Cooking

Cooking fuels

Light, Electricity

Water

Growing food, oils

Transport

Solar heat & others

By Country



Online Catalogue:

LOCAL SUSTAINABLE SOLUTIONS IN EAST AFRICA – Transport

www.localsolutions.inforse.org

Collection of Successful Cases of Sustainable Energy and Climate Solutions in Kenya, Uganda, and Tanzania.

Table of Contents

GROWING FOOD, OILS 4
- Kitchen gardening 4
  - Bag Gardening 4
  - Keyhole Home Gardening 6
  - Kitchen Garden 8
  - Vertical Gardening by Biogas International Limited Company 10
- Organic vegetables for market 12
  - Mlango Farm 12
  - Vertical Gardening by Biogas International Limited Company 14
- Agro-foresty, & products from trees 16
  - Ficus Natalensis Agroforestry systems 16
  - Soap and Lotion Making from Natural Tree Oils 18

TRANSPORT 20
- Animals for farming and transportation 20
  - Donkeys for transportation 20
  - Using Oxen for Farming 22
- Electro mobility 24
  - Electric 3-Wheeler, E-Bike, E-Motorbike, E-BodaBoda 24
  - Electric Bicycles - Bicycles Helped with a Motor 27
- Bicycles 29
  - Bicycles in Tanzania 29
  - Bicycles in Uganda 31
  - Buffalo Bicycles in Kenya 33
  - Electric Bicycles - Bicycles Helped with a Motor 35

The Catalogue is published by Partners of the Project "East African Civil Society for Sustainable Energy & Climate Action" (EASE-CA), a Project by members of the civil society network INFORSE - International Network for Sustainable Energy. The Partners are: JEEP and UCSD in Uganda, Suswatch in Kenya, TaTEDO in Tanzania, which is also INFORSE-East Africa Coordinator, Nordic Folkecenter for Renewable Energy (NFRE), and INFORSE Secretariat in Denmark. More on the EASE-CA Project: www.inforse.org/africa/EASE.htm. The online database behind the Catalogue is designed by NFRE. The EASE-CA Project is supported by CISU - Civil Society in Development, Denmark in 2019-22.

Catalogue generated on:

03.11.2026

Bag Gardening





Why to choose this solution?

For many urban and slum dwellers, space is limited, while for those living in areas with insufficient rain, the same is true of water. For all these growers, vertical sack gardening is emerging as a way to grow a large supply of vegetables despite water shortages and other constraints. The garden is especially suitable for growing vegetables such as kales, spinach, coriander, onions, tomatoes, okra and eggplant. Normally, when the green leafy vegetables are ready for harvest, they can be harvested 2-3 times a week and deliver strong nutritional value, containing vitamins A, C, and K that are particularly essential for growing children.

Savings per day or production:

This creative innovation is an efficient water-management venture, as the sacks are tailored to ensure that there is no water seepage or waste, thus delivering all added water to the plants. With this option, a space that can be occupied by two kale (sukuma wiki) seedlings planted the conventional way, can be occupied by one sack that can hold up to 150 seedlings, thus increasing food production 75-fold.

Cost in money and in own time to construct:

Small garden costs vary by size, location and complexity. One would spend anywhere from USD 4 to 18 per square foot after installation. Design costs run to USD 0.05 to 0.75 per square foot, or about 5% to 10% of the project cost.

Lifetime:

Grow bags are predicted to last 7 to 8 seasons, but with good care, they can last for much longer. Grow bags fabric is pressed together, not woven, which increases their durability.

Maintenance needed:

Regularly maintaining a garden involves many things including: routine care (pruning, trimming, watering); weeding. Applying either organic or inorganic fertilizers and pesticides.

Resources needed in use:

Tools include: Jembe (shovel) - to dig the soil that will be mixed with other components for constructing the garden; Forkjembe - to dig the soil in hard ground areas; Spade - to be used in collection and mixing the soil components; Tinsnip/ Knife- to cut the top part of the tin completely; Tin punch- to punch holes on the tins surfaces and the bottom; Wheelbarrow - to measure and transport the various soil parts to the recommended ratio, Perforated tins, 50 kgs sacks, gravel, clay soil, sand soil, manure, seeds and water. Purpose of various equipment: Perforated tins- to pass water through to the soil component, hold the gravel in the sack, filter dirty water, bottom tins have few holes and no holes on the bottom, second bottom tin has more holes, and third tin has more holes than the rest.

Problems and limits:

Digging, kneeling, stooping or bending over, and a variety of other repetitive movements that are all part of gardening can be harmful to your joints, to your bones, to your muscles, and can cause blisters on your hands

and possibly also on your feet.

Where and how can you get it or make it?

Smart Farm, Hela mchangani-Kangemi Nairobi.

Skills needed to produce, install. maintenance, use:

Soil analysis, composting (or worm binning), sun- exposure charting, seed germination, planter- building, diligent pest control, pollinating, tool care and maintenance.

How to use it:

https://www.youtube.com/watch?v=DduV2SGhJDU

How to maintain it:

Climate effect (if any):

The technique uses very little water, and one can use recycled water, making it economical. The method has created employment and generated income for both rural and urban dwellers, and has proved to be a good way for farmers to adapt to the effects of climate change.

Why is it successful?

Increased production per unit area (up to six fold). Efficient on time, labour and water. Provision of good agricultural nutrition, It can be accessed by all and low-land requirements (as low as 3 sq meters).

If you can make it, a short description, typical problems, materials needed:

Necessary Materials: A woven burlap or plastic bag, such as a used food-aid sack, serves as the container. Fill the bottom of the bag or sack with soil, build up, fill the bag, cut sites for plantings, transplant seedlings, plant on the top, and grow your plants.

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

What policies and strategies helped the success?

The adoption of urban agriculture as a livelihood strategy, as it promotes vertical bag farms that need limited space to set up and to operate.

More info:

The Real IPM Co.(Kenya) Ltd. P.O. Box 4001-01002 Madaraka, Thika, Kenya. Tel +254 725 806086, General enquiries: info@realipm.com. Sales orders: Sales.Ke@biobestgroup.com OR sales@realipm.com

Sources:

Case uploaded:

2021-02-22

Keyhole Home Gardening





Why to choose this solution?

It can improve food security, health, and livelihoods among the communities.

Savings per day or production:

It requires locally available resources to establish. Reduces household expenditures on vegetables, i.e., for a normal family, 2000 USh (USD 1) can be saved per day. Three keyhole gardens can supply a large family with a variety of crops during a year.

Cost in money and in own time to construct:

Requires little land and investment to set up. Family/ home labour is used, and it takes like approximately 3- 5 hours to establish.

Lifetime:

3-5 years.

Maintenance needed:

It is easy to maintain. It only requires regular weeding, fertilizer application, replacing of the compost baskets, planting seeds, and harvesting produce, which is not extremely time-consuming or difficult.

Resources needed in use:

Time, knowledge/competencies, materials (seedlings, garden tools such as hoes, knives)

Problems and limits:

Construction can be somewhat effort-intensive but not cost-intensive.

Where and how can you get it or make it?

JEEP trains communities in how to establish such gardens. The garden can be established in a kitchen space, compound, or courtyard.

Skills needed to produce, install. maintenance, use:

Hands-on skills, vocational skills, home-mentored skills.

How to use it:

To be added.

How to maintain it:

Regular weeding of the garden is needed.

Climate effect (if any):

When using compost in the garden, it helps to increase carbon in soil, which reduces emissions on a small scale. Pollution from use of inorganic fertilizers is limited.

Why is it successful?

It is made through the use of locally available materials, it requires less knowledge and skill, just a small piece of land is needed, and it is easy to make. Usually built near houses, keyhole gardens enable anyone to farm easily, which is especially suitable for elderly and for physically challenged farmers. There is no need for tillage and less need for water. All forces are oriented towards achieving food security in a sustainable manner. Beneficial to the home in waste management, especially compostable kitchen waste.

If you can make it, a short description, typical problems, materials needed:

Materials: Stakes, black soil, banana fibres, kitchen waste, garden waste, manure (compost, farm yard manure, poultry litter), bricks/plastic bottles, dry mater, water, seedlings, basin, hoe, spade, etc. Problems: Knowledge and skills, materials in some communities may not be available. Procedures: Establishment needs a trained or skilled person.

How to make it (if possible):

Needs a trained person to make.

How is it delivered and by whom?

JEEP trains trainers of trainers which have been key in delivering the concept to other people in the communities.

Successful financial model

What policies and strategies helped the success?

Government programs, private-sector programs, use of trainers of trainer (ToT) approach, inclusion of vulnerable groups of people in the food-production process, and awareness-creation on the need for a sustainable food-production approach.

More info:

JEEP, 7 Miles, Gayaza Rd, Kyanja, Kampala, P. O. Box 4264, Uganda. Tel: +256 414 578 316. info@jeepfolkecenter.org

Sources:

www.jeepfolkecenter.org

Case uploaded:

2020-09-16

Kitchen Garden





Why to choose this solution?

Kitchen gardens aim to improve food security, health, and livelihoods among local communities.

Savings per day or production:

They reduce household expenditures on vegetables. An average family can save 2,000 Uganda shillings (USD 0.5) per day. Three keyhole gardens can supply a large family of 10 members with a variety of crops during a year.

Cost in money and in own time to construct:

Requires little land and investment to set up. An investment of 5000 USh (USD 1.4) is needed to establish the garden. Family/home labour is required, and it takes approximately 3-5 hours to establish.

Lifetime:

3-5 years.

Maintenance needed:

It is easy to maintain. It only requires regular weeding, fertilizer application, replacing of the compost baskets, planting seeds, and harvesting crops, which is not extremely time-consuming or difficult.

Resources needed in use:

Time, knowledge/competencies, and materials (seedlings, garden tools such as hoes, knives).

Problems and limits:

Construction can be somewhat effort intensive but not cost intensive. Setting up the garden involves many measurements and carrying of a lot of soil to make a heap (40 wheelbarrows of soil are needed to make a heap). If measurements are not accurate, the whole shape may be lost.

Where and how can you get it or make it?

JEEP trains communities in how to establish such gardens. The garden can be established in kitchen space, compound, or courtyard. It is available in Uganda mainly in the central and northern parts of the country.

Skills needed to produce, install. maintenance, use:

Hands-on skills, vocational skills, home-mentored skills. Knowledge of basic gardening: when to plant, use compost, weed and harvest; what kind of seeds to use.

How to use it:

Not relevant.

How to maintain it:

Regular weeding of the garden.

Climate effect (if any):

In the keyhole garden, farmers grow a variety of plants of which some have insect-repellent properties thus decreasing pest occurrence and also eliminating the costs of pesticides and their negative effects on the environment.

Why is it successful?

It is made through the use of locally available materials. It requires some knowledge and skills and a small piece of land. It is easy to make. Usually, they are made near houses. Keyhole gardens enable anyone to farm easily, which is especially suitable for elderly and for physically challenged farmers. There is no need for tillage and less need for water. All forces are oriented towards achieving food security in a sustainable manner.

If you can make it, a short description, typical problems, materials needed:

Materials such as stakes, black soil, banana fibres, compostable kitchen waste, garden waste, manure (compost, farmyard manure, poultry litter), bricks/ plastic bottles, dry mater, water, seedlings, basin, hoe, spade. Knowledge and skills are needed to establish. Materials may not be available in some communities.

How to make it (if possible):

Needs a skilled person to make.

How is it delivered and by whom?

Keyhole gardening is a home-based income generation activity. Delivery model is practical hands-on and participatory in nature. Business model is establishment by skilled / trained persons. The solution can be implemented individually, as a group or family who can sell the grown food stuffs to traders and directly to consumers. Trained trainers of trainers (TOTs), CSOs have got a key coordinating function in implementing the solution towards ensuring food security and improved livelihoods.

Successful financial model

Kitchen gardens are often promoted as a way to cut household costs by providing low-cost access to fruits and vegetables. Kitchen gardens are profitable, if the fair market value of garden labor is excluded from calculated costs. Local environmental conditions, gardening practices, and crop choices will influence the actual net value realized by individual gardeners.

What policies and strategies helped the success?

Government programs, private-sector programs, use of trainers of trainers (ToT) approach; support from development partners in the promotion of urban agriculture; and awareness-creation on the need for a sustainable food-production approach.

More info:

JEEP, 7 Miles, Gayaza Rd, Kyanja, Kampala, P. O. Box 4264, Uganda. Tel: +256 414 578 316.

Sources:

Email: info@jeepfolkecenter.org/ https://jeepfolkecenter.org/

Case uploaded:

2020-10-15

Vertical Gardening by Biogas International Limited Company







Why to choose this solution?

The solution helps in promoting or supporting food security since its for pure food production in vegetables, fruits, herbs plus any other food crop that can grow in it. It is easier to make, install, plant in, manage and replicate anywhere and everywhere needed. It is practical everywhere and anywhere in the rural, urban area, rocky areas, hills, flat areas and swampy areas. It is economical since it requires small piece of land to set up, its low labour intensive and less time is spent on it. It has high quantity harvest with high quality produce in a smaller area as compared to the direct ground ploughing. The technology is aimed at improving organic farming and less water usage helping in improving soil quality. The technology is part of the solid waste management since the organic wastes are used to make organic manure for nutrients replenishing.

Savings per day or production:

For the families using the technology save at least KSH 60 per day for vegetables purchase. Such amount can be saved and be used for other development purposes. It is also a source of income for many families.

Cost in money and in own time to construct:

It is less costly to set up, and cost depends on the size, its easily expandable and also less labour intensive and less time spent in setting up and maintaining them. This is because it is simply entails setting up the vertical gardens, soil and compost manure. Then filling up the garden, followed by planting, uprooting the weeds with hands and watering the plants.

Lifetime:

Over 20 years, since its a plastic of more than 0.75 mm thickness.

Maintenance needed:

The main maintenance needed is to plant, pluck the weeds and water the plants as you occasionally add compost manure.

Resources needed in use:

Vertical garden, top soil, compost manure, seedlings and source of water. With those in place you are set and ready to kick off the process of getting your harvest in a few months.

Problems and limits:

Financial constrains faced by the locals in terms of accessing the vertical gardens and seedlings and sometimes source of water can be a limiting factor.

Where and how can you get it or make it?

Available in Nairobi, at Biogas International Limited Company head office in Karen, Ngong Road, Mwitu plot 33. In Kisumu the branch office is at Dunga Beach.

Skills needed to produce, install. maintenance, use:

The skills needed are just averagely farming techniques with some organic farming skills and how to make a

compost manure.

How to use it:

How to maintain it:

Climate effect (if any):

This kind of farming is climate smart agriculture technique whereby it conserves water by consuming less water, helps to improve the green matter cover, and does not necessarily require clearing of forests and vegetation to set up, hence helps in Environmental conservation and combating climate change.

Why is it successful?

It is successful because its a source of food for many families, and those who have known the benefits plus who wants to secure food security for their families always embraces it and never wants to stop doing it with its benefits attached to their minds. it is also easier to make, install and manage, less labour intensive and time consuming makes it possible to be replicated by many.

If you can make it, a short description, typical problems, materials needed:

The materials needed are vertical gardens, soil, compost manure, seedlings, source of water and tools like Wheelbarrow and spade for installation process. After setting up the garden, the user can just install them, plant in them and maintain them easily.

How to make it (if possible):

Vertical gardening by Biogas International Limited Company.

How is it delivered and by whom?

Vertical gardening by Biogas International Limited Company

Successful financial model

What policies and strategies helped the success?

The main strategy that continues to result to its success is the strict practice of organic farming.

More info:

This kind of farming is aimed at involving all people of different genders, ages, class and categories to practice organic farming/agriculture towards attainment of food security. It also aims at extra cash earning by either saving or sales of the vegetables and produce. Also aimed at involving the urban population into agriculture.

Sources:

The source is from Biogas International Limited Company, flexibiogas technology.
https://biogas.co.ke/2019/05/03/growing-vertical-gardens/

Case uploaded:

2023-03-15

Mlango Farm





Why to choose this solution?

Mlango Farm is an agricultural sanctuary where quality and sustainable foods are grown without the use of artificial fertilizers and synthetic pesticides. It produces over 50 different crops (fruits and vegetables). This organic farming helps to eliminate pesticides and chemicals sprayed on plants contaminating the soil, water supply, and air; it reduces pollution of air, soil, food, and groundwater. It also helps reduce public health risks because the produce is rich in nutrients such as vitamin C, iron, magnesium, and phosphorus, with less exposure to nitrates and pesticide residues.

Savings per day or production:

Not specified.

Cost in money and in own time to construct:

Not specified.

Lifetime:

Mlango Farm has been operational since the year 2007.

Maintenance needed:

Weeding, watering the crops, picking of fresh produce.

Resources needed in use:

They use a farmland, compost, crop residue, labour.

Problems and limits:

Mlango Farm sits on a slope, thus incurring additional cost for construction of terraces and contours.

Where and how can you get it or make it?

Mlango Farm is situated in Ngecha village in Limuru Kenya.

Skills needed to produce, install. maintenance, use:

Agricultural (fundamentals of farming) skills are required to produce and maintain the crops.

How to use it:

To be added.

How to maintain it:

To be added.

Climate effect (if any):

Not specified.

Why is it successful?

Mlango Farm attribute their success to understanding the fundamentals of farming, which, according to them,

starts with healthy soil. They use compost, crop residue, and crop rotation to enrich the soil. The success of soil care at the farm is evident through the quality of their produce. Many of their customers can attest to the tastiness of their produce.

If you can make it, a short description, typical problems, materials needed:

Requires farm land, fruit trees, vegetables, and compost.

How to make it (if possible):

Not relevant.

How is it delivered and by whom?

Mlango Farm delivers fresh vegetables to hotels and restaurants in Nairobi and its environs, including farm-share baskets with a variety of vegetables to individuals. Every week they deliver baskets with a variety of vegetables at pickup points, they bring the vegetables to a pickup point in the morning, from which customers can pick up their basket during that day or at whichever time is convenient to them. Customers can sign up for only 950 Ksh per week on http://www.mlango.org/img/signup.pdf and send an email to: baskets@mlango.org. One basket is enough for 4 or 5 meals.

Successful financial model

Collaboration with agricultural experts, Learning from online resources ie Google since the Kamande Njenga and his wife Els Breet both did not have a background in agriculture when they started the farm. Mlango farm foundation aiming to provide children and youth (regardless of socio-economic background) encouraging practical and experimental learning through farm visits for all ages.

What policies and strategies helped the success?

Certification by Encert in 2010. Farm tours at a cost of 1,500 KSh (USD 15) per person (half price for children, and kids under the age of 3 are free).

More info:

http://www.mlango.org/

Sources:

Mlango farm, Limuru Rd, Nairobi. Tel: 0728 848296. E-mail: info@mlango.org

Case uploaded:

2020-09-22

Vertical Gardening by Biogas International Limited Company







Why to choose this solution?

The solution helps in promoting or supporting food security since its for pure food production in vegetables, fruits, herbs plus any other food crop that can grow in it. It is easier to make, install, plant in, manage and replicate anywhere and everywhere needed. It is practical everywhere and anywhere in the rural, urban area, rocky areas, hills, flat areas and swampy areas. It is economical since it requires small piece of land to set up, its low labour intensive and less time is spent on it. It has high quantity harvest with high quality produce in a smaller area as compared to the direct ground ploughing. The technology is aimed at improving organic farming and less water usage helping in improving soil quality. The technology is part of the solid waste management since the organic wastes are used to make organic manure for nutrients replenishing.

Savings per day or production:

For the families using the technology save at least KSH 60 per day for vegetables purchase. Such amount can be saved and be used for other development purposes. It is also a source of income for many families.

Cost in money and in own time to construct:

It is less costly to set up, and cost depends on the size, its easily expandable and also less labour intensive and less time spent in setting up and maintaining them. This is because it is simply entails setting up the vertical gardens, soil and compost manure. Then filling up the garden, followed by planting, uprooting the weeds with hands and watering the plants.

Lifetime:

Over 20 years, since its a plastic of more than 0.75 mm thickness.

Maintenance needed:

The main maintenance needed is to plant, pluck the weeds and water the plants as you occasionally add compost manure.

Resources needed in use:

Vertical garden, top soil, compost manure, seedlings and source of water. With those in place you are set and ready to kick off the process of getting your harvest in a few months.

Problems and limits:

Financial constrains faced by the locals in terms of accessing the vertical gardens and seedlings and sometimes source of water can be a limiting factor.

Where and how can you get it or make it?

Available in Nairobi, at Biogas International Limited Company head office in Karen, Ngong Road, Mwitu plot 33. In Kisumu the branch office is at Dunga Beach.

Skills needed to produce, install. maintenance, use:

The skills needed are just averagely farming techniques with some organic farming skills and how to make a

compost manure.

How to use it:

How to maintain it:

Climate effect (if any):

This kind of farming is climate smart agriculture technique whereby it conserves water by consuming less water, helps to improve the green matter cover, and does not necessarily require clearing of forests and vegetation to set up, hence helps in Environmental conservation and combating climate change.

Why is it successful?

It is successful because its a source of food for many families, and those who have known the benefits plus who wants to secure food security for their families always embraces it and never wants to stop doing it with its benefits attached to their minds. it is also easier to make, install and manage, less labour intensive and time consuming makes it possible to be replicated by many.

If you can make it, a short description, typical problems, materials needed:

The materials needed are vertical gardens, soil, compost manure, seedlings, source of water and tools like Wheelbarrow and spade for installation process. After setting up the garden, the user can just install them, plant in them and maintain them easily.

How to make it (if possible):

Vertical gardening by Biogas International Limited Company.

How is it delivered and by whom?

Vertical gardening by Biogas International Limited Company

Successful financial model

What policies and strategies helped the success?

The main strategy that continues to result to its success is the strict practice of organic farming.

More info:

This kind of farming is aimed at involving all people of different genders, ages, class and categories to practice organic farming/agriculture towards attainment of food security. It also aims at extra cash earning by either saving or sales of the vegetables and produce. Also aimed at involving the urban population into agriculture.

Sources:

The source is from Biogas International Limited Company, flexibiogas technology.
https://biogas.co.ke/2019/05/03/growing-vertical-gardens/

Case uploaded:

2023-03-15

Ficus Natalensis Agroforestry systems







Why to choose this solution?

Tree is grown as a live fence around homes and at a wide spacing for shade and soil rejunevation in coffee, cocoa and banana plantations, as it drops leaves which quickly decay to provide both soil cover and manure. Throughout Uganda, barkcloth is made from this tree which can be used domestically or sold to supplement household income. Leaves are used to treat dysentry and sore throats. Other uses: Pruned branches are used as fuel wood when dry and as fodder for livestock, and also act as windbreaks.

Savings per day or production:

Any annual or perennial crop can be inter-cropped with Ficus spp. provided the tree canopy is managed well.

Cost in money and in own time to construct:

The most important factor affecting cost is labor to transport the bulky stem cuttings to the site. However, Ficus natalensis is easy to establish and is durable (over 100 years) depending on management.

Lifetime:

Ficus Natalensis is propagated using cuttings from young branches which are planted vertically 6m apart along a contour. The tree is quite robust and can attain heights of over 20m, with a very extensive canopy if left to grow unchecked.

Maintenance needed:

Pruning raises its canopy to the desired height above the ground. Fencing is required to protect the tree from damage by livestock in early stages. Within 12 to 18 months, the tree is established enough to withstand browsing (WOCAT, 2014). Implementation of the technology on steep slopes(> 50%) not possible without other supportive Sustainable Land Management interventions including construction of stone lines and mulch application.

Resources needed in use:

A Ficus tree can live for a hundred years.

Problems and limits:

Scarcity of fuel wood may lead to over-harvesting of branches, destroying the canopy. Nonetheless, the tree regenerates quickly with the coming of the rains.

Where and how can you get it or make it?

Ficus Natalensis is propagated using cuttings from young branches which are planted vertically 6m apart. Propagation material (large cuttings and seedlings) is readily available and cheap, making the technology inexpensive to establish. It is cultivated in all regions of Uganda.

Skills needed to produce, install. maintenance, use:

Simple farming knowledge and skills. A wide strip of bark is removed in one piece, then softened with steam. An 18-inch-wide strip of bark can be beaten with a mallet into pieces of cloth over seven feet wide. One tree

could yield 40 bark strippings (AB Katende et. al., 1995).

How to use it:

Barkcloth Making in Uganda: https://www.youtube.com/watch?v=uhznFtHhkBo

How to maintain it:

Maintenance is by simple agronomic practices like weeding when still young. Care should be taken no to harm the skin if the aim is to get good quality bark-cloth. When the canopy grows so thick and heavy it may be good to reduce because a very heavy canopy can result to getting the tree uprooted during storms.

Climate effect (if any):

Why is it successful?

Propagation material is readily available and cheap, making the technology inexpensive to establish.

If you can make it, a short description, typical problems, materials needed:

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

What policies and strategies helped the success?

The National Forestry and Tree Planting Act (2003) that recognizes indigenous knowledge in forest conservation, in line with the Convention on Biodiversity.

More info:

AB Katende et. al, (1995). Useful Trees and Shrubs for Uganda. Regional Soil Conservation Unit. WOCAT (2014). Ficus Natalensis Agroforestry System.

Sources:

http://www.fao.org/3/au287e/au287e.pdf

Case uploaded:

2021-03-16

Soap and Lotion Making from Natural Tree Oils







Why to choose this solution?

Trees such as shear nut tree, Eucalyptus tree, coconut tree and palm trees provide natural oils, which can be used for making soaps (laundry, bathing and liquid soap), Vaseline cream, lotions, and body creams. Using these natural oils have also health benefits to treating skin disorders, certain diseases, and repelling mosquitos. Soap making plays a big role in environment conservation because efforts are now being made to conserve these trees, from which the oil can extracted and be used to generate income. It can also be a good activity for small case business of a Village Savings and Loans Associations (VSLA). Good for both children and adults.

Savings per day or production:

Using soap reduces household expenditures on soap because for an average family a bar can be used for three weeks compared to other ordinary soap which lasts for about two weeks.

Cost in money and in own time to construct:

It requires little investment to start. One may need approximately USD 57 (USh 200,000) as start-up capital to start making soap for a small business. The soap making process takes 45 minutes, after which the soaps need three weeks to get dried. Then you can package and label them. The different products from natural oils costs between USh 2,000 - 50,000 (USD 0.54-14).

Lifetime:

The soap can last for over 3 years since it is made out of natural tree oils and no preservatives are added.

Maintenance needed:

Needs be stored in a cool dry place.

Resources needed in use:

Buckets / basins and water.

Problems and limits:

Inhalation of caustic soda fumes during the soap making process can be dangerous to human health. Therefore, it is necessary to use masks or scarf and gloves during the soap making.

Where and how can you get it or make it?

In Uganda, JEEP is making soap and JEEP also trains communities in soap production.

Skills needed to produce, install. maintenance, use:

The ingredients are shea butter, coconut oils, caustic soda, water, and herbs like Aloe Vera, rosemary, pawpaw leaves. Equipment needed are measuring weight, bowls and a spoon to mix and heat, and molding trays. About 5 liter plant oil makes 45 soap bar weighing 120 grammes.

How to use it:

How to maintain it:

Climate effect (if any):

It is environment friendly and it is playing a big part in environment conservation because efforts are now being made to conserve the trees where the oils come from.

Why is it successful?

It is successful because it requires small investment to start and materials are locally available from indigenous trees in Uganda. Additionally, soap is on a high demand everywhere in the world. It is also a good activity for a small scale business, and as a Village Savings and Loans Association activity.

If you can make it, a short description, typical problems, materials needed:

How to make it (if possible):

https://www.youtube.com/watch?v=zRSxDWfIkhA&ab_channel=JointEnergyandEnvironmentProjects

How is it delivered and by whom?

Business model is production by skilled persons with a few employees that sell to traders, shops, markets and directly to. Trained small organised groups can help to maintain quality. JEEP has supported and coordinated organising and training such groups in rural and urban centres.

Successful financial model

Support for development, training of small organised groups in soap making and branding with labelling.

What policies and strategies helped the success?

Government efforts to conserve the trees from which natural oils come from. Subsidising prices so as it is affordable to many people. Advertising it by emphasizing that it is made from natural tree oils, educating people about the health benefits and encouraging people to take it on as a VSLA activity.

More info:

https://www.youtube.com/channel/UCNu_MEIXjnCWqDXjuCD6yQg and
https://www.youtube.com/watch?v=oufmoZuMqVU

Sources:

JEEP, 7 Miles, Gayaza Rd, Kyanja, Kampala, P. O. Box 4264, Uganda. Phone: +256 (414) 578 316. E-mail: info@jeepfolkecenter.org, Web: https://jeepfolkecenter.org/

Case uploaded:

2020-10-06

Donkeys for transportation





Why to choose this solution?

Donkeys are used for both commercial and domestic purposes, transporting goods and people in rural, urban, and peri-urban areas. They contribute significantly to both the national economy and household livelihood support. The reason why donkeys are so important for many communities in Kenya is that they are adapted and resilient in the different environments ranging from wet, cold and mountainous conditions to dry, hot and semi-arid areas with harsh climatic conditions. They are inexpensive means of transport to wide range of commodities including water, agricultural produce, garbage,firewwod, household items etc.

Savings per day or production:

Donkeys save the women from using their little finances that would have been used in sourcing for alternative transport such as bicycle, motorcycle, or vehicle. The savings are used to cater for other household requirements, mainly food.

Cost in money and in own time to construct:

The average price of an adult donkey costs about Kenya Shillings 13,000 (130 USD)

Lifetime:

A healthy donkey has a lifespan of about 27-40 years

Maintenance needed:

Donkeys should be fed well and once in a while have checked by a veterinary officer. They should be housed in shelters that protect them from harsh weather and vaccinated against rabies annually and dewormed every three months.

Resources needed in use:

Donkeys can either work as draught animals where they pull a cart or a plough, or alternatively a load is placed directly on their backs.

Problems and limits:

There is an increase in global demand for donkey meat and skin resulting to massive slaughtering and theft of these animals from most donkey owning communities in Kenya.The implications of this commercial donkey slaughter in Kenya where 5.1 per cent (301,977 donkeys) of the total population was wiped out by the slaughterhouses alone during the period 2016-2018. Lack of proper policies on donkeys may also diminish their population in Kenya.

Where and how can you get it or make it?

Donkeys are available across Kenya with larger number of its population drawn from high agricultural potential counties like Kiambu, Kirinyaga and Nyandarua. Donkeys are purchased in various markets.

Skills needed to produce, install. maintenance, use:

Skills needed to maintain and use donkeys are simple; The animals should be fed well and once in a while

checked by a vet. donkeys should be housed in shelters that protect them from harsh weather.They should be vaccinated against rabies annually and dewormed every three months.There is no actual skills in using donkeys; The work simply entails loading, directing donkeys as well as unloading cargo from the cart or donkeys back by the user.

How to use it:

https://youtu.be/HTx8SwNul_c (copyright (2018) KTN News Kenya)

How to maintain it:

Not relevant

Climate effect (if any):

The use of donkeys for transport avoids the burning of fossil fuels like gasoline and diesel from other means of transport like vehicles which release carbon dioxide, a greenhouse gas, into the atmosphere.

Why is it successful?

Donkeys are a cheaper means of transport compared to vehicle pick-ups and have capacity to ferry a considerable quantity of goods. They enhance accessibility to hard-to-reach areas;They access with ease the earth roads during rainy seasons, foot paths and marshy areas which cannot not be accessed using other means of transport such as cars and motorbikes.

If you can make it, a short description, typical problems, materials needed:

Not relevant

How to make it (if possible):

Not relevant

How is it delivered and by whom?

Donkeys are sold and purchased at various markets, after which the owners take them home by themselves.

Successful financial model

What policies and strategies helped the success?

The Kenyan government imposed a ban on the slaughter of donkeys in 2020 to control the unprecedented and unsustainable demand for Donkey skins in kenya,but was later lifted by the High Court in 2021. In Kenya, the donkey was gazetted as a food animal in the year 1999 (GoK, 1999) with the aim of curbing backyard slaughter, improving food safety and stimulating donkey production in response to market availability. An increase in global demand for donkey meat and skin led to establishment and licensing of four donkey slaughterhouses.The export donkey slaughterhouses were established, licensed and operationalized within the period 2016 and 2018.

More info:

https://www.standardmedia.co.ke/business/opinion/article/2001376330/why-rural-kenyan-communities-rely-on-donkey-for-daily-economic-activities

Sources:

https://www.standardmedia.co.ke/business/opinion/article/2001376330/why-rural-kenyan-communities-rely-on-donkey-for-daily-economic-activities
https://www.standardmedia.co.ke/business/enterprise/article/2001260297/so-you-want-to-start-a-donkey-transport-business photo 1(cc, the star) 2(cc istock) 3(cc voanews)

Case uploaded:

2022-03-16

Using Oxen for Farming





Why to choose this solution?

Savings per day or production:

The solution contributes to saving money that would have been spent on labour. Two oxen, operated by two people, on average can plough an acre per day which would take at least 25 people to perform the same task. There is also saving on time which enables timely sowing.

Cost in money and in own time to construct:

One has to buy or breed two animals (usually bulls) and will require an ox-plough set. The animals need to be acquired when still young so the cost is comparatively low at the time of acquiring e.g. about USD 120, depending on area, then the ox-plough costs about USD 15. One may need to consider the costs involved in caring and training the animals until they are ready to start farming.

Lifetime:

Depending on the care provided by the owner (this includes avoiding overworking the animals), the pair may remain productive for over 5 years.

Maintenance needed:

The animals need to be well fed, treated well in case of any ailments and not overworked. The ox-plough itself requires minor maintenance and replacements of parts that may break.

Resources needed in use:

Problems and limits:

Both the animals and operators need to be trained. Also being living things the animals may be prone to disease, accidents etc.

Where and how can you get it or make it?

The animals can be bred by the farmer himself or bought from other farmers. The ox-plough are readily available in local markets and shops in areas where ox-ploughing is practiced.

Skills needed to produce, install. maintenance, use:

Both the animals and operators need to be trained.

How to use it:

How to maintain it:

Climate effect (if any):

No outstanding climate effect attributable, but is safer to the environment compared to the tractor because of lesser emissions.

Why is it successful?

It is woven in the cultural fibre of the people where it is practiced. It saves a lot on man-power and time used for ploughing and sowing.

If you can make it, a short description, typical problems, materials needed:

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

Two main models exist: Farmers who own oxen and ploughing set. They use the oxen to plough their gardens, then they are also hired to plough their neighbours gardens. The second model is where the person operates the oxen purely for business being hired to plough other peoples gardens and farms.

What policies and strategies helped the success?

More info:

Sources:

Case uploaded:

2022-12-30

Electric 3-Wheeler, E-Bike, E-Motorbike, E-BodaBoda






Why to choose this solution?

Electric vehicles have a lot of advantages compared to combustion engine vehicles; they are cheaper, do not pollute the air hence reducing public health spending, and are more comfortable as they are less noisy. The e-vehicles have rechargeable battery, which can be charged at night at home.

Savings per day or production:

E-vehicles are less expensive for fuel and maintenance compared to combastion engine vehicles. The cost of fuel is reduced by 70%, as electricity is cheaper than petrol and diesel. The maintenance cost is minimal as e-vehicles need less maintenance.

Cost in money and in own time to construct:

The electrical vehicles can be constructed in different sizes from two-, three- to four-wheelers and for different purposes like private use, and commercial cargo uses. Its cost depends on size, capacity and use from USD 660 to 6,260.

Lifetime:

Depends on handling or how properly used and maintained by the user.

Maintenance needed:

There is no need of regular technical services. There is only need of proper handling by the user.

Resources needed in use:

Electric Vehicles (EVs) use electricity from the battery storage charged by normal electric supply.

Problems and limits:

Currently, the available electric 3/2 wheelers like tuk-tuks, boda-bodas, and e-scooters are limited by lack of convenient and affordable charging facilities, as well as standardization of chargers and batteries. Policies and regulations are major barriers to accelerating the e-mobilty adoption. The production facilities are still in small scale, but it is growing rapidly. This will create jobs, and will bring the price down.

Where and how can you get it or make it?

Available as being imported from China and India and by being retrofitted. There are companies started assembling and producing them.

Skills needed to produce, install. maintenance, use:

Assembling and retrofitting of electric three-wheelers/EVs require skilled and experienced engineers (electrical & mechanical engineer, electromechanical engineers). Major repair and maintenance require skilled technicians otherwise trained operators may do minor maintenance of the vehicle.

How to use it:

Training is required from Vocational Education and Training Authority (VETA) or from any other recognized institution.

How to maintain it:

Major repair and maintenance require skilled technicians otherwise trained operators may do minor maintenance of the vehicle.

Climate effect (if any):

Contribute to reducing greenhouse gas (GHG) emission from fossil fuels vehicles (petrol & diesel vehicles), which increase the global warming effects that has a high impact on the country and socio-economic factors such as human health, poverty, low agricultural production, etc. The transport sector globally contributes one-quarter of all energy-related emitted greenhouse gases, which is expected to reach to one-third by 2050. Fuel demand by the transport sector is expected to increase rapidly due to urbanization and economic growth which also worsens global climate change.

Why is it successful?

The electric three-wheelers are very efficient and can be operated easily with no carbon emissions as they are charged by electricity, or minigrids, which is produced by renewable energy. It has a great contribution to the improvement of air quality through the reduction of greenhouse gas (GHG) emissions associated with fossil fuel transportation. Also, the prices of electric three-wheelers and operational costs are affordable by the majority.

If you can make it, a short description, typical problems, materials needed:

E-mobility is currently considered as the best solution for the environment in terms of public and personal transportation for better air quality, combating climate change, and economic relief compared to fossil-fueled mobility. In Africa, there is an increasing demand, and several assemblying facilities are has started. The electric mobility/vehicles are imported as components, and the assembling requires trained technical personnel and engineers. For the part of retrofitting, some of the spares are also imported. The spares/components/materials needed include an electric motor (DC motor), motor controller, cell unit (chargeable battery), charger system, and charging infrastructures, the other parts remain the same as other fossil-fueled vehicles.

How to make it (if possible):

Electric vehicle manufactured in factories and special engineering knowledge is required.

How is it delivered and by whom?

Successful financial model

UN-Habitat is financing and facilitating the development of pilot projects introducing electric vehicles. There are also examples of facilitating to rent the battery or get a loan to buy a vehicle, like a partnership of Roam Air with M-Kopa in Kenya.

What policies and strategies helped the success?

In Tanzania, the Climate Mitigation Strategy-2012 promotes fuel switching in transport systems and low-emission transport via mass rapid transport systems.

More info:

In Tanzania: E-motion https://e-motion.africa/ and eMo BodaBoda https://www.emobodaboda.co.tz/ ; In Kenya: ROAM AIR https://www.roam-electric.com/ Kibo Bike https://kibo.bike/ ; In Uganda: BodaWerk https://bodawerk.com/mobility/ UNFCCC: https://unfccc.int/news/advancing-electric-mobility-in-africa UNEP: https://www.unep.org/explore-topics/transport/what-we-do/global-electric-mobility-programme and ICI:
https://www.international-climate-initiative.com/en/iki-media/news/electric_2_and_3_wheelers_in_east_africa_and_southeast_asia/

Sources:

Case uploaded:
2022-12-30

Electric Bicycles - Bicycles Helped with a Motor





Why to choose this solution?

Electric bicycles offer a mobility which is in between bicycles and motorbikes. Changing from combustion engine motorcycles, you reduce the CO2 emission, air pollution, and noise. Compared to a normal bike, the electric motor helps you to drive faster and longer, and the rechargeable battery can be charged at night at home and at other electric outlets. For times or places without electricity to recharge, it is still possible to drive the bike by man power, as a normal bike.

Savings per day or production:

The cost of fuel is reduced by at least 70% compared to combustion engine motorbikes as electricity is cheaper than petrol and diesel.

Cost in money and in own time to construct:

The prices differ according to models for usages like private, cargo, re-used or new, from USD 400 to 1000. They can ride from 40 to 80 km by one charge with up to 25 km/h carrying 120 kg. A model driving 80 km in one charge costs USD 765 in Kenya.

Lifetime:

Bicycles itself last 10-20+ years. The battery lasts about 5 years, when it needs to be changed or you can continue use the bike without motor.

Maintenance needed:

It needs normal maintenance for bikes. You can adjust, how much the battery helps, from 25% to 100%. It is faster than normal bikes, so brakes need to be regularly checked, and helmet is need to be used. When there is no more power in the battery, you need to recharge it, if you want the motor to help.

Resources needed in use:

Electric bikes are normal bikes, which need the user to pedal for it to ride and has a motor helping to ride faster and up hill. Man power is always required and if you need the motor to help, the electricity is from the battery, which can be charged by normal electric plug.

Problems and limits:

The starter price is higher compared to a normal bike, but cheaper than a motorbike. The battery has a limitation of how many km it can power to ride depending on the models, and how much the motor is used. The battery is expensive to change after the 5 years.

Where and how can you get it or make it?

The electric bikes are available in shops and e-bike companies, which are importing, manufacturing or assembling them. There are companies, which convert bikes to electric bikes by attaching motor and battery. There are programs, and associations promoting bicycles and e-bicycles for community use by donating, renting or for reduced price.

Skills needed to produce, install. maintenance, use:

How to use it:

How to maintain it:

Climate effect (if any):

Using e-bikes reduces greenhouse gas emissions compared to fossil fuel vehicles.

Why is it successful?

It is succesful because it is a smart and cheap way of transportation. Cheap because it does not need fuels just energy from the battery, and in times of lack of energy, you can just use the pedals as a normal bike.

If you can make it, a short description, typical problems, materials needed:

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

Loan, renting or leasing. Battery can be owned by a company with charging stations. Companies using it to employees delivering goods brings savings, and good image. Support and donations to community use as waste collection, water carriage for women, ambulance, and school children during school period, which is increasing school attendance.

What policies and strategies helped the success?

More info:

First African Bicycle Information Organization (FABIO), AfricroozEs bikes: https://fabio.or.ug/; eBee: https://ebee.africa/ and African Ebike: https://african-ebike.de/en/

Sources:

Case uploaded:

2022-12-01

Bicycles in Tanzania





Why to choose this solution?

Bicycles are used for productive activities, transporting both people and goods. Cycling is a cheap mode of transport, certainly when compared with traveling by car or by any motor vehicle. It is faster than walking and is not easily impeded by traffic jams. A large percentage of cycling also supports income-generating activities in Tanzania.

Savings per day or production:

Reduction of transport-related expenses, including time requirements, benefiting households as well as small businesses that use bicycles.

Cost in money and in own time to construct:

New and used bicycles are available from many shops all over the country. Depending on condition, their prices range from TSh 150,000 to 300,000. A bicycle can last for five years or more, depending on usage, handling, and maintenance by its user(s).

Lifetime:

Depending on handling and maintenance by the user and frequency of use, bicycle can last for more than 5 years.

Maintenance needed:

Cleaning, lubrication, protection from the elements, and repair of small damages will keep it in working order for years. Requires some training or relevant experience, simple materials, and small tools.

Resources needed in use:

Bicycles run on metabolic â€œhuman powerâ€•. New in the bicycles market are the e-bikes, which are mechanically boosted, so it can partially power the bicycle through a battery.

Problems and limits:

Exposure to road accidents is high, especially in crowded and heavy traffic areas, given the lack of dedicated lanes for cyclists. Bicycles are less comfortable than vehicles.

Where and how can you get it or make it?

Available in many regions and shops in Tanzania. Requires training or applicable experience, tools, and supplies to assemble correctly.

Skills needed to produce, install. maintenance, use:

Simple but specific training is required to use, and repair bicycles that are safe to ride. Do-It-Yourself guides for simple repairs and maintenance include those found at https://www.bicycling.com/repair/

How to use it:

https://www.youtube.com/watch?v=74csHhg5WAQ

How to maintain it:

Simple but specific training is required to use, and repair bicycles that are safe to ride. Do-It-Yourself guides for simple repairs and maintenance.

Climate effect (if any):

Transport, largely fossil-fuelled, is the third-largest source of CO2 emissions. Bicycles produce zero carbon emissions. Further, bicycles donâ€™t chew up the roads as motorized vehicles do. They are a far more sustainable technology, as it takes much less energy, along with fewer and less toxic materials, to make a bicycle than it does to manufacture any motor vehicle.

Why is it successful?

Bicycles have many benefits, including pollution and CO2-emission reductions as well as ease of maneuvering and operation. Of all transport other than walking, they incur the lowest costs in maintenance. Daily or regular bicycle-riding usually has positive effects on ridersâ€™ fitness. Cycling functions even with little or no upgraded infrastructure, and bicycles do not occupy large parking spaces.

If you can make it, a short description, typical problems, materials needed:

How to make it (if possible):

How is it delivered and by whom?

Supply is demand-driven. There are many suppliers, distributors, and agents all over Tanzania. MeTL Groupâ€™s National Bicycle Company (NABICO) is a major manufacturer and assembler of bicycles in Tanzania. Also, there are several clubs for cyclists in the country.

Successful financial model

Prices of bicycles (new or used) and operational costs are affordable by the majority.

What policies and strategies helped the success?

Tanzaniaâ€™s transport policy include bicycles. Bicycles do not need a road license, there are no road penalties for cyclists, etc. In addition, bicycle shops are located throughout the country, facilitating access.

More info:

https://www.poverty.ch/measuring-the-impact-of-bicycles-in-tanzania/ , https://www.youtube.com/user/WorldBicycleRelief , https://onebiketz.com/ , http://www.bikeinafrica.com/ (English & French), especially â€œLoving Tanzaniaâ€• by bike. https://www.bicycling.com/repair/. YouTube Channel for â€œAfricaâ€™s Cycling Revolutionâ€• (English): https://www.youtube.com/c/Olympics/search?query=africa%27s%20cycling%20revolution

Sources:

Case uploaded:

2021-03-12

Bicycles in Uganda





Why to choose this solution?

Bicycles are the principal means of transportation in many regions of the Republic of Uganda. They also provide a popular form of recreation, and have been adapted for use as toys for children, general fitness, military and police applications, courier services, bicycle racing, and bicycle stunts. The bicycle is a simple, affordable, reliable, clean and environmentally sustainable means of transportation. It serves as a tool for development and as a means not just of transportation but of access to education, health care, and sport. The synergy between the bicycle and the user fosters creativity and social engagement. It gives the user an immediate awareness of the local environment. This humble symbol of sustainable transportation conveys a positive message to foster more sustainable consumption and production. It has a positive impact on climate.

Savings per day or production:

Bicycle-riding avoids fossil-fueled transport and, thus, reduces carbon emissions and decreases the need for more roadways. Insofar as it replaces driving, it reduces landfill waste. An astonishing 75% of the parts of a bicycle are recyclable. Bicycle use improves air quality because it is a zero -emissions way to get from place to place. It also can help protect wildlife. Bicycling can reduce stress, improve respiratory health, maintain strength and balance, and effectively reduce healthcare expenses. It can reduce or eliminate expenditures on daily transportation, car insurance, and parking.

Cost in money and in own time to construct:

A bicycle costs about USh 250,000-500,000 (USD 71.4- 142). However, the price depends on the size, and purpose of the bicycle.

Lifetime:

About 15 years, but the lifetime depends on the how the owner handles it through maintenance.

Maintenance needed:

Keep the bicycle clean by washing it regularly. The drive train should be kept clean and well lubed. A chain cleaner tool will make chain cleaning much easier. Check the tire pressure always and ensure nuts and bolts are tight. Brakes should be checked regularly, index the gears. Replace components damaged by excessive wear and tear.

Resources needed in use:

Knowledge on how to ride.

Problems and limits:

Bicycles are slower compared to other means of transport. Bicycles are also weather sensitive as a rider is not protected from rain, sunshine and dust. Bicycle seats are not comfortable compared to other means of transport. Riding for long time is tiring, and sometime ends up causing wrist and back pain. Bicycles are not easily traced once stolen. Flat tires, inability to carry much cargo, challenges of route and traffic and fear of the unknown are potential impediments.

Where and how can you get it or make it?

They can be accessed through bicycle houses, bicycle shops, bicycle garages in Uganda. Bicycles sometimes may be bought second hand from individuals who no longer need it.

Skills needed to produce, install. maintenance, use:

Production requires skilled personnel. Use of the bicycle requires a physical ability to ride it.

How to use it:

Not relevant.

How to maintain it:

Bicycle parts should be kept clean and properly lubricated for good performance.

Climate effect (if any):

Bicycles are environmentally friendly since they do not emit any carbon in the atmosphere like fossil-fueled means of transport. Use of bicycles (and walking) are the only ways to cut carbon emissions in urban transportation.

Why is it successful?

Apart from walking, bicycles are the cheapest means of transportation and are the most environmentally friendly forms of transportation. Riding a bicycle is a physical task that can also serve as healthy exercise.

If you can make it, a short description, typical problems, materials needed:

Production needs skilled personnel and to use the bicycle it needs knowledge on how to ride it.

How to make it (if possible):

Not relevant.

How is it delivered and by whom?

Bicycle models are advertised by shops and by manufacturers. Sales and discounts may be offered by the bicycle house or shops.

Successful financial model

Offering retail sales of new bicycles. Offering discounts for wholesalers. Sale promotions, especially during celebrations.

What policies and strategies helped the success?

The government has stopped overlooking the bicycle in its policies, budgeting, taxing and other major activities. The private sector has also been innovative by pushing the government to remove taxes. The civil society has also raised its voice and pushed governments, as well as private sector actors and users to greater and more efficient use of bicycles.

More info:

http://www.jugendhilfe-ostafrika.de/wp-content/uploads/2011/12/Overview-bicycles-Uganda.pdf

Sources:

http://wedocs.unep.org/bitstream/handle/20.500.11822/25414/uganda_nmtpolicy.pdf?sequence=1&isAllowed=y

Case uploaded:

2020-10-15

Buffalo Bicycles in Kenya







Why to choose this solution?

Providing bicycles to the students through Plan International helps improve pupilsâ€™ academic performances, since time saved in travel to and from school will be taken to study after arriving early and the ability to depart later if needed. The bicycles are a clean and environmentally sustainable means of transportation which gives their users ease and independence of mobility. They have been seen to increase student retention rates, especially among those who otherwise would drop out of school due to teen pregnancies.

Savings per day or production:

Saves travel time spent by students who otherwise must walk long distances to and from school. Providing a quality, durable bicycle to improve access to education is both simple and a more cost-effective way to improve childrenâ€™s education than constructing more schools or implementing dedicated bus or taxi services.

Cost in money and in own time to construct:

The bicycles were donated by Plan International Kenya in partnership with World Bicycle Relief through the organization of the Bicycle Education Empowerment Program (BEEP).

Lifetime:

About 15 years with proper maintenance.

Maintenance needed:

Community members have been trained as bicycle mechanics to repair and maintain bicycles. Parents whose children have benefitted from the program, have the responsibility to ensure the bicycles are maintained and well used for the intended purposes. Some maintenance is needed, including regularly washing the bicycle as well as regularly checking the brakes and the tire pressure. Users also must ensure that nuts and bolts are and remain tight. Worn and damaged components must be replaced promptly.

Resources needed in use:

The students need to learn how to ride bicycles.

Problems and limits:

Cycling is affected by bad weather, especially during rainy days, rendering some parts of the road impassable. High â€œwet bulb temperatures â€˜â€™ (heat/humidity combinations) may also threaten a studentâ€™s health.

Where and how can you get it or make it?

Available at Plan International Kisumu.

Skills needed to produce, install. maintenance, use:

Production requires skilled personnel. Use of the bicycle requires a physical ability to ride it.

How to use it:

Not relevant.

How to maintain it:

Not relevant.

Climate effect (if any):

Bicycles are environmentally friendly since they do not emit any carbon to the atmosphere like other means of transport (diesel fleet emissions). Apart from walking, use of bicycles is the only way to cut carbon emissions in urban transportation.

Why is it successful?

BEEP providesdurable, reliable bicycles, significantly reducing the studentsâ€™ travel time to school. The bicycles are a cost effective way to improve educational outcomes for adolescent girls, and an appropriate technology to address long distances facing rural students.

If you can make it, a short description, typical problems, materials needed:

Production requires skilled personnel. Use of the bicycle requires a physical ability to ride it.

How to make it (if possible):

Not relevant

How is it delivered and by whom?

The bicycles were delivered by Plan International as a donation targeting 70% of the girls and 30 % of the boys within the selected schools. Creation of a diverse committee ensured deep community involvement. Incentives were provided for bicycle maintenance and care as well as for school attendance through study-to-own contracts signed by students and parents. Training provided to bicycle mechanics ensured that the bicycles remained in good working order, are some of the successful business models.

Successful financial model

Successful partnerships with the World Bicycle Relief (WBR).

What policies and strategies helped the success?

The local community was incorporated into the management of the programme (Bicycle for Education Empowerment Programme) through Bicycle Supervisory Committees, which act as the focal points for implementation of the programme. The committee helps to identify children who would benefit most from a bicycle, monitors the usage of the bicycles, and oversees the work of the field mechanics.

More info:

https://plan-international.org/kenya

Sources:

Plan International Kenya. Methodist Ministries Centre, Block C, 2nd floor Nairobi. P. O. Box 25196-00603 Kenya. T: +254 709 859000 / +254 20 2761000. Kenya.Co@plan-international.org

Case uploaded:

2021-02-23

Electric Bicycles - Bicycles Helped with a Motor





Why to choose this solution?

Electric bicycles offer a mobility which is in between bicycles and motorbikes. Changing from combustion engine motorcycles, you reduce the CO2 emission, air pollution, and noise. Compared to a normal bike, the electric motor helps you to drive faster and longer, and the rechargeable battery can be charged at night at home and at other electric outlets. For times or places without electricity to recharge, it is still possible to drive the bike by man power, as a normal bike.

Savings per day or production:

The cost of fuel is reduced by at least 70% compared to combustion engine motorbikes as electricity is cheaper than petrol and diesel.

Cost in money and in own time to construct:

The prices differ according to models for usages like private, cargo, re-used or new, from USD 400 to 1000. They can ride from 40 to 80 km by one charge with up to 25 km/h carrying 120 kg. A model driving 80 km in one charge costs USD 765 in Kenya.

Lifetime:

Bicycles itself last 10-20+ years. The battery lasts about 5 years, when it needs to be changed or you can continue use the bike without motor.

Maintenance needed:

It needs normal maintenance for bikes. You can adjust, how much the battery helps, from 25% to 100%. It is faster than normal bikes, so brakes need to be regularly checked, and helmet is need to be used. When there is no more power in the battery, you need to recharge it, if you want the motor to help.

Resources needed in use:

Electric bikes are normal bikes, which need the user to pedal for it to ride and has a motor helping to ride faster and up hill. Man power is always required and if you need the motor to help, the electricity is from the battery, which can be charged by normal electric plug.

Problems and limits:

The starter price is higher compared to a normal bike, but cheaper than a motorbike. The battery has a limitation of how many km it can power to ride depending on the models, and how much the motor is used. The battery is expensive to change after the 5 years.

Where and how can you get it or make it?

The electric bikes are available in shops and e-bike companies, which are importing, manufacturing or assembling them. There are companies, which convert bikes to electric bikes by attaching motor and battery. There are programs, and associations promoting bicycles and e-bicycles for community use by donating, renting or for reduced price.

Skills needed to produce, install. maintenance, use:

How to use it:

How to maintain it:

Climate effect (if any):

Using e-bikes reduces greenhouse gas emissions compared to fossil fuel vehicles.

Why is it successful?

It is succesful because it is a smart and cheap way of transportation. Cheap because it does not need fuels just energy from the battery, and in times of lack of energy, you can just use the pedals as a normal bike.

If you can make it, a short description, typical problems, materials needed:

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

Loan, renting or leasing. Battery can be owned by a company with charging stations. Companies using it to employees delivering goods brings savings, and good image. Support and donations to community use as waste collection, water carriage for women, ambulance, and school children during school period, which is increasing school attendance.

What policies and strategies helped the success?

More info:

First African Bicycle Information Organization (FABIO), AfricroozEs bikes: https://fabio.or.ug/; eBee: https://ebee.africa/ and African Ebike: https://african-ebike.de/en/

Sources:

Case uploaded:

2022-12-01