tools and knowledge about health and lifestyle. Every day health workers face the problem of not having any equipment. Without tools, it is difficult for them to do their work.

For this reason we want to develop a training programme on health and lifestyle. In the Philippines people have a saying, Bahala Na: come what may. If they have more money they generally spend it on more unhealthy food - meat or sugar - or on alcohol. They live by the day and hardly think of the short-term let alone the long-term consequences of their behaviour. This attitude to life makes it hard to get them to realise the long-term importance of a healthier lifestyle. Where sexual behaviour is concerned, the Church/religion is an additional factor. Safe sex is not done. In the aforementioned 25 remote barangays, children marry at the age of 13 and families of 5 to 16 children are not uncommon.

This lifestyle and these habits make it harder to get people to realise the importance of a healthier lifestyle and to actually change their behaviour.

Some figures:

WHO statistics of health in general (2003)

Population of the Philippines: 86,264,000

Life expectancy at birth M/F: 64/71 years

Healthy life expectancy at birth M/F: 57/62 years.



Pictures of the circumstances in which people live in the Philippines, there is no drainage, it smells like urine everywhere

Children in the Philippines, near a well, washing themselves and doing the laundry



One of the local shops, selling local products, in the Philippines, they love meat (if they have the money to buy meat) and they love sweets Children living in the Philippines, most of the time garbage everywhere and they walk on bare feet.

Children living in the Philippines, most of the time garbage everywhere and they walk on bare feet

Desired endproduct

Starting points, a strategy and a ground plan for a lifestyle and lifestyle-related diseases training programme for youth and adults.

Content

1. What are the causes of people falling ill?

2. What do nutrition, hygiene, alcohol, smoking, drug use and safe sex have to do with this?
3. What can you do to keep yourself from falling ill as easily?

Method

The training programme needs to be practical. Participants should gain more knowledge on disease prevention through interactive assignments/information transfer and should also become motivated to actually change their behaviour.

What training/education strategy would you recommend in this situation?

What are your arguments for this strategy?

Trainers: attitude and aids

The training programme offers the health workers concrete aids to pass on information.

The training programme offers trainers guidelines on how to conduct themselves.

The following subthemes can be researched and explored:

A. (Medical) background information

- What are the (factual biological) health risks of a one-dimensional diet of rice, meat and sugar?
- What are the health risks of (excessive) alcohol use?
- What can you conclude based on the data/statistics on the health situation and/or causes of death in the Philippines? Do your conclusions substantiate the alleged health risks?

B. Content of training/health education

- Are there training programmes that (in part) address this problem already? To what extent can NBCA use them given the situation in the Philippines?
- What knowledge is most important to teach in regard to healthy nutrition, safe sex, alcohol/smoking and drugs? Make a concrete priority list.
- Collect or develop concrete training materials.

C. Appreciating the situation in the barangays:

- What could motivate people in these barangays (remote villages) to live more healthily? What is motivational for the youth and what for the adults? What do they gain by living more healthily?
- What might be a concrete first step to living more healthily?
- Find out whether and how training sessions for youth and adults are different or identical.

D. Trainers' attitude:

- What should the trainers do - and more importantly what should they avoid - to impart their knowledge and to motivate people to change their behaviour?

Information sources

World Health Organisation: www.who.int/healthinfo

Unicef: www.unicef.org/infobycountry

Maastricht University: www.gvo.unimaas.nl

Wageningen University & Research centre: www.humannutrition.wur.nl

VU University Amsterdam lifestyle informatics section www.vu.nl

www.innovatienetwerk.org

www.stopaidsnow.nl

www.rutgersnissogroep.org

www.cordaidmemisa.nl

www.onderzoeksinformatie.nl

Wageningen University & Research centre "studiekring voeding en voedsel in ontwikkelingslanden"

www.wemos.nl

S027 - Penduka (Namibia): Design a biogas installation operating on human increments

Question

Design a biogas installation for:

- A. a glass-melting oven operating on biogas produced with excrements and green waste of the targeted community;
- B. domestic use (cooking, electricity) for approximately 40 people living in the neighbourhood.

Situation

Penduka is a local non-governmental development organisation working with women in Namibia. In the Oshiwambo and Otjiherero languages the word 'Penduka' literally means 'Wake Up!' and figuratively 'Stand Up'. Penduka is registered at the Ministry of Health and Social Services and at the Ministry of Trade and Industry.

Penduka was founded in 1992 by Christien Roos from the Netherlands and four Namibian women. The main Penduka centre is situated just outside Windhoek (the capital of Namibia) on the outskirts of the black suburb Katutura.

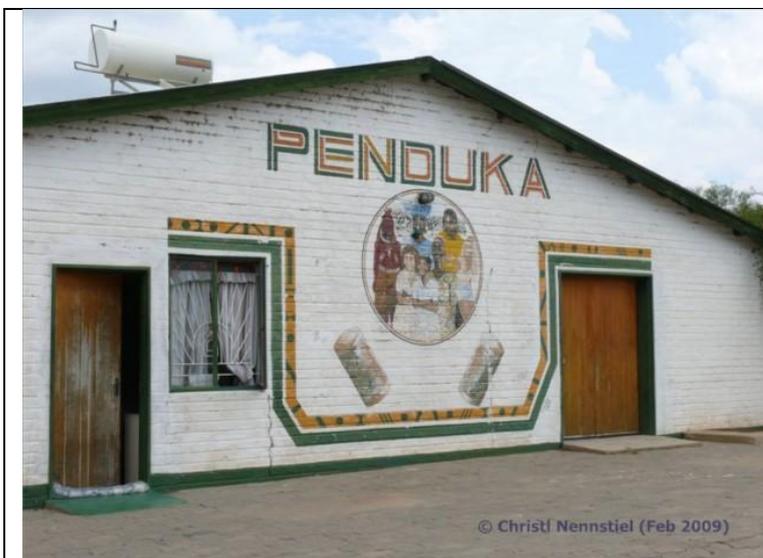


Penduka especially supports women living in poverty, women who are physically disabled, suffer from tuberculosis or HIV, or have a low level of education. Penduka provides them with education. The objective is to empower them through craftsmanship so that they can join the income-generating part of Namibia. They are given training in different fields of income-generating activities, specially taking into account their cultural background and the natural resources available.

These women learn skills, for example fabric design, embroidery, sewing, batik, pottery, and glass bead making. Penduka women make beautiful products.

Penduka started in 1992 with 4 employees, and it now has a total of 150 people on the payroll. More than 600 women throughout Namibia are members of Penduka, doing embroidery work to obtain their only income. This gives you an idea of their strength and determination.

Penduka collaborates with many organisation worldwide. These organisations purchase sustainable fabrics, support Penduka's communication, etc. Penduka also collaborates with Worldschool. Young people often generate new and innovative ideas. Luckily, young people in the Netherlands are educated and aware of environmental issues and the need for sustainable development.



Penduka organisation, Katatura



Penduka products



Bead making



Penduka women sewing

Introduction to the assignment

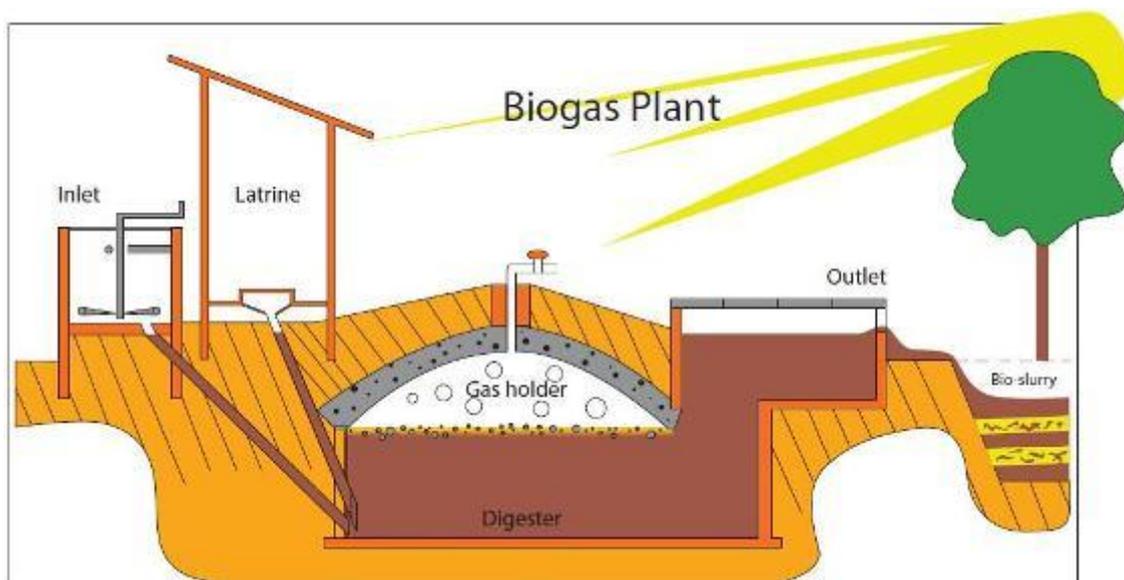
In Penduka's glass recycling department, a glass-melting oven is used. At this moment this oven uses gas from a gas bottle. These bottles are rather expensive, but still preferable to firewood. Wood is very scarce

in Namibia and generates a lot of smoke. Moreover, demand for firewood leads to deforestation, which is bad for the environment.

Domestically, women living at the Penduka premises mainly use electricity. Electricity is very expensive and the costs have increased another 30% since last year. Women working at Penduka, but living outside the premises, use a combination of paraffin, gas and/or electricity.

Biogas could be used as an alternative fuel for the glass-melting oven. It is very important to know that the women working at this glass recycling department are all deaf. There are many pros to using biogas, but safety is absolutely crucial. Biogas could also be used to generate electricity at the Penduka premises. Outside Penduka, in the townships, many people live together without proper sanitation. Biogas production there could serve as the ultimate in recycling, solving the sanitation and the energy problems at the same time.

Biogas is produced by the anaerobic fermentation of biodegradable materials such as biomass and manure. A biogas installation uses approximately 20 kg of excrement a day, for which around 40 people are needed. Biogas is primarily composed of methane (CH₄) and carbon dioxide (CO₂). Methane can be combusted, releasing energy. This energy release allows biogas to be used as a fuel for any heating purpose, such as cooking. It can also be used in anaerobic digesters where it is typically used in a gas engine to convert the energy in the gas into electricity and heat.



Simple sketch of a household biogas plant
(source: <http://en.wikipedia.org/wiki/Biogas>)

A first attempt to develop biogas is being made by Cedric Ceulemans, working on the Harmonature project with a local team at Penduka. Cedric is an experienced designer from Belgium with an interest in alternative energy.

Desired endproduct

A biogas installation design for:

A. a glass-melting oven operating on biogas produced with excrements and green waste of the targeted community;

B. domestic use (cooking, electricity) for approximately 40 people living in the neighbourhood.

Continuity and sustainability are very important for the biogas installation.

To create a successful end product for this Worldschool assignment, a study of the local situation is necessary. You need to get a picture of the local possibilities and impossibilities. Empathise!

Issues to be considered:

concerning the biogas installation

- What are the local conditions necessary for the biogas installation?
- What materials can be used for the biogas installation?
- How will it be built?
- Can the biogas be used directly or does it have to be converted to methane?
- What are the different uses of the digester's outlet and how safe is it?
- What are the investment costs?
- Where does the money come from?
- What are the long-term costs?
- Will it be cheaper than the current electricity, gas and wood consumption bill?
- How much time is required to collect the materials?
- Who will be tasked with such jobs?
- What is the best location on the Penduka premises or elsewhere? Why?
- What are the effects of low temperatures during the winter on the fermentation processes?

concerning safety issues

The women working in the glass recycling department are deaf.

- What safety precautions and security measures must be taken?
- How is this communicated, especially to the women?

To ensure safety, an easy-to-read manual is crucial, preferably with sketches or pictures to make the information accessible.

Last year, pupils of a Dutch school worked on the Cabrejou Worldschool assignment "biogas on Savu". They investigated the use of crops in a biogas installation. Their report can be read at <http://www.worldschool.nl/library>.

S024 - Steun Sahel Projecten (Burkina Faso): Windmills and pumps in the Sahel

Question

What is the (most) ideal construction of a windmill powered rope pump?

Situation

How to generate water in the bone dry Sahel belt?

Stichting Steun Sahelprojecten (SSS) cooperates with OCADES (Organisation Catholique pour le Développement et la Solidarité) round the town of Koupela in the east of Burkina Faso.

The monsoon lasts from June to September. After that there is no rain at all for nine months. We want to help improve the living conditions, for example through higher crop yields. This cannot be done without improving the current water supply.

The growing of vegetables and planting and growing of trees (seedlings) now requires a huge investment of time and effort because the water comes from a pump and a well (the distance from the surface to the water table is approximately 10 to 35 metres).

However, there aren't many people in the Sahel who dare take the risk of building a windmill due to the heavy gusts of wind that precede a downpour. The mill does not need to run during the monsoon. We are looking for smart solutions to our water issue. It would be a cause for celebration if the wind would be able to fill water basins/reservoirs!



Desired endproduct

There are many examples of well-intentioned solutions that fail to work in practise in developing countries and of projects that falter after a few years.

Before you start it is important to reflect upon the preconditions of something that is called 'sustainable engineering': how can technology and development aid go together? How do you prevent a local community from being faced with an imposed technology push and instead offer a bottom up solution?

Any technical design needs to take the local context into account: the local needs, the local materials, local business, and so on. We hope that in the search for answers to our questions you will be inspired by successful examples of other water projects, or else of course by instructive failures!

There is considerable expertise at various institutions and organizations in the Netherlands (the universities, organisations such as Ingenieurs Zonder Grenzen, Engineers for a sustainable future, etc.).

See www.practica.org or www.practicafoundation.nl: The Practica Foundation is an organisation that has great practical experience in the field of water and energy in developing countries.

What do we want?

We are looking for the ideal design of a windmill that does not spin too fast and that can be driven by a (rope) pump from January to May. This mill must be designed in such a way that it will slow down

automatically when there is too much wind (what can be expected in terms of wind during various periods of time at the spot where the mill will be placed?)

Examples can be found on the Internet, but there often seem to be all sorts of (technical) snags in the design. See for example "design for a windmill" by Jonas Mylemans (graduation work at the Karel de Grote Hogeschool in Antwerp). The transmission seems to be weak. Has the right type of mill been chosen? Do the brakes work properly, etc.?

We would like a rope pump to be included in the design, but if you come up with options that are clearly better (and well argued), we are interested in those as well. What is the smartest combination of mill and (rope) pump? We are looking forward to your designs/prototypes/choices. Please base your proposals mainly on your own (experimental, trial and error) research and calculations.

What constructions are safe, easy to maintain, reliable, relatively cheap, and make maximum use of local materials/possibilities?

Option 1

Connecting the rope pump indirectly to the horizontal axle of the windmill

Cf. the Bosman mill or the American windmill:

Two transmissions with a V-belt (rope).

Because of the long rope, the mill may deviate from the prevailing winds from the northeast.

For more information, visit www.ropepumps.org and go to "In cooperation with Practica Foundation", click on "Wind rope pumps", then watch the first YouTube hit: 7:09.

Option 2

In accordance with the YouTube clip, connecting the rope pump indirectly to the tilted axle (from vertical to horizontal) of the double Savonius rotor. The axle is supported by an oil drum and may deviate a few degrees from the northeast direction.

Finally, a few comments:

- Is it possible to use such a mill to generate energy?
- If the water is pumped up to the surface it needs to be stored; what systems can we use for this purpose? Water basins? What do they look like? How do you prevent such a basin from becoming a hotbed for mosquitoes (malaria)? Could such a basin (if you decide to construct them) be used for fish-farming?

A few tips:

For development issues there are agencies such as:

- the "WOT" at the university of Twente
- the "Cicat", associated with the Delft University of Technology cicat@tudelft.nl
- "Agrimosa" at the Wageningen University

The ZWO Geldrop Foundation builds rope pumps in Burkina Faso, and is sure to have a model; Simon v.d. Maal, slvdmaal@onsbrabantnet.nl

S015 - Steun Sahel Projecten (Burkina Faso): Breaking grounds for water buffers

Question

How can we improve infiltration of water?

Situation

Stichting Steun Sahelprojecten (SSS) collaborates with OCADES (Organisation Catholique pour le Développement et la Solidarité) around the town of Koupela in the east of Burkina Faso. We want to help improve living conditions, through higher crop yields, for example, so the people there will have more food for themselves and more food to sell at the local market. This also means we need to improve the current water supply.

Growing vegetables and planting and growing trees (seedlings) now requires a huge investment of time and effort because the water comes from a pump and a well. The distance from the surface to the water table ranges from 10 to 35 metres. During the monsoon, that lasts from July to October, there is enough rainfall (about 650 mm). After that there is no rain at all. In recent years, however, there is less and less rain during the last rainy month. This means that the crops don't mature enough. The harvest in October 2011 was disastrous, and a famine is never far away.

Along the stream in the village of Kombéolé 15 wells with a maximum depth of 14 metre have been dug. The soil consists of a loamy sand, that can be ploughed with an ox or a donkey, but turns hard as rock during the dry season (October to June). 10 meters into the soil there is a water-bearing layer of sand (aquifer) about one metre thick. The stream is two meters deep and five wide. After a downpour the water rises up to four meters above the stream bed; 80 meters onto the left bank and 80 meters onto the right, creating a stretch of water 165 meters wide. The wells are then fully submerged.

Remarkably, four months after the rainy season the wells are almost empty, but the stream bed still contains water. This means that the infiltration from the stream bed into the aquifer is poor. During floods (that occur about four times every rainy season) the water carries along a lot of silt that ends up in the wells.

We are looking for smart solutions to our water issue. But be careful, there are many examples of well-intentioned solutions that fail to work in practice in developing countries. Before you start it is important to reflect upon the preconditions of something that is called 'sustainable engineering': how can technology and development aid go together? How do you prevent a local community from being faced with an imposed technology push and instead offer a bottom-up solution?

More information

Map Google Earth
12 degrees 20' 05" N; 0 degrees 15' 24" W: around the reservoir that Stichting Steun Sahelprojecten has built themselves in 2001-2002. And far around.



Google Earth shows a nice map of the stream and the 15 wells; the starting point is the large reservoir in the west. The stream flows eastward. The dam's length is 250 m.



Two wells at 15 m distance from each other. The well in the back supplies a lot of water and is located in an aquifer, the well up front delivers little water and is located beside the aquifer.

Coordinates: 12 degrees 20' 09,29" N 0 degrees 15' 16,72" W



Photograph taken inside the well; people are dredging the silt; the damage to the side of the well still needs to be repaired.

During a flood the water rises up to a metre above the wellhead. This means a lot of silt ends up in the well.

The water has risen up to the circular groups of huts (see Google Earth)
Coordinates of this well: 12 degrees 20' 15,00" N 0 degrees 15' 03,17" W.



A dowser walks along the stream and discovers an aquifer. Coordinates: 12 degrees 20' 15,34" N 0 degrees 14' 53,60" W.



The vegetable garden of 50x50 m with three wells is situated 50 metres to the south. To the far right of the picture, behind the yellow can, you can see one of the three wells. The three wells do not supply enough water to support the entire garden. Coordinates: 12 degrees 20' 13,17"N 0 degrees 14' 53,59".

Desired endproduct

We would like to receive some practical advice - based on theoretical knowledge - on improving the infiltration of stream water into the aquifers.

Contour trenching (see short instructional videos on YouTube) is an example of a promising technique to improve infiltration. Basically, it is about digging trenches to break the hard top layer, improving the infiltration. We would like more specific information on contour trenching in any case, but perhaps there are other techniques to improve infiltration?

Examples of some of the issues we are faced with:

The area is characterised by bare laterite plains, dotted here and there with a single acacia tree. Laterite is a loamy soil that becomes very hard, and sometimes irreversibly hard, during the dry season.

How could you dig trenches here? We prefer to have the work done by hand, because it provides employment opportunities. It will probably also be the cheapest way to do it. Analyse advantages and disadvantages of working with bulldozers and working by hand, and compare the costs of mechanised trenching (\pm € 12/m² for trenching with a bulldozer) with those of manual trenching (daily wages € 1,50/person in Burkina Faso). Please note: these data are estimates and are provided by the Naga Foundation (see more information).

- o Once you have dug through the top layer, then the soil will allow the water to pass through more easily, but that top layer is very hard. When is the best time to dig those trenches? After the first rains? How do you organise this project? Local farmers will have plenty of work to do on their fields after the first rains. This means you will have to hire workers to do the digging at the start of the rainy season. Or should the work be done during the dry season after all, by the farmers themselves? How could you make the (manual) contour trenching in laterite during the dry season easier?
- o Advise us on the kind of trenches or holes needed to improve the infiltration from the stream bed into the aquifer. What shape, depth and length are needed in our situation (aquifer at 10 metres, width of the flood plain 165 metres)? How do you decide this? How can we decide on a location?

Usually a dowsing rod is used to find water: could we use one?

- o Are there experiences gained elsewhere that we can use to answer the questions above? How do we prevent the ground water from becoming contaminated?
- o List infiltration techniques; what are their pros and cons?
- o How do we prevent our wells filling up with silt?
Any technical design needs to take the local context into account: the local needs, the local materials, local business, and so on. We hope that in the search for answers to our questions you will be inspired by successful examples of other water projects, or else of course by instructive failures!

More information

There is considerable expertise on water technology and development issues at various institutions and organisations in the Netherlands (various technical universities, organisations such as 'Ingenieurs Zonder Grenzen', 'Engineers for a sustainable future', WETSUS, Leeuwarden). Talk to employees if you have any specific and practical questions.

See also:

www.practica.org or www.practicafoundation.nl: the Practica Foundation is an organisation that has great practical experience in the fields of water and energy in developing countries.

[www.wateraid.org/international/what we do/sustainable technologies/default.asp](http://www.wateraid.org/international/what_we_do/sustainable_technologies/default.asp)

www.nl.wikipedia.org/wiki/Aquifer

www.grondwaterformules.nl/

About contour trenching and other specific infiltration and storage techniques:
<http://www.nagafoundation.org/ned.cfm?approach>

www.bebuffered.com/downloads/3R_managing_the_water_buffer_2010.pdf

www.samsamwater.com

www.waterforaridland.com

See, for example, this publication:

www.waterforaridland.com/Books/Book3%20water%20from%20dry%20riverbeds.pdf

S011 - KROY (Dominican Republic): aLEDgria - batteries not included

Question

Design a mechanism that can make a LED light burn. Preferably with a dynamo or a weight making use of gravity. Think of a slowly dropping weight like in a cuckoo-clock, for example. It should be a mechanism without batteries. Moreover, it should be designed in such a way that your hands are free for other things.

Situation

The KROY foundation is a youth organisation that focuses on the promotion of sustainable development in Groningen and beyond since 2004. We try to realise these objectives by making other people aware of matters such as sustainable energy, art, vintage clothing and development cooperation.

The founder of the organisation, Richard Severin, is from the Dominican Republic and has made contact with an educational organisation named DREAM Project (Dominican Republic Mentoring and Education Project) during a solar energy work assignment. DREAM is the partner organisation that tries to improve education from the inside in the poorest communities of Cabarete and Cabrera in the North of the Dominican Republic.

Among other things, they build schools, provide teaching materials, organise summer camps and manage a DREAM Centre with after school care, including education facilities and homework assistance for children of the poorest inhabitants such as Haitian children.

Since 2007, DREAM makes use of solar energy and provides in the energy needs of the DREAM Centre. This is necessary given that power cuts, particularly in these poor areas, are common and these power cuts are often unpredictable and long-lasting. The public school Colonia Nueva, located next to the DREAM Centre, and the school in Cabrera have no solar electricity and are therefore shrouded in darkness whenever electricity goes down. As you can imagine this is not good for education. Partly because this makes evening classes almost impossible, but also because the water supply of the toilets and sinks depend on an electrical water pump. The KROY foundation currently tries to gather funds for a solar energy system for the public school Colonia Nueva.



Introduction to the assignment

Currently there are more than 2 billion people worldwide that literally have no electricity. Most of these people are in Africa but also in Latin-America and Asia. Electricity is essential for development, but without any light daily activities become difficult in the evening or at night, if not impossible. Think of making homework, cooking, going to the toilet... A bright spot like a LED light can already make a difference.

There are already different solutions such as flashlights, candles, petroleum lights, open fire or installations on solar energy. But flashlights require batteries that have to be regularly purchased just like candles and petroleum; open fire is dangerous, needs wood and has already caused numerous burns, installations on solar energy require storage batteries or rechargeable batteries that wear out at some point, need replacement and will probably pollute the environment. And dynamo torches seem impracticable in practice because your hands are not free.

We are therefore looking for a LED-light solution for the kitchen, the toilet, for the reading table or for any space in general where people have to conduct an activity and therefore need their hands to be free for a while; where nothing needs to be frequently purchased and the environment is not polluted. Preferably a system that does not need to store energy in batteries, that is not too complicated, nor too expensive and can be easily repaired.

A system that can generate light for 2 minutes is already a start but the longer the better of course. 15 minutes of light without any intervention needed would be ideal. Only a small amount of electricity is enough to make a LED lamp burn. This is exactly what we want. A small system of a LED lamp - a small dynamo - and a mechanism to put the dynamo to work. You can make the dynamo run by the power generated by a spring, a wheel or a weight. Comparable to the cuckoo-clock principle. Whereby the propulsion of the dynamo is caused by the dropping weight which, as a result, generates electricity.

You have to see it like this:

If it does not have to be portable the dynamo/weight principle could work. If it has to be portable you will need a battery to store the energy.

You are free to develop/design a completely different kind of energy generating system as long as it does not need batteries, it does not produce waste, frequently cost money or is too complex or vulnerable.

Desired endproduct

The assignment is to develop a cheap, simple but still robust mechanical piece of equipment or construction with which enough energy can be generated for a LED light to burn as long as possible. This energy can be generated by the weight/dynamo principle or any other method you can think of. We would like to see a demonstration of a prototype machine! Furthermore, a piece of equipment that could be taken into production easily. With local materials and with the tools of an average third-world bike repairer or car mechanic.

We are not looking for a "technology push" but want "bottom up" solutions. In other words, solutions based on reasoning from within the local context: local needs, local materials, possibilities and local activities (think of materials that can be found at the average African bike repairer's shop). And possibly combined with innovations from the west.

During technical designing, you could make use of the experiences of various knowledge centres in The Netherlands and abroad in the field of developmental technology .

Information about this topic can be found on the Internet and at the different knowledge centres in The Netherlands and abroad:

<http://web.mit.edu/aboutmit>

Massachusetts Institute of Technology (MIT)

<http://www.shimano.nl/> <http://www.batavus.nl/>

For information about dynamo technology

<http://www.ecodesign.nl/>

Website about the principles of eco design

www.allesduurzaam.nl

Road map in the world of sustainability

www.duurzaamheid.kennisnet.nl

This site provides quick and easy access to information about sustainability in and for educational purposes

www.duurzame-energie.pagina.nl

Homepage about sustainable energy

www.natuurlijkenergie.nl

For primary school pupils, with a lot of information and interesting experiments

www.e21.nl

About energy in the 21st century, for teachers and pupils in Secondary Education!!

www.duurzameenergie.nl

Site of Milieu Central about different forms of sustainable energy

www.ipdubo.nl

Site of the Information point Sustainable Construction

Scholen voor Duurzaamheid

Website with project of the IVN for schools in Secondary Education

Energy Survival

Energy Survival is an educational project for the 6th grade of the primary education. It contains a digital teaching programme directed at sustainable energy.

www.keihardgebruiken.nl

A confronting energy campaign, made up by young individuals

www.leerlijn.info/klimaatenergie

A continuous learning line about climate and sustainable energy from the IVN. With a digital product database for education, containing educative programmes and materials about climate and energy.

ladiesfirst.nu

Initiator Wubbo Ockels is dedicated to a clean country in The Netherlands

www.magneet.hanze.nl

Experimental room for engineering, part of the Hanzehogeschool Groningen.
Learning chair sustainable development

www.tudelft.nl <http://www.students4sustainability.nl/>

<http://w3.tue.nl/nl/diensten/stu/puc/leerlingen/profielwinkel/>

Helpdesk Technical University Eindhoven