

2020-2060

REAP AQUA SOLAR HYBRID LTD INFRASTRUCTURE MASTERPLAN FOR GHANA

The aim of this Project is to ensure that Ghana's ongoing industrialization drive spreads to every part of the country, as opposed to the current situation where the vast majority of manufacturing facilities are located in the largest urban areas, namely Accra, Tema, Kumasi, Takoradi and Tamale. To reach this ambitious Goal it is essentially to supply each of the 218 districts with water, electricity and state of the art infrastructure.

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PROPOSAL INFRASTRUCTURE MASTERPLAN FOR GHANA

THE MILESTONES.

1

SELECTION OF 18 LOCATIONS FOR THE INSTALLATION OF AQUA SOLAR POWER & WATER PLANTS

As the basis for the program „Water, Electricity and Jobs for 218 Districts in Ghana”, we propose the construction of our patented power & water plants. So we are able to supply the planned projects with the necessary resources. The suitable Locations must be carefully selected by the Government of Ghana.

2

BUILDING OF THE 18 AQUA SOLAR FACILITIES ON THE SELECTED LOCATIONS More than 3.000 Jobs are created.

Electricity with 24 hours storage for more than 150.000 Households at a price of 0,05 € per Kwh .
High Quality minerlized Drinking Water for more than 2.5 Million Households at a price of 0,48 € per 1000 Liter

3

LAYING OF 4500 KILOMETER „MULTI PURPOSE PIPELINES” To provide the produced Power & Water to all 218 targeted Districts.

In cooperation with the world market leader in the field of trenchless pipe and cable laying, we are able to lay a multi purpose pipeline for water, electricity and high speed fiber optic internet. All this with an incredible **performance of 10.000 metres per day!**

4

BUILDING OF 18 SMART ECO CENTERS Beside the Aqua Solar Plant there are Health, Education Facilities

The integrated remote TeleMed Health Center connected with the main Hospitals via the broadband Technology can now **allow rural patients to see specialists without leaving their communities.** The Center provides smart remote e-learning system to the rural citizens. they now **have access to unlimited education.** Integration of Ghana’s universities is possible and desired.

5

FURTHER DEVELOPMENT OF SMART ECO CENTERS INTO COMPLETE SMART ECO CITIES. Up to 13.000 Jobs are created during Construction.

Further development of the smart eco centers into complete smart eco cities. Modern living combined with smart factories, sustainable ressource management and electrical mobility. With this Concept Ghana becomes the most ecologically conscious country in Africa. The Health and Education System will be the basis for establishing of international Factories and permanent Jobs.

6

TRANSFORMATION OF TRADITIONAL AGRICULTURAL AREAS INTO MODERN AND HIGHLY EFFICIENT AGRO INDUSTRIES.

We define agriculture tech as technology that increases the efficiency of farms. Together with several innovative Agro-Companies the Team of RASH LTD will develop a revolutionary sustainable agricultural concept for Ghana including the Smart Agro Training Centers where Farmers can learn from leading Experts in the modern agricultural Industry

7

BUILDING OF SMART ASSEMBLING FACTORIES AS PART OF EACH SMART ECO CITY. Minimum Target of 9.000 Jobs should be created.

RASH LTD goal is the acquisition of at least one international company which build a joint venture factory at the 18 Eco City locations. Each Factory with at least 500 local workers. Main Categories of assembled products will be automotive, laptops, smartphones, TVs, home appliances, renewable energy equipment.

8

BUILDING OF SMART ASSEMBLING FACTORIES AS PART OF EACH SMART ECO CITY. Minimum Target of 18.000 Jobs should be created.

RASH LTD wants to focus on the acquisition of internationally active companies. Following products should be produced in joint venture factories with at least 1000 workers ... building materials, food, pharma products, chemicals, agro-products etc. We should preferably choose companies that bring know-how into the country and train the employees based on the dual education program.

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PHASE 1

The main goal of this phase is the supply of 218 districts with water, electricity and high speed internet.

Step 1

Experts from the relevant ministries should select 18 sites for the construction of the aqua solar power stations.

Step 2

Our partners from germany erect the facilities using local workers. More than 3000 jobs are created during the construction phase.

Step 3

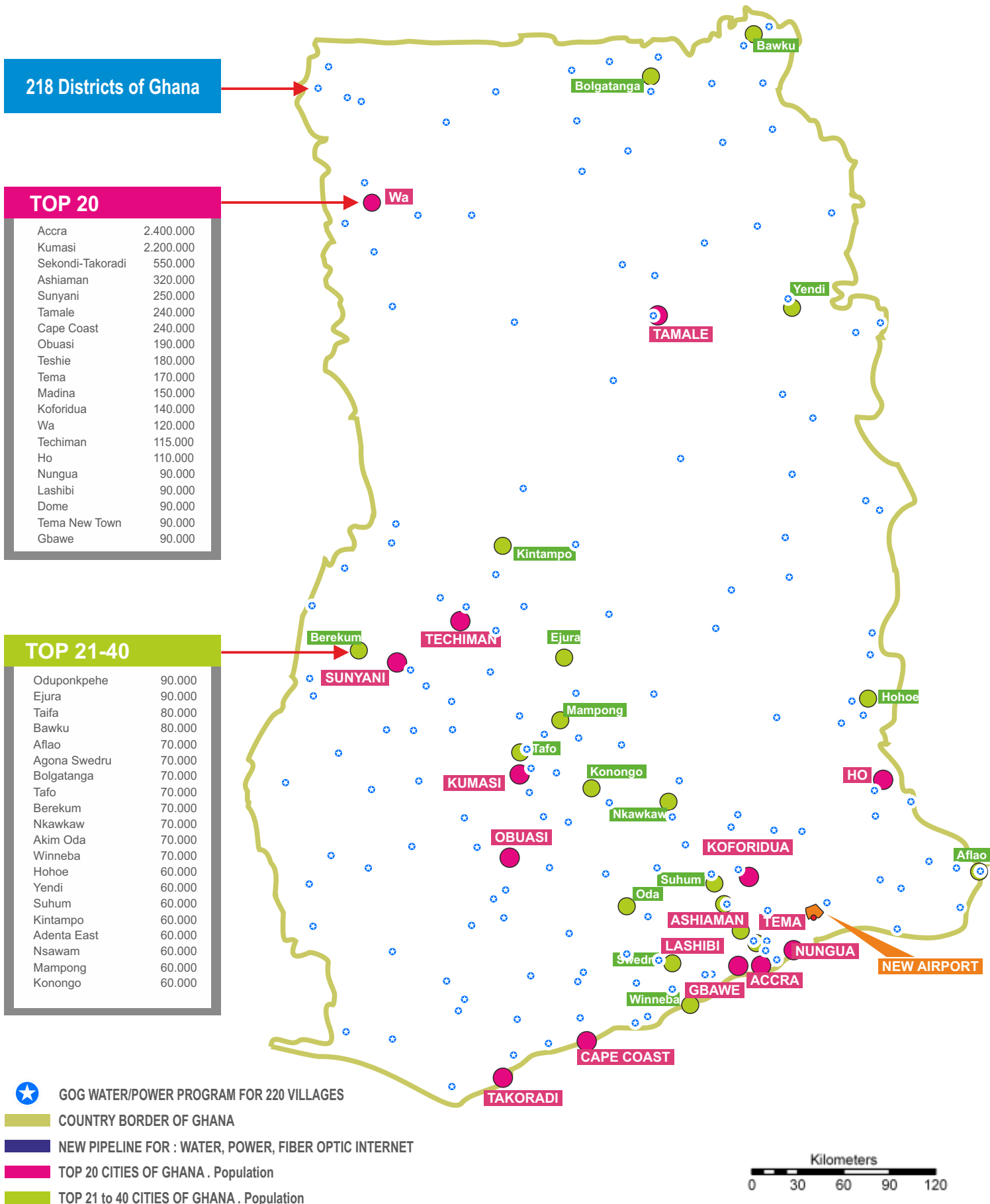
With the help of the patented german technology for the laying of pipelines, up to 4500 kilometers of multi-purpose-pipelines are installed. This allows all 218 districts to be supplied with water, electricity and high speed internet. More than 1700 jobs are created during the construction phase.

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INFRASTRUCTURE MASTERPLAN FOR GHANA

TARGET AREAS:



INFRASTRUCTURE MASTERPLAN FOR GHANA

List of all Districts in Ghana

TARGET AREAS:



1.1.	Adansi North District (map)	3.16	Mfantseman Municipal District	6.26	Zabzugu District
1.2.	Adansi South District	3.17	Twifo Atti - Mokwa District	7.1.	Bawku Municipal District
1.3.	Afigya-Kwabre District	3.18	Twifo Hemang - Lower Denkyira District	7.2.	Bawku West District
1.4.	Ahafo-Ano North District	3.19	Upper Denkyira East Municipal District	7.3.	Binduri District
1.5.	Ahafo-Ano South District	3.20	Upper Denkyira West District	7.4.	Bolgatanga Municipal District
1.6.	Amansie Central District	4.1.	Akwapim North Municipal District	7.5.	Bongo District
1.7.	Amansie West District	4.2.	Akwapim South District	7.6.	Builsa North District
1.8.	Asante-Akim Central Municipal District	4.3.	Akyemansa District	7.7.	Builsa South District
1.9.	Asante-Akim North District	4.4.	Asuogyaman District	7.8.	Garu-Tempene District
1.10.	Asante-Akim South District	4.5.	Atiwa District	7.9.	Kassena Nankana Municipal District
1.11.	Asokore-Mampong Municipal District	4.6.	Ayensuano District	7.10.	Kassena Nankana West District
1.12.	Atwima-Kwanwoma District	4.7.	Birim Central Municipal District	7.11.	Nabdram District
1.13.	Atwima-Mponua District	4.8.	Birim North District	7.12.	Pusiga District
1.14.	Atwima-Nwabiagya District	4.9.	Birim South District	7.13.	Talensi District
1.15.	Bekwai Municipal District	4.10.	Denkyembour District	8.1.	Daffama-Bussie-Issa District
1.16.	Bosome-Freho District	4.11.	East Akim Municipal District	8.2.	Jirapa District
1.17.	Bosomtwe District	4.12.	Fanteakwa District	8.3.	Lambussie Kari District
1.18.	Ejisu-Juaben Municipal District	4.13.	Kwaebibirem District	8.4.	Lawra District
1.19.	Ejura-Sekyedumase District	4.14.	Kwahu Afram Plains North District	8.5.	Nadowli-Kaleo District
1.20.	Kumasi Metropolitan District	4.15.	Kwahu Afram Plains South District	8.6.	Nandom District
1.21.	Kumawu District	4.16.	Kwahu East District	8.7.	Sissala East District
1.22.	Kwabre East District	4.17.	Kwahu South District	8.8.	Sissala West District
1.23.	Mampong Municipal District	4.18.	Kwahu West Municipal District	8.9.	Wa East District
1.24.	Obuasi Municipal District	4.19.	Lower Manya Krobo Municipal District	8.10.	Wa Municipal District
1.25.	Offinso Municipal District	4.20.	New Juaben Municipal District	8.11.	Wa West District
1.26.	Offinso North District	4.21.	Nsawam - Adoagyire Municipal District	9.1.	Adaklu District
1.27.	Sekyere-Afram Plains District (map)	4.22.	Suhum Municipal District	9.2.	Afadzato South District (Afadzato District)
1.28.	Sekyere Central District	4.23.	Upper Manya Krobo District	9.3.	Agotime-Ziope District
1.29.	Sekyere East District	4.24.	Upper West Akim District	9.4.	Akatsi North District
1.30.	Sekyere South District (map)	4.25.	West Akim Municipal District	9.5.	Akatsi South District
2.1.	Asunafo North Municipal District	4.26.	Yilo Krobo Municipal District	9.6.	Biakoye District
2.2.	Asunafo South District	5.1.	Accra Metropolitan District	9.7.	Central Tongu District
2.3.	Asutifi District	5.2.	Ada West District	9.8.	Ho Municipal District
2.4.	Asutifi South District	5.3.	Adenta Municipal District	9.9.	Ho West District
2.5.	Atebubu-Amantin District	5.4.	Ashaiman Municipal District	9.10.	Hohoe Municipal District
2.6.	Banda District	5.5.	Dangme East District	9.11.	Jasikan District
2.7.	Berekum Municipal District	5.6.	Ga Central Municipal District	9.12.	Kadjebi District
2.8.	Dormaa East District	5.7.	Ga East Municipal District	9.13.	Keta Municipal District
2.9.	Dormaa Municipal District	5.8.	Ga South Municipal District	9.14.	Ketu South Municipal District
2.10.	Dormaa West District	5.9.	Ga West Municipal District	9.15.	Ketu North District
2.11.	Jaman North District	5.10.	Kpone - Katamanso District	9.16.	Kpando Municipal District
2.12.	Jaman South District	5.11.	La Dade-Kotopon Municipal	9.17.	Krachi East District
2.13.	Kintampo North Municipal District	5.12.	La-Nkwantanang-Madina District	9.18.	Krachi-Nchumuru District
2.14.	Kintampo South District	5.13.	Ledzokuku-Krowor Municipal District	9.19.	Krachi West District
2.15.	Nkoranza North District	5.14.	Ningo - Prampam District	9.20.	Nkwanta North District
2.16.	Nkoranza South Municipal District	5.15.	Shai - Osudoku District	9.21.	Nkwanta South District
2.17.	Pru District	5.16.	Tema Metropolitan District	9.22.	North Dayi District
2.18.	Sene East District	6.1.	Bole District	9.23.	North Tongu District
2.19.	Sene West District	6.2.	Bunkpurugu - Yunyoo District	9.24.	South Dayi District
2.20.	Sunyani Municipal District	6.3.	Central Gonja District	9.25.	South Tongu District
2.21.	Sunyani West District	6.4.	Chereponi District	10.1.	Ahanta West District
2.22.	Tain District	6.5.	East Gonja District	10.2.	Aowin District
2.23.	Tano North District	6.6.	East Mamprusi District	10.3.	Suaman District
2.24.	Tano South District	6.7.	Gushiegu District	10.4.	Bia District
2.25.	Techiman Municipal District	6.8.	Karaga District	10.5.	Bia East District
2.26.	Techiman North District	6.9.	Kpandai District	10.6.	Bibiani-Anhwiaso-Bekwai District
2.27.	Wenchi Munic	6.10.	Kumbungu District	10.7.	Bodi District
3.1.	Abura - Asebu - Kwamankese District	6.11.	Mamprugo-Moaduri District	10.8.	Ellembelle District
3.2.	Agona East District	6.12.	Mion District	10.9.	Jomoro District
3.3.	Agona West Municipal District	6.13.	Nanumba North District	10.1.	Juaboso District
3.4.	Ajumako-Enyan-Essiam District	6.14.	Nanumba South District	10.1.	Mpohor-Wassa East District
3.5.	Asikuma - Odoben - Brakwa District	6.15.	North Gonja District	10.1.	Mpohor District
3.6.	Assin North Municipal District	6.16.	Saboba District	10.1.	Nzema East Municipal District
3.7.	Assin South District	6.17.	Sagnerigu District	10.1.	Prestea-Honi Valley District
3.8.	Awutu-Senya District	6.18.	Savelugu-Nanton Municipal District	10.1.	Sefwi-Akontombra District
3.9.	Awutu Senya East Municipal District	6.19.	Sawla-Tuna-Kalba District	10.1.	Sefwi-Wiaso District
3.10.	Cape Coast Metropolitan District	6.20.	Tamale Metropolitan District	10.1.	Sekondi-Takoradi Metropolitan District
3.11.	Effutu Municipal District	6.21.	Tatale-Sangule District	10.1.	Shama District
3.12.	Ekumfi District	6.22.	Tolong District	10.1.	Tarkwa Nsuaem Municipal District
3.13.	Gomoa East District	6.23.	West Gonja District	10.2.	Wasa-Amenfi East District
3.14.	Gomoa West District	6.24.	West Mamprusi District	10.2.	Wasa-Amenfi Central District
3.15.	Komenda-Edina-Eguafo-Abrem District	6.25.	Yendi Municipal District	10.2.	Wasa-Amenfi West District

**INFRASTRUCTURE
MASTERPLAN FOR GHANA**

AQUASOLAR

with Multi Purpose Pipeline (MPP)

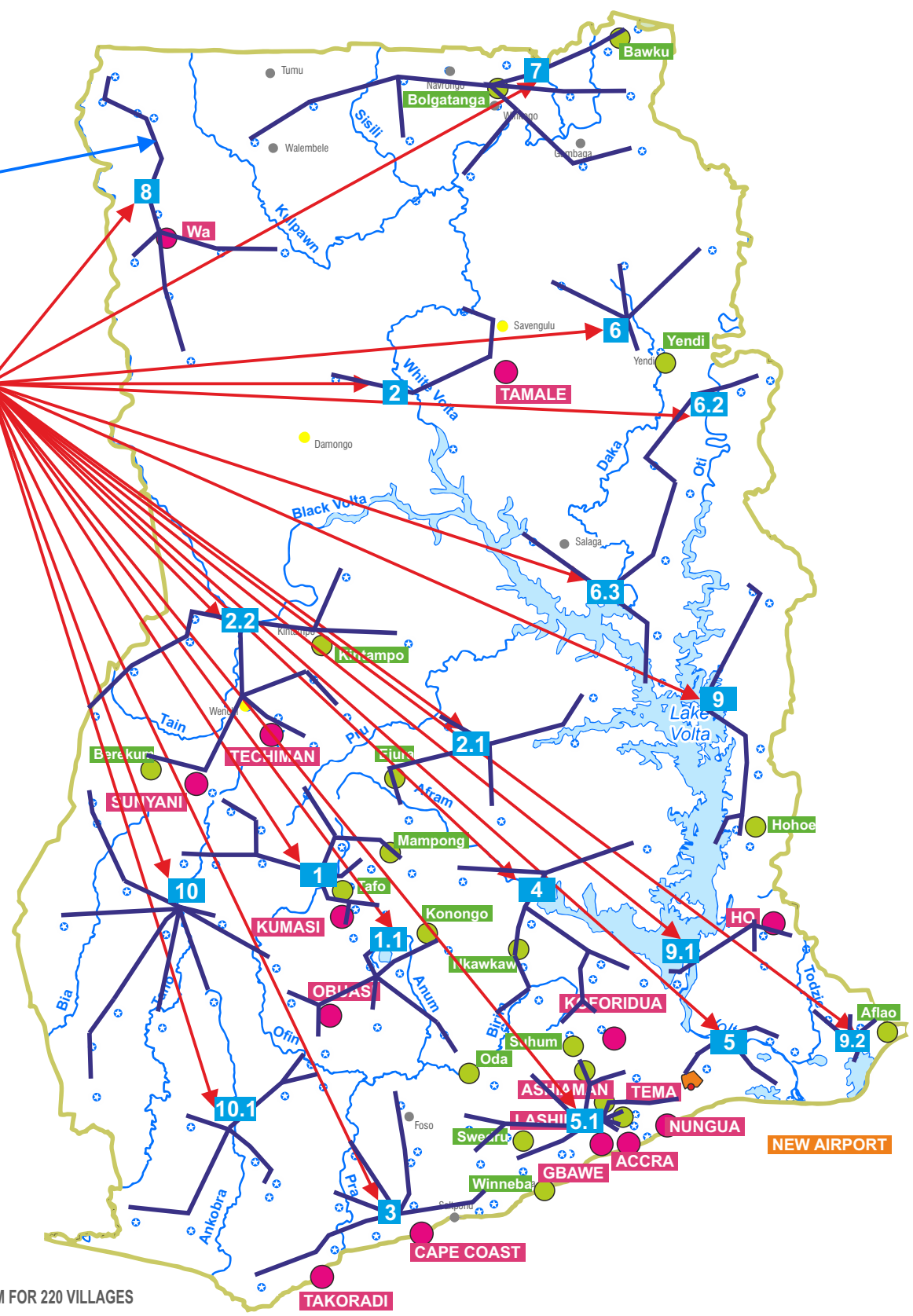
**MULTI PURPOSE PIPELINE FOR:
WATER
ELECTRICITY
INTERNET**

**AQUA SOLAR
HYBRID
POWER & WATER
PLANT**

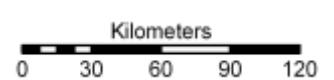
**AQUASOLAR
Facilities**

Districts	Pipeline	Capacity
1.0	280	4
1.1	310	4
2.0	160	1
2.1	220	1
2.2	360	5
3.0	250	5
4.0	240	4
5.0	100	2
5.1	330	7
6.0	160	3
6.2	130	1
6.3	150	1
7.0	470	3
8.0	270	1
9.0	190	1
9.1	110	3
9.2	70	1
10.0	390	2
10.1	260	1

KM: 4450 MW: 50 x4 =200



- ★ GOG WATER/POWER PROGRAM FOR 220 VILLAGES
- COUNTRY BORDER OF GHANA
- NEW PIPELINE FOR : WATER, POWER, FIBER OPTIC INTERNET
- TOP 20 CITIES OF GHANA . Population
- TOP 21 to 40 CITIES OF GHANA . Population



Smart AQUA SOLAR Water & Power Plant

Multi-Effect-Solar Power Plants (MES-PP) are the first Solar Thermal Power Plants with **integrated 24 h Energy Storage**. The solar radiation is collected and heats up the raw water (river water, brackish water, sea water) up to 95 °C which is stored in so called HotWater-Storages (HWS). In the power plant the hot water evaporates under vacuum condition and the steam drives the turbine with the generator which produces electric power. The steam condenses in the condenser, where **pure drinking water** may be produced.

HIGHLIGHTS.

This brandnew developed and patented Facility has a yearly Production Capacity of:

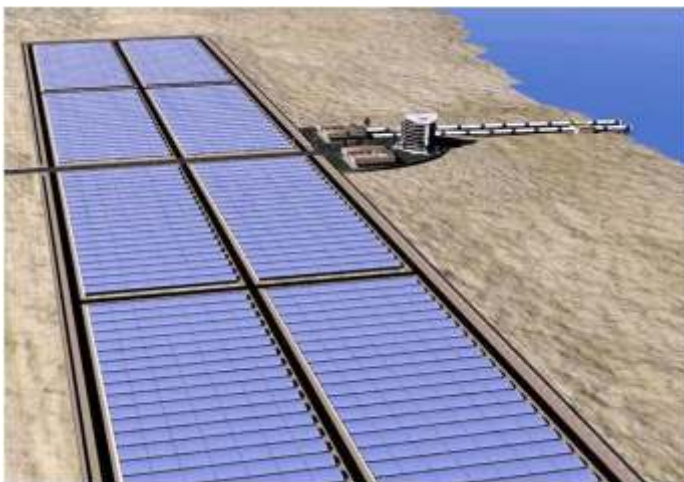
150.000.000 Kwh Green Solar Electricity

The factory can produce :electricity **with 24 hours storage**. Price per Kwh is lower than 0,05 Euro. With this Amount of Electricity **more than 150.000 Households** in Ghana can get Power for the whole Year.

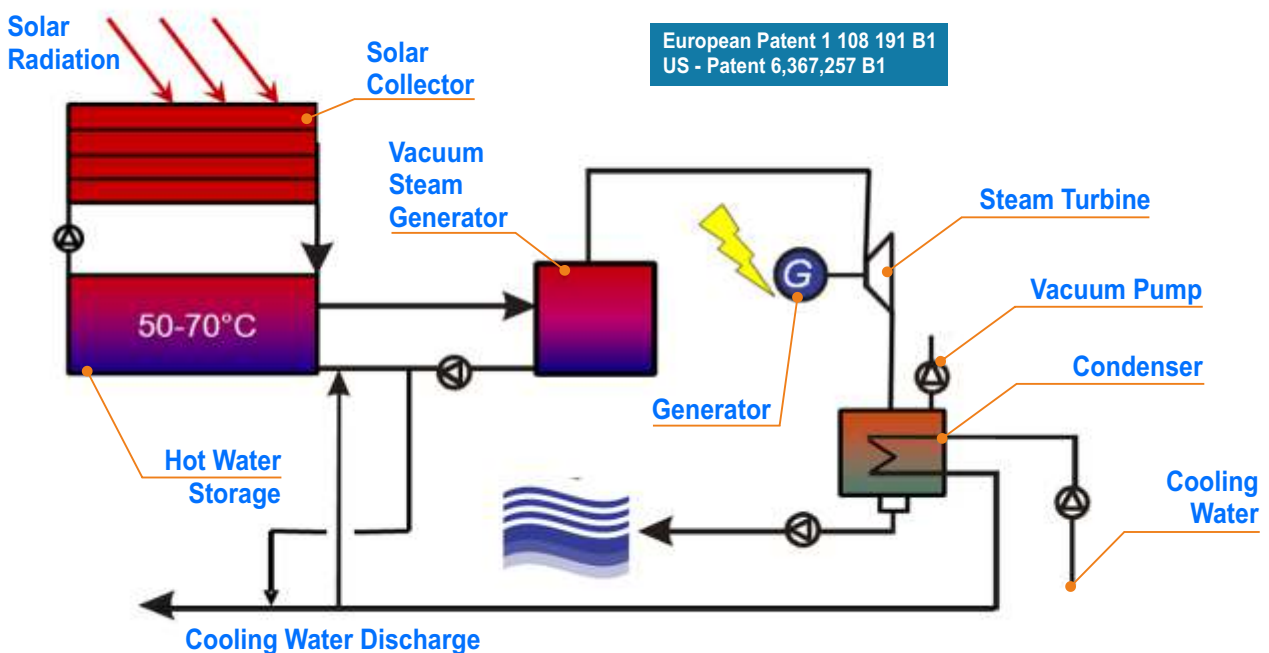
4.800.000.000 Liter drinkable Water

4,8 Million m3 drinkable Water produced out of Sea-, Lake- or Riverwater delivered through pipelines to all villages around for **1,20 EURO per 1000 Liter** delivered through new government owned multi purpose pipelines.

developed & patented:
WITT SOLAR AG
 ESCHENWEG 6
 D-76275 ETTLINGEN, GERMANY



NEW JOBS
 can be generated.
 This technology is
 available for
 Production in Africa



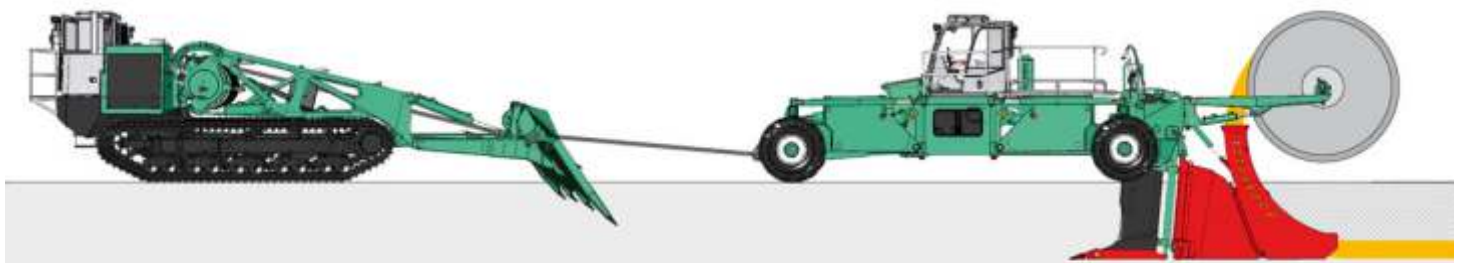
Smart AQUA SOLAR Multi Purpose Pipeline

In addition to the 18 smart city locations, we have also found an economic solution to supply the other 200 locations with water and electricity. In cooperation with the world market leader in the field of trenchless pipe and cable laying, we are able to lay a multi purpose pipeline for water, electricity and high speed fiber optic internet.

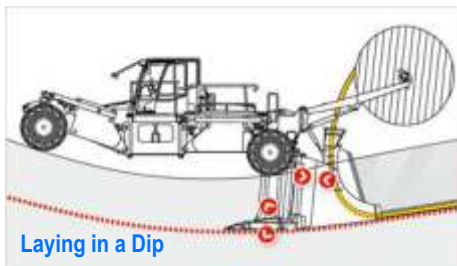
All this with an incredible performance of 10.000 metres per day! The entire pipeline has a length of approximately 4500 kilometers. The complete line can therefore be realized in a period of 15 to 20 months. This is only on the assumption that the terrain is accessible, without major problems. (For example: dense jungle or high mountains)



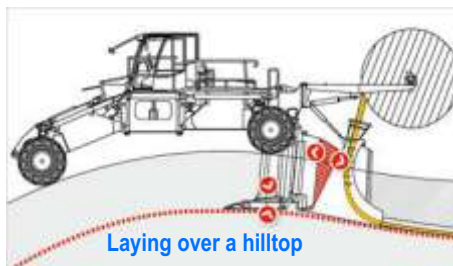
Working with this german patented laying system means: careful insertion and laying of the pipes and cables and **incredible performance of 10 Kilometers per Day**



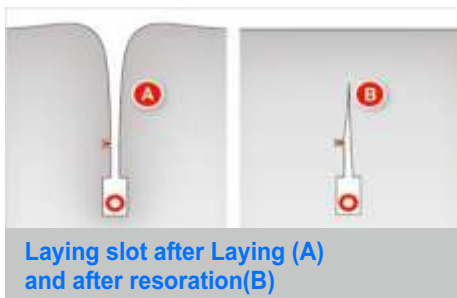
The laying unit is attached to the plough blade in a manner that allows it to be adjusted, so that it can adapt horizontally and vertically to any curves in the ground (accordion system).



Laying in a Dip



Laying over a hilltop



Laying slot after Laying (A) and after resoration(B)

The graduated laying slot gives the cable/pipe enough free space. Even after laying, the material laid rests freely and relaxed on the base of the slot. Even if stones fall in, they cannot cause any damage. Likewise, it is not possible for the pipe to rise into the groundwater area.

The laying blade presses the ground apart with high force. After the laying process, as the ground surface is restored, the laying slot is closed almost halfway. The ground forms a "bridge" over the cable/pipe that has been laid. The remaining lower part of the laying slot is filled by rain water seeping in (fine particles are washed downwards). An official inspection of the lines laid using the Föckersperger laying system (newly laid lines as well as lines laid several decades ago) confirmed that the laying work had been carried out to a high standard of quality. The walls of the laying slot were still more highly compacted than the rest of the ground.



With the aid of the laying device, the cable/pipe is inserted linearly into into the graduated slot by means of light pre-tensioning. The land material rests on the wave crests.



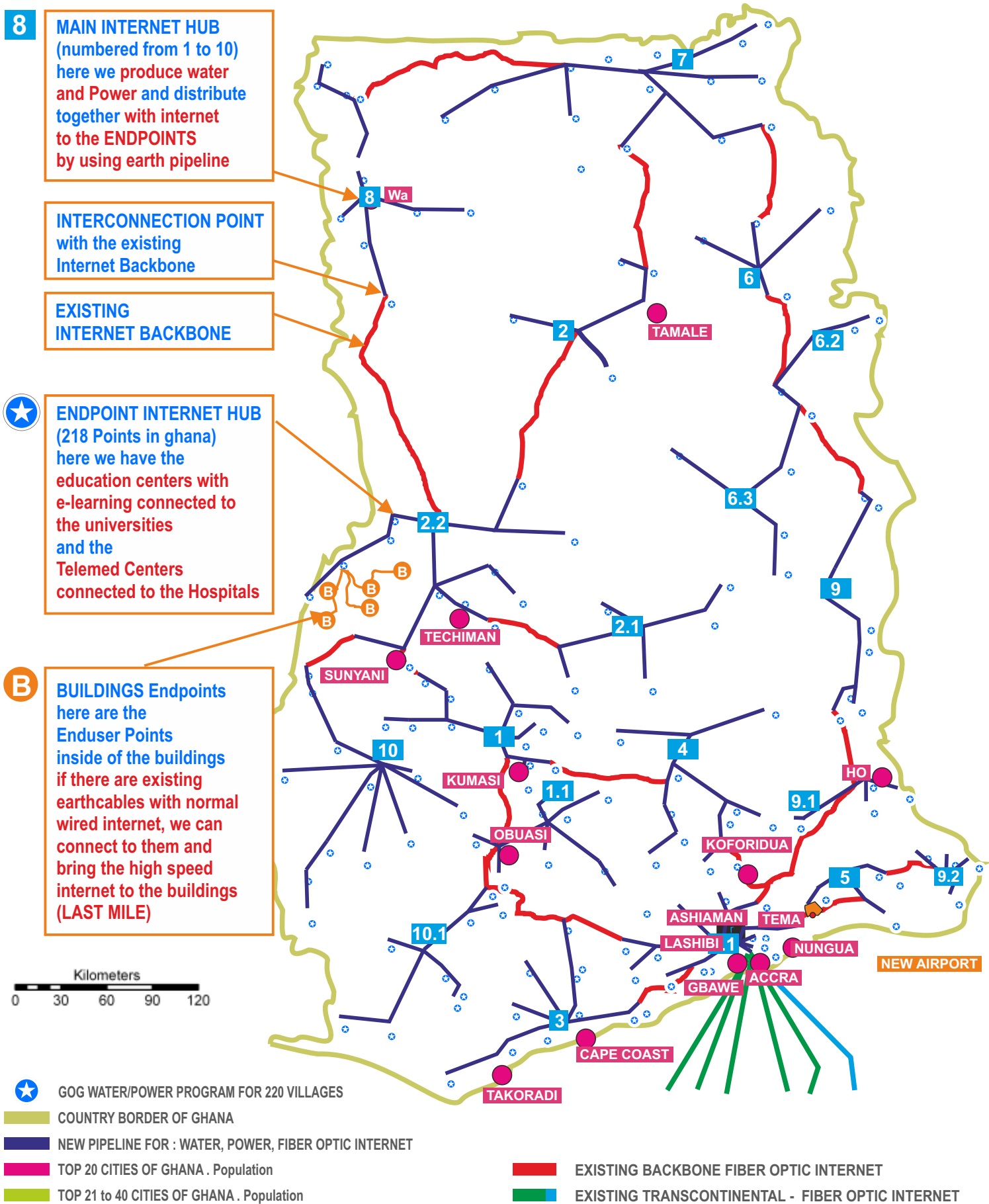
The cable/pipe laying chute, which can be moved horizontally, smooths the base of the slot

The tip of the blade clears and forms the laying slot base. The ripped-up slot base is not always the desired cable bed. Upright stones form a particularly dangerous base. Thanks to our patented guidance system, the entire cable laying chute smooths the slot base under pressure. The rough ground and the protruding stones are pressed firmly down. The cable/pipe is now placed on the smoothed base of the slot.

**INFRASTRUCTURE
MASTERPLAN FOR GHANA**

INTERCONNECTION

of the **NEW PIPELINE** (4450 Kilometers)
with existing Internet Backbone



PHASE 2

THE SMART ECO CENTER CONCEPT

In this phase, so-called smart eco centers are being built. This facility is located near the aquasolar facilities.

Using the resources water and electricity as well as the high speed internet, it is possible to provide the most important facilities to the population. These are the TeleMed Health Center with direct multimedia connection to the large hospitals in Ghana. As well as an e-Learning Center with broadband connection to our remote virtual education server and other educational institutions such as universities and dual training centers.

Another very important integrated facility is the Smart Agro Training Center where Farmers can learn from leading experts in the modern agricultural industry.

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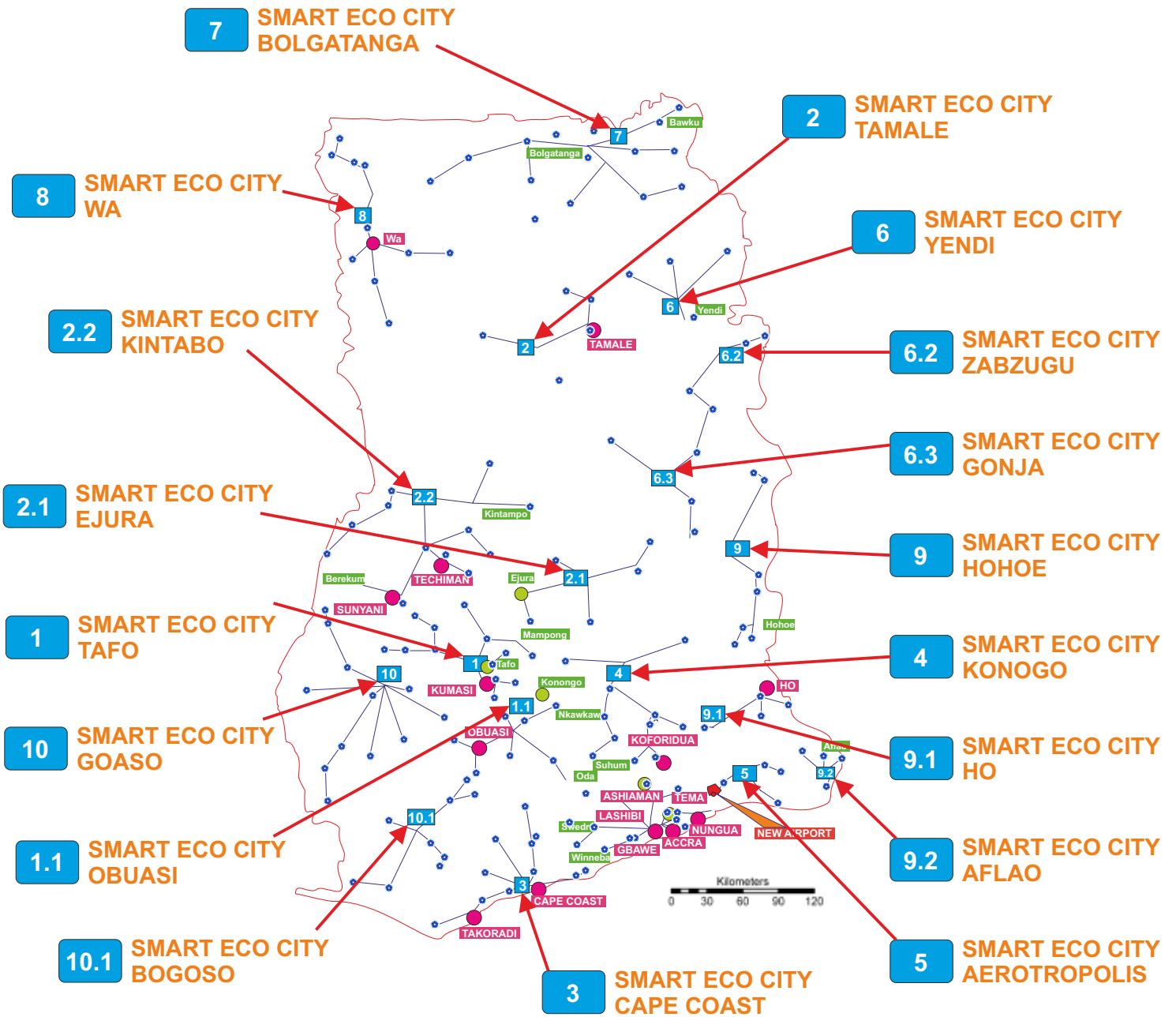


18
Centers
in Ghana

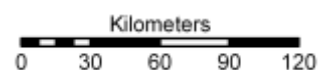
THE SMART ECO CENTER WORKS AS THE HUB

for:

1. Resources (Electricity, Water)
2. Education (Center with High Speed Internet)
3. Health (Health Station with TeleMed Connection)



- ★ GOG WATER/POWER PROGRAM FOR 220 VILLAGES
- COUNTRY BORDER OF GHANA
- NEW PIPELINE FOR : WATER, POWER, FIBER OPTIC INTERNET
- TOP 20 CITIES OF GHANA . Population
- TOP 21 to 40 CITIES OF GHANA . Population



**INFRASTRUCTURE
MASTERPLAN FOR GHANA
SMART ECO CENTER CONCEPT**



SMART ECO CENTER

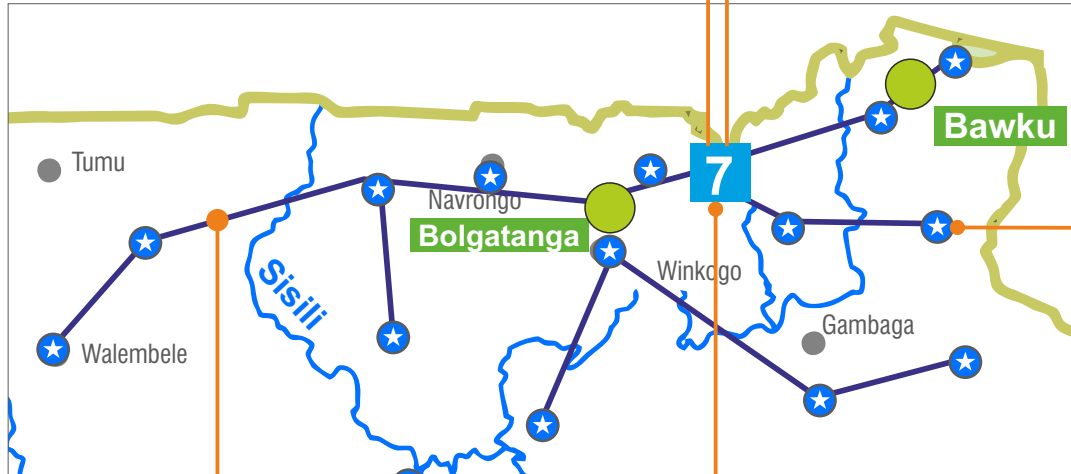
Module: Smart Health TeleMed Center
Module: Smart e-Learning Center
Module: Smart Agro Training Center
 is expandable with additional Modules:

- Module: Smart Housing
- Module: Smart Assembling Factories
- Module: Smart Production Factories
- Module: Smart Agriculture Facilities
- Module: Smart Dual Education Center
- Module: Smart Wastewater Recycling Center
- Module: Smart Recycling Energy Center



AQUA SOLAR PLANT

1 Unit can produce:
Electricity: 16.500 Kwh per Day
Drinking Water: 500.000 Liter per Day
 is expandable with unlimited Units.



MULTI PURPOSE PIPELINE (MPP)

- Drinking Water Pipeline
- 33 KV Power Cable
- Internet fiber optic cable

The MPP connects the Eco City Hub with 220 villages and provides Water, Power and Internet.

ECO CITY HUB

- AQUA SOLAR PLANT
- SMART ECO CENTER

The Basis of the future Smart Eco City. The location must be CAREFULLY selected by the participating ministries. The Hub should later be developed into an Smart Eco City, so the terrain and the traffic connection must be suitable for the further expansion. Access to sufficient water must be available (River, Lake, Sea)

220 VILLAGES

- SUPPLY POINT for water, electricity, internet

The optimal supply with electricity, water and internet is the basis for the further development of the villages. One or more **Smart Eco Center Modules** should be installed at the beginning.

Smart TeleMed Health Center

TeleMedical Treatment has great potential to increase access to high quality of healthcare in rural communities. Technology can now allow rural patients to see specialists without leaving their communities, permits local providers to take advantage of distant expertise, and improves timeliness of care.

What is telemedicine?

Telemedicine is the remote delivery of healthcare services and information using telecommunications technology.

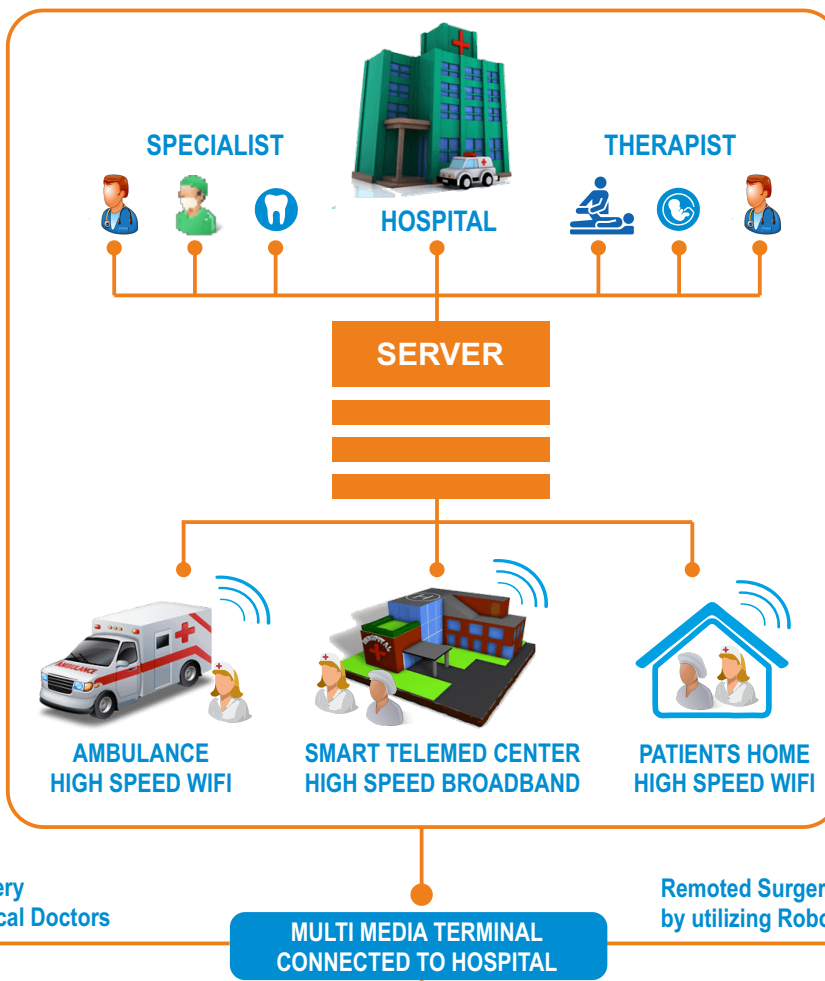
What is telehealth?

Telehealth is often used to refer to a broader scope of remote healthcare services than the term telemedicine. Telehealth includes remote non-clinical services, such as provider training, administrative meetings, and continuing medical education, in addition to clinical services.



There's a well-understood correlation that as the economy of a country improves, so the health of its citizens improves. What may be less obvious is that the opposite is also true – improving the health of a nation's citizens can directly result in economic growth, because there will be more people able to conduct effective activities in the workforce.

Health presents a challenge for all nations; in a study by the Pew Research Center, a median of 85% of respondents believe it was a problem in their country. Effective public health systems are essential for providing care for the sick, and for instituting measures that promote wellness and prevent disease.



While one of the most common images of telehealth is of a patient speaking by videoconference with a remote physician, telehealth can take many forms. The Health Resources Services Administration defines telehealth as the use of electronic information and telecommunications technologies to support long-distance clinical healthcare, patient and professional health-related education, public health and health administration.



Remoted Medical Examination assisted by Specially trained Nurses



Remoted Medical Examination assisted by Specially trained Nurses





Smart E-Learning Center

By harnessing the potential of Information & Communications Technologies, our partner has built a platform in Virtual Environment, wherein Teachers & Students can interact with each other, even beyond the normal working hours of an educational Institution (on Ant/Time - AnyWhere & 24x7 Basis) ~ with high focus on Courseware & Learning Resources. Because all rural districts are connected to the broadband internet, they now have access to unlimited education.

Learning should not end when the class ends.

LMS-Learning Management System (Virtual Campus)

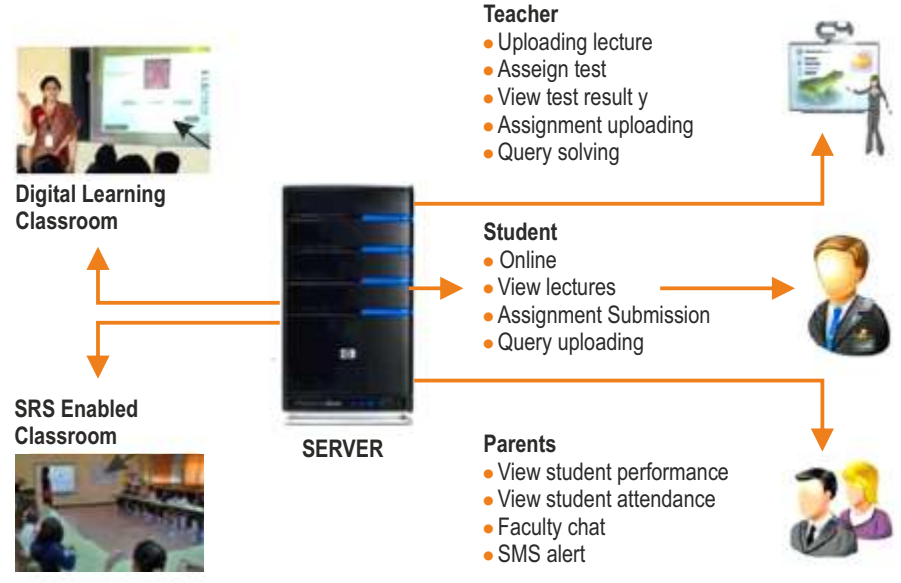
Equipped with a multitude of User Friendly tools (including Calendars & Bulletin Boards) for effective interaction amongst Teachers & Students, it supports 'e-Learning', quite comprehensively - with full control at Teachers command. Besides, it is also supported by Tools to pick & upload Learning Resources (enriched with Flash Animations), from a vast repository of them available on World Wide Web. Teachers can deploy them (in Classroom Sessions) as supplementary Tools while Students can harness them at their Study Desk - when they are at their creative Best.



FEATURES

Lectures	Assignments
Online Test	Forum
Performance Info	Live Lecture

WORKFLOW





The Dual Education System



The Dual Education System combines apprenticeships in private companies and vocational education at a vocational school in one course. This system is practiced in several countries, notably Germany, Austria, and Switzerland but also for some years now in South Korea.

In the **Dual Education System** young people can learn one of **356 apprenticeship occupations**, such as Doctor's Assistant, Dispensing Optician, Nurse, Cook, or Electrical Engineer. The precise skills and theory taught are strictly regulated and defined by national standards: An „Industrial Manager” has always acquired the same skills and taken the same courses in production planning, accounting and controlling, marketing, trade laws, etc.

In France, dual education (formation en alternance) has gained a lot of popularity since the 1990s, with information technology being the greatest draw.

In South Korea, the German and Swiss dual apprenticeship system was studied and implemented by then Prime Minister Park Geun-hye to address South Korea's more glaring employment needs including tackling the country's high youth employment rate and as well as reforming South Korea's entire education system. Since the rise of Master Schools and modern reforms through the implementation of vocational education in the South Korean education system, graduates from vocational high schools have been successful in navigating through South Korea's highly competitive and sluggish job market as they possess relevant skill sets that are in high demand in the South Korean economy.

Apprenticeship section.As one part of the dual education course, students are trained in a company for three to five days a week. The company is responsible for ensuring that students get the standard quantity and quality of training set down in the training descriptions for each trade.

In Germany, this practical training may be complemented by more practical lessons at workshops run by the guilds and chamber of

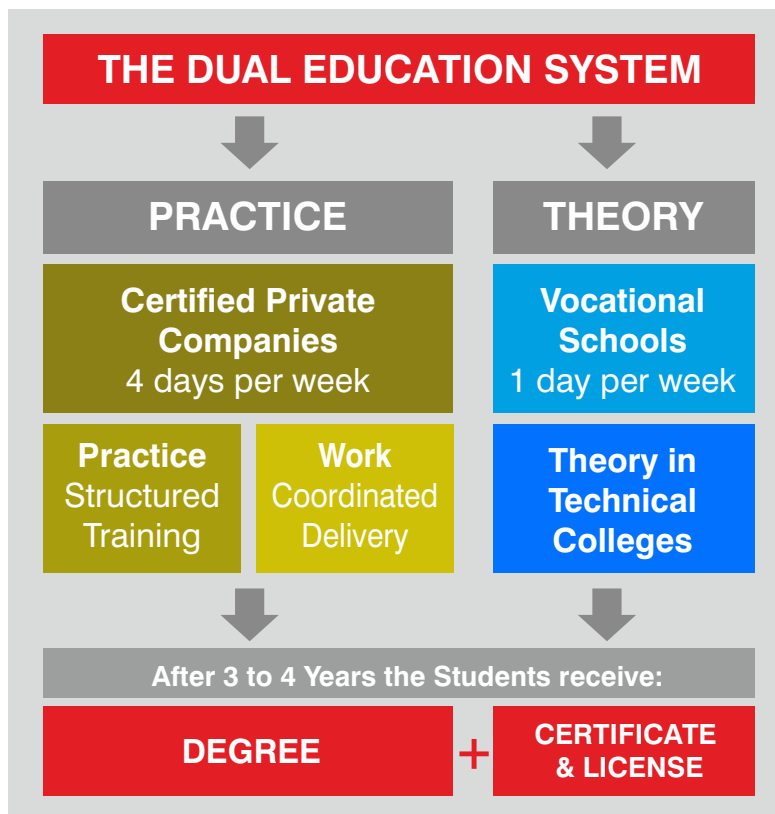
commerce, in order to compensate for the bias caused by training at only one company. These extra courses usually take three or four weeks a year. The time spent at vocational school is approximately 60 days a year, in blocks of one or two weeks at a time spread out over the year.

School section.The other part of the dual education course involves lessons at a vocational school. The responsibility for this part of the course lies with the school authorities in every German state or Swiss canton. Both general lessons (for example German, politics, economics, religion or even sport) and trade-specific theory are taught. Lessons may be taught part-time (one or two days a week) or in blocks of several weeks. The latter is preferred for trades learned by only a small number of students, where students may have to travel long distances to get to the nearest vocational school which teaches their subject.

Testing.In Germany, for most trades, the first examination takes place about half-way through the vocational training and is only to test how well the student is doing so far: the marks do not go towards the final exam. Both exams are organised by

the small business trade group and chamber of commerce and industry. Examinations for trained artisans are traditionally known as journeyman's tests.

Examinations for trades which have been recognised more recently are organised slightly differently. Here, the first examination counts as 40% of the total result, with the final examination making up the other 60%. Those who fail the exam can apply to have their training extended until the following year when they can retake it. Only one extension is allowed.



Smart Agro Training Center

We define **agriculture tech** as technology that increases the efficiency of farms. We identified more than 80 innovative Agro-Companies and categorized them into 8 Main Categories. The Team will work closely t to develop a **revolutionary sustainable agricultural concept** for the African continent including the Smart Agro Traning Center where Farmers can learn from leading Experts in the modern agricultural Industry.

- Farm Management Software
- Next Generation Farms
- Animal Data
- Smart Irrigation
- Precision Agriculture And Predictive Analytics
- Marketplaces
- Robotics And Drones
- Sensors



The Agriculture Tech Expert Map:

80+ Agrotechnology Companies powering the Future of Farming and Agrobusiness



PHASE 3

THE SMART ECO CITY CONCEPT

If the location of a smart eco center has been geo-strategically selected very well, it is the ideal basis for expansion into a smart eco city.

The road network is optimally adapted to the electromobility. Each individual building is connected to the canalisation, to the water network and to the broadband internet via the underground lines. The city has state-of-the-art energy-saving street lighting with integrated wireless internet service.

The perfect combination of living and working is particularly important. Distances between work, education, leisure and living are as short as possible. The economical use of all resources is just as important as a perfect recycling system.

All these features are particularly important to attract international companies, to create quality jobs and transfer specialist knowledge to the country.

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Masterplan of the Smart Eco City in Ghana	21
Plan of the Smart Eco Center, the heart of each Eco City	22
Description of the Smart Housing Concept (Masterblock)	23
Description of the Smart Electric Mobility Concept	24
Description of the Smart Lighting & Telecom Concept	25
Description of the Smart Assembling Factories	26
Description of the Smart Production Factories	27

The Smart Eco City Concept

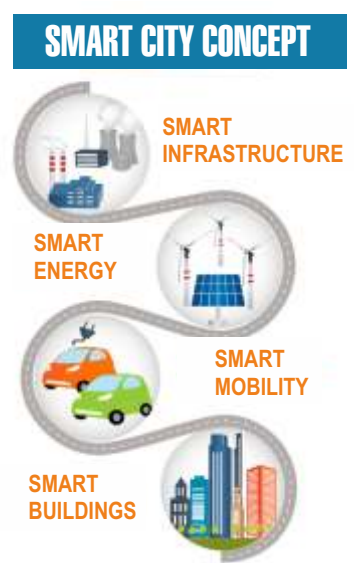


What are Smart Eco Cities? In short, these cities are the ones which go the extra mile to become environmentally friendly, by combining energy saving techniques with the latest technology. In the current eco-crisis, it's important that cities set out policies and goals to protect the local environment whilst also considering how they can bring the latest innovations in technology to their plans.

Architecture in harmony with nature. This is the most important approach for Jupiter's architects team. We try to integrate the most important components of the smart city as harmoniously as possible into the existing landscape. We process the existing landscape with high-tech fertilizer and integrate water reservoirs to store fresh water



Our Design Ideas of Smart Eco Villages in Rural Areas



Another important Goal when creating a smart eco city: to keep its carbon emissions and energy costs low by informing its residents of their own personal use of these resources. By drastically improving its transport connections and electric vehicle charging points, the city can cover the energy needs of the residents completely by itself. The City will be developed in an open-end style over the next 10 - 20 years and will focus on green energy. For example: with a football stadium powered by solar panels alone, research into the latest renewable energy resources and a commitment to green spaces,

Ghana should become one of the most ecologically conscious country in the world.

To achieve this goal it is necessary that the government is committed to a long-term masterplan. Building smart eco-cities through careful urban planning and promises to fulfil a policy agreement. The Masterplan should aimed at following environmental goals:

- efficient transport system
- sustainable energy concepts
- waste treatment improvements
- sustainable agriculture concepts
- smart recycling systems





the 12 SMART ECO MODULES

Smart Education E-learning Center

We developed a platform in the Virtual Environment, wherein Teachers & Students can interact, regardless of the distance between them. Because all rural districts are connected to the broadband internet, they now have access to unlimited education.

Smart Dual Education Concept

The Dual Education System combines apprenticeships in private companies and vocational education at a vocational school in one course. This system is practiced in several countries, notably Germany, Austria, and Switzerland.

Smart Assembling Factories

assembling factories for electric vehicles, electronic products, household appliances, solarpanels and more ... will generate many jobs, technology know how and well skilled workers.

Smart Production Factories

We are in negotiations with heavy industry groups. The focus will be the settlement factories for Cement, Asphalt, Steel construction, Chemicals, Pharmaceuticals and Food. Because high economic growth requires large amounts of material and products

Smart Aqua Solar Water & Power Plant

Even the smallest unit of this plant generates more than 6 million kilowatt hours of electricity and more than 180 million pure, mineralized drinking water every year and 24 Hours per Day.

Smart Agriculture

As population growth increases the need to ramp up food production, our hi tech agriculture partners are creating a range of agricultural software, services, farming techniques, and more aimed at bringing more data and efficiency to the sector.

Smart Recycling Energy Concept

Remove recyclable waste from black bins and recover energy from what is left over. It will significantly reduce the amount of waste that is sent to landfill. The remaining waste is burnt and the heat is used to turn water into steam to power a turbine and generate Megawatts of electricity for export to the National Grid.

Smart Wastewater Recycling

Wastewater is a resource that is too valuable to throw away, Wastewater from large cities is often pumped directly into rivers or seas without treatment. Our goal is to transform wastewater into resource recovery facilities. Several smart cities produce more energy than required for their operations and sell the excess energy back to the grid.

Smart Electric Mobility Concept

The Road network is optimized for the use of electric vehicles. Charged by Solar powered stations at home and at work. There is Innovative vertically Parking and Carports with integrated Speed Charging.

Smart Office & Housing Concept

A smart building is the integration of building, technology, and energy systems. These systems may include building automation, life safety, telecommunications, intelligent user systems and facility management systems.

Smart Lighting & Telecom Concept

Highly efficient and sensor-controlled LED lamps are used to illuminate streets and public areas. The lights are equipped with wireless transmitters. This can also provide the citizens with high speed mobile internet.

Smart TeleMed Health Center

TeleMedical Treatment has great potential to improve medical care throughout the country. Modern Health Centers in all Districts are connected to the Broadband Internet. Now all rural patients are in the position to consult specialists without leaving their communities



**SmartEcoCity
GHANA**

MASTERPLAN SMART ECO CITY IN GHANA

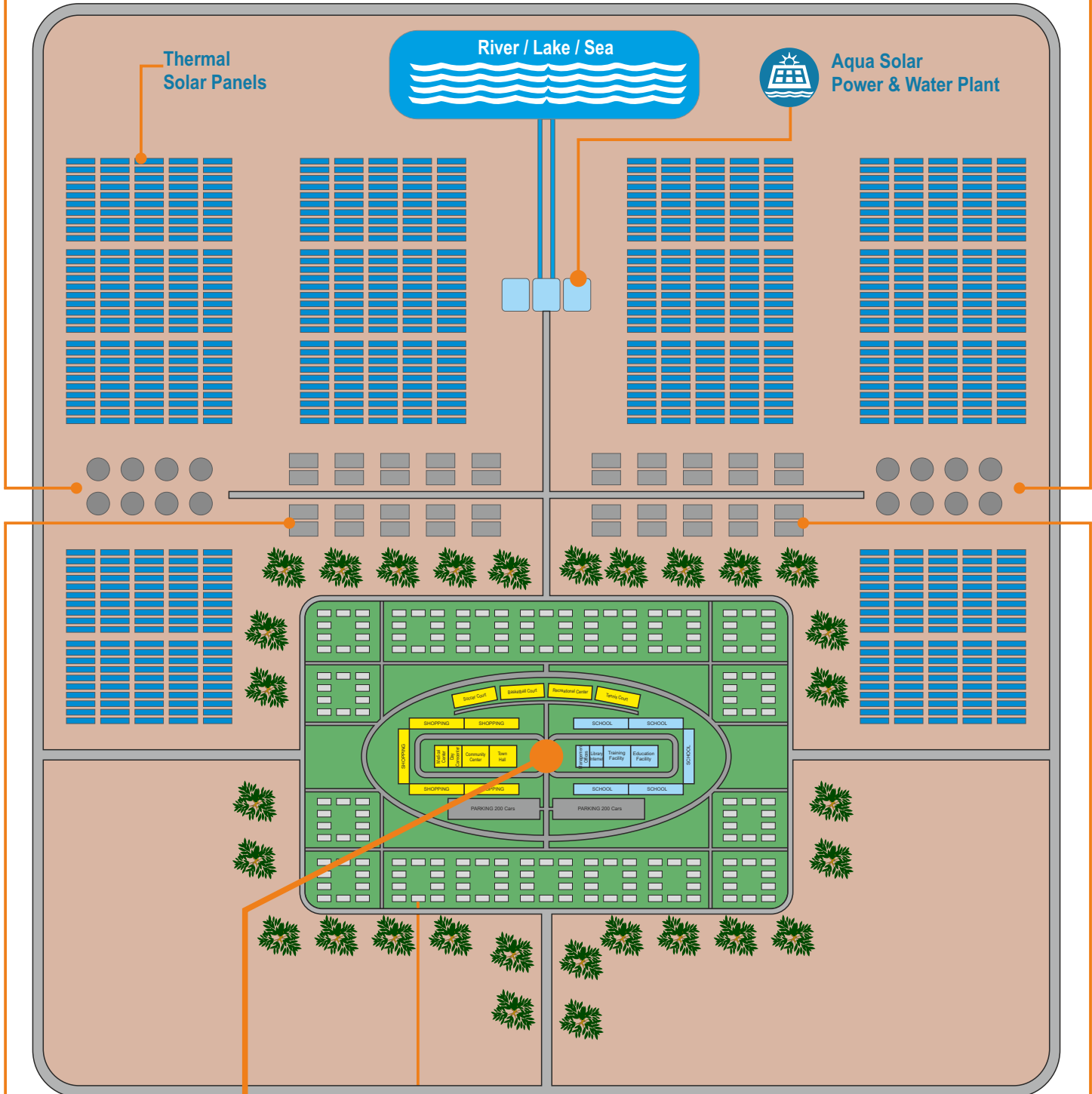
Sustainable City Concept for 3200 Citizens
1600 Apartments
Smart Eco Center / Factories / Health / Education



Smart Recycling Energy Center



Smart Wastewater Recycling Center



Smart Assembl. Factories



Center of Smart Eco City



Smart Housing Apartments



Smart Road Network



Smart Production Factories

PLAN

SMART ECO CITY CENTER

Sustainable City Concept for 3200 Citizens
 1600 Apartments
 Smart Eco Center / Factories / Health / Education



Smart Dual Education Center



Smart E-learning Center



Smart Agro Education



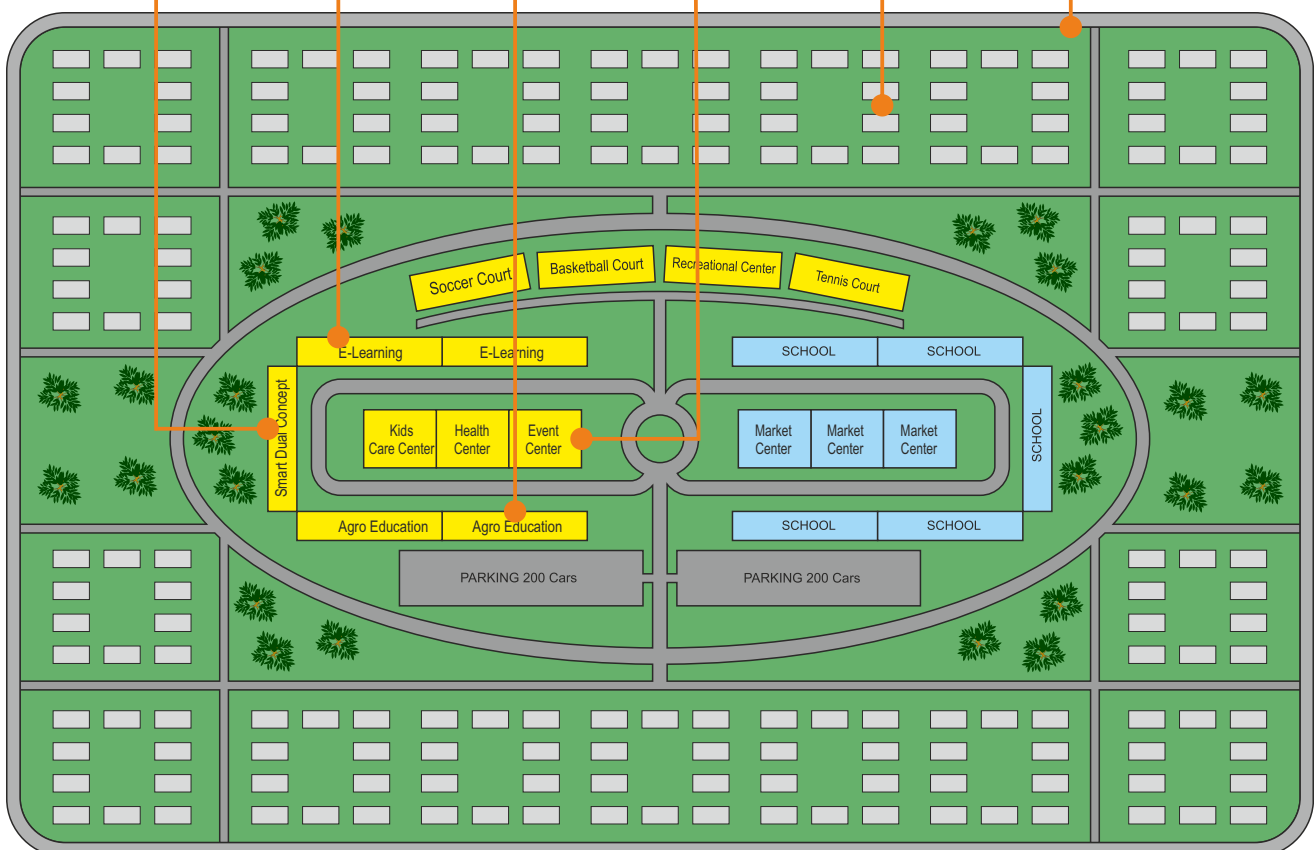
Smart TeleMed Health Center



Smart Office & Housing Concept



Smart Electric Mobility Concept



Smart Office & Housing Concept



The Masterunit which contains 10 Blocks (= 80 Apartments).
This concept offers the following advantages:

- In the Center there are Relaxing Areas and Children Playgrounds. The surrounding Buildings protect those Areas from Traffic.
- each apartment offers views to the playground. So the parents always have their little children in view.
- Better Orientation for Visitors because of the Masterunit Structure
- clear, simple and safe traffic concept

NEW JOBS
can be generated.
This technology is available for Production in Africa

MASTERUNIT with 10 Blocks (80 Apartments):

RESIDENTIAL ROAD



CONNECTION ROAD BETWEEN MASTERUNITS



PLAYGROUND
30 x 25 m



RELAX AREA
30 x 25 m



Smart Electric Mobility Concept

Nowadays it is very popular to talk about electromobility. The experts of the Jupitergroup, however, are of the opinion that this concept works only with **appropriate infrastructure**.

That is why we have developed innovative solutions for this concept. Especially in the developing countries, it is possible to **build completely new smart eco cities**, with integrated charging stations supported by solar energy.

Our solutions for vertical parking are particularly helpful in urban areas. Space-saving parking with simultaneous loading of the vehicles. **This we understand as sustainable city planning.**



Solar supported Power Charging Station at Home.

NEW JOBS
can be generated.
This technology is
available for
Production in Africa



Vertically Parking with included Power Charging.



**REAL ELECTRIC MOBILITY
BEGINS WITH
NATIONWIDE POWER
SUPPLY.**

Innovative Carports with Solar supported Power Charging.



Smart Lighting & Telecom Concept

Highly efficient and sensor-controlled LED lamps are used to illuminate streets and public areas. In addition, the lights are equipped with wireless transmitters. This can also provide the citizens with (free) high speed mobile internet.

Streetlights are a vital part of every city, providing citizens and business with safety and security. But what if we could use our street lighting network in a more intelligent way rather than the simple on-off system that currently exists.

Through our Smart Eco City Concept, Ghana should leading the way with the realization of intelligent street lighting, looking at ways to add more control and efficiency to the lighting network while harnessing the power of real time data to improve both lighting and safety throughout the city. Combined with domestic production, this concept could also be an export highlight to other African countries.



Why Intelligent Lighting?

The introduction of intelligent lighting offers several key benefits to a city including environmental, financial, safety and security:



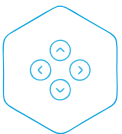
Energy Efficiency
Energy efficient LED lighting reduces carbon footprint and long term operation costs.



Operations Centre Integration
Real time data feeds directly in to the state-of- the-art operations centre allowing for the manual brightening of lighting when required.



Noise Detection
Street disturbances can be monitored using noise detection, with real time CCTV and community safety response.



Movement Detection
Movement sensors allow us to monitor footfall and traffic flow - generating important data to aid in city planning.



Air Pollution Detection
Air pollution monitoring can be integrated into the street lighting network - giving the city up-to-date and accurate data to help with planning and pollution reduction

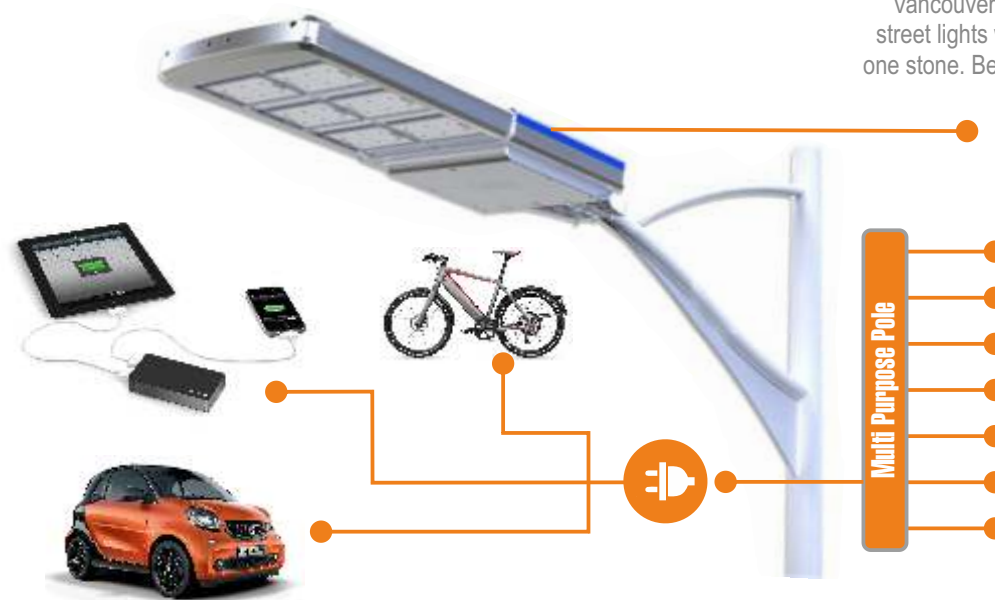


WiFi Service
An intelligent street lighting network allows for the provision of a limited WiFi service for use by vital city services and citizens.

NEW JOBS
can be generated. This technology is available for Production in Africa

This smart street light is equipped with an low consumption LED light bulb and capable of providing Wi-Fi, improving cellphone service and charging electric cars and phone or laptops. It can even feature a touchscreen where people can pay for parking or stop and get directions. **But why would Cities invest in those new intelligent lights when they have already street lights?**

The answer can be seen at the example of the city of Vancouver: According to the National Post, Vancouver's downtown is filled with more than 100 cellphone towers from five competing carriers. British Columbia has pledged nearly \$3 million to install 570 electric car charging stations within the province, and Vancouver was already looking to replace its old sodium street lights with LED lights. That's a lot of birds killed with one stone. Because the new smart poles can cover all that.



Low Consumption LED Light

- Government WIFI Network**
- Telecom Carrier A**
- Telecom Carrier B**
- Telecom Carrier C**
- Parking Cash Station**
- Speed Charging Cars & Bikes**
- Speed Charging Mobile Devices**

Smart Assembling Factories

Under the brand ECOS ... vehicles will be marketed for the entire African continent. Negotiations with international groups on the founding of joint ventures have already begun. This project aims to make Ghana a decisive step towards transformation into a technology country



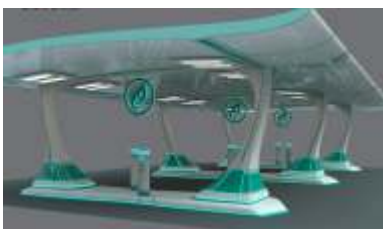
Living and Working

In the illustration you can see a smart eco city with an integrated car factory. The following vehicle categories are to be assembled in factories all over Ghana.

- Cars with electric drive and hybrid drive
- Small Bus and SUV
- Pickup & small transport vehicle
- Medium and large Bus
- Truck (7 to 30 tons)
- Special vehicles for police, rescue, fire service and military
- Special vehicles for the construction industry



NEW JOBS
can be generated. This technology is available for Production in Africa



Smart Production Factories

We are in negotiations with heavy industry groups. The focus will be the settlement factories for Cement, Asphalt, Steel construction, Chemicals, Pharmaceuticals and Food. Because high economic growth requires large amounts of material and products



What is the connection between education, innovation and economic development?

If you take a human capital view of economic development, it's fairly straightforward: if you invest in people's education, then incomes will develop.

But that presupposes that people are going to get jobs and that there's something that's actually driving the development. So part of the attempt to talk back to that from an innovation approach is to ask: **how do jobs get created?** How do countries **take on new technologies** and **become effective producers?**

In this kind of argument it's not just thinking about supplying the education, it's saying that knowing **where the possibilities for an economy to specialize** and develop are going to be important in thinking about how economic development takes place.

Our strategy for Ghana is the specialization in future-oriented products with high demand in the African continent. These factories should be at the **latest technical standard to ensure the competitiveness** in the target markets.



Pictured: Our Design for Industrie and Living as part of the smart eco cities

Heavy Industry Factories.



NEW JOBS
can be generated.
This technology is
available for
Production in Africa

Modern Food Factories.



Innovative Pharmaceutical Factories.



PHASE 4

SMART RESOURCE MANAGEMENT

Our experts have great knowledge about the latest technologies in waste management and recycling systems. A rapidly growing economy such as Ghana can only meet the growing need for resources with the help of these technologies.

These systems can recycle all kinds of waste and generate additional energy such as electricity and biogas. With the installation of a nationwide waste collection system, many new jobs are created and the environment is kept clean.

Organic waste is the ideal basis for producing precious high-tech fertilizers. With the advanced technologies of our experts, Ghana can become a leading producer in Africa and export the products to the entire continent. However, Ghana's agriculture in particular benefits from the new developments in these industries.

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Smart Recycling Energy Concept

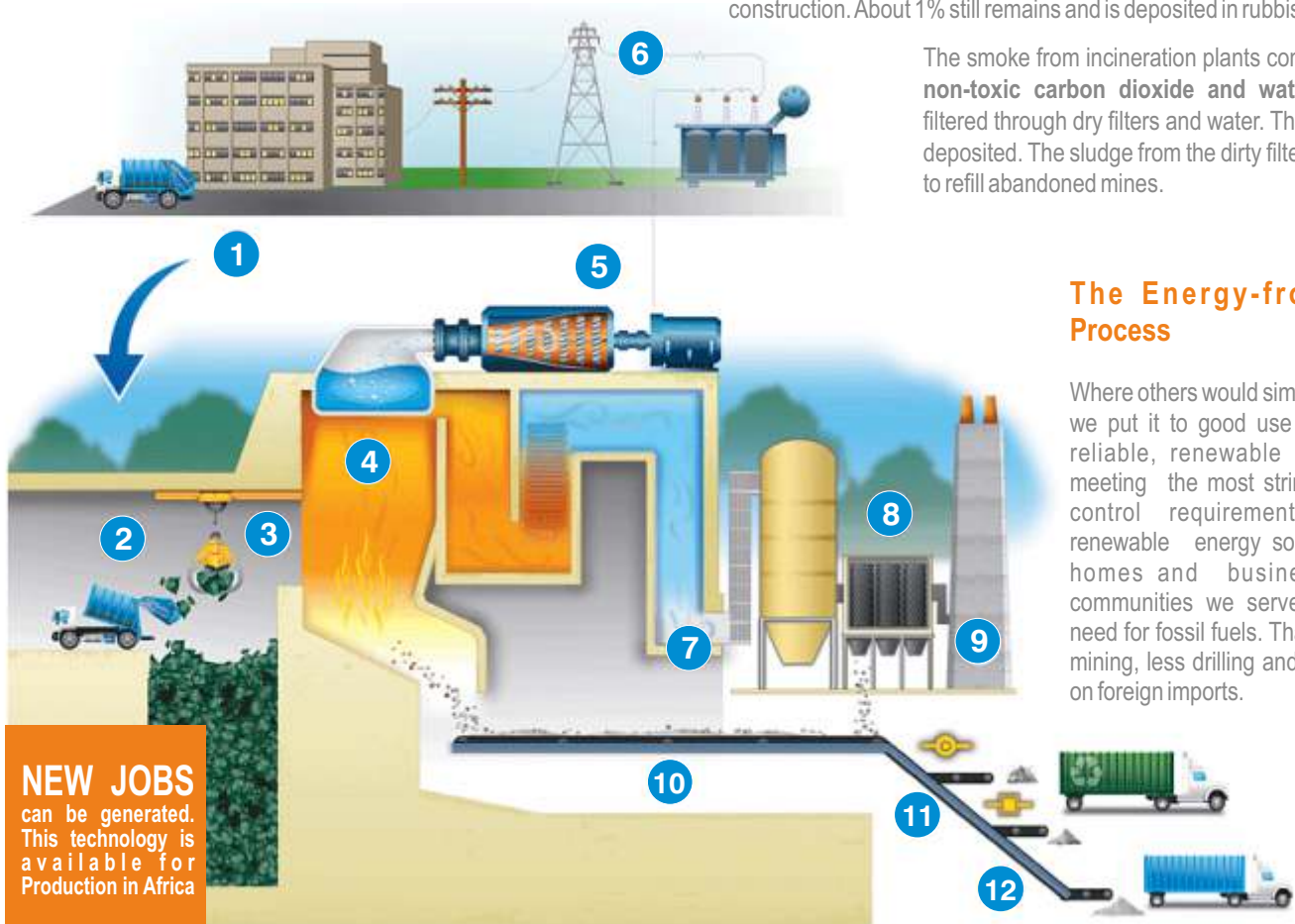
Waste to Energy. The next EXPORT HIT for Ghana's Economy?

Let's take a closer look at the model of SWEDEN the top leader in waste to energy models:

50% of the household waste is burnt to produce energy at Incineration plants. Waste is a relatively cheap fuel and Sweden has, over time, developed a large capacity and skill in efficient and profitable waste treatment. **In 2014, Sweden even imported 2.7 million tonnes of waste from other countries. The produced Energy can be exported to generate lucrative profit.**

The remaining ashes constitute 15% of the weight before burning. From the ashes, metals are separated and recycled, and the rest, such as porcelain and tile, which do not burn, is sifted to extract gravel that is used in road construction. About 1% still remains and is deposited in rubbish dumps.

The smoke from incineration plants consists of **99.9% non-toxic carbon dioxide and water**, but is still filtered through dry filters and water. The dry filters are deposited. The sludge from the dirty filter water is used to refill abandoned mines.



The Energy-from-Waste Process

Where others would simply bury waste, we put it to good use by recovering reliable, renewable energy while meeting the most stringent pollution control requirements. Using this renewable energy source to power homes and businesses in the communities we serve offsets the need for fossil fuels. That means less mining, less drilling and less reliance on foreign imports.

NEW JOBS
can be generated. This technology is available for Production in Africa

- 1 Post-recycled municipal solid waste is picked up at your home or business.
- 2 waste is delivered and temporarily stored in a bunker. We maintain the building around the tipping and bunker area under negative pressure and use this air in the combustion process to control odor.
- 3 The waste is fed into a combustion chamber and burned at extremely high temperatures in a self-sustaining process.
- 4 Heat from combustion boils water to create steam.
- 5 The steam turns a turbine-driven generator to produce electricity, or may sometimes be used directly for heating or industrial processes.
- 6 Electricity is distributed to the grid and used to power homes and businesses.
- 7 State-of-the-art air pollution control equipment is used to cool, collect, and clean combustion gases. This equipment operates under stringent state and federal standards.
- 8 We control emissions of particulate matter primarily through a baghouse (fabric filter).
- 9 Emissions and other operating criteria are continuously monitored to ensure compliance with state and federal standards.
- 10 Residual material from the combustion process is collected for processing and metals extraction.
- 11 Ferrous and non-ferrous metals are extracted for recycling.
- 12 Remaining residual materials are beneficially reused or disposed of in a landfill.

Smart Recycling Energy Concept

The Recycling and Energy Recovery Facility is designed to remove recyclable waste from black bins and recover energy from what is left over. It will significantly reduce the amount of waste that is sent to landfill.

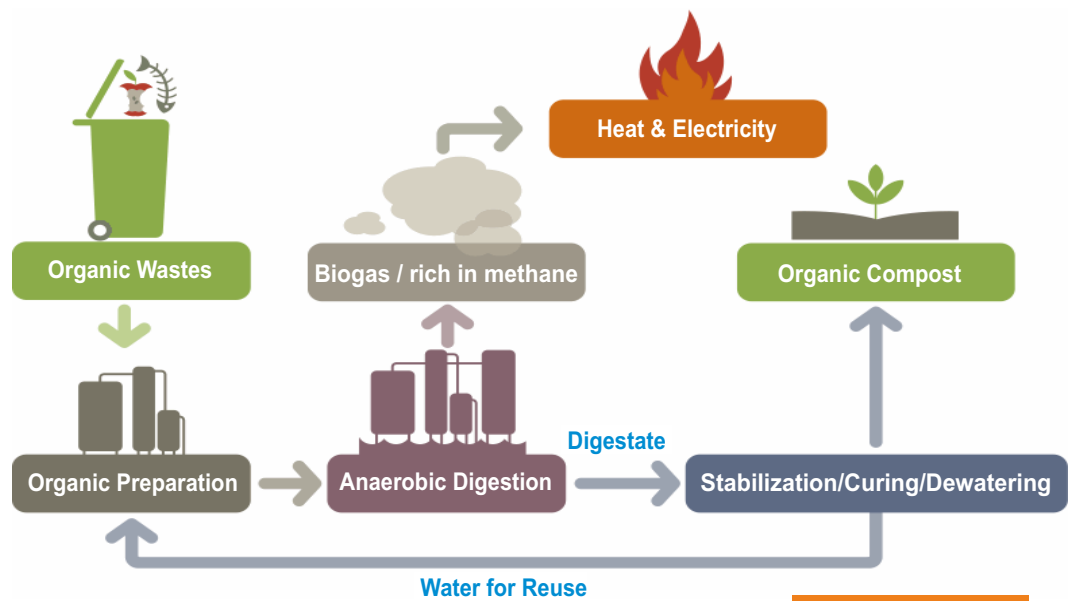
Our Partners Energy Recovery Facility operates 24/7 within the EU standards for emissions to atmosphere. When all the recyclables have been removed the remaining waste is burnt in carefully controlled conditions. The heat from the combustion process is used to turn water into steam. The steam then power a turbine to generate Megawatts of electricity for export to the National Grid.



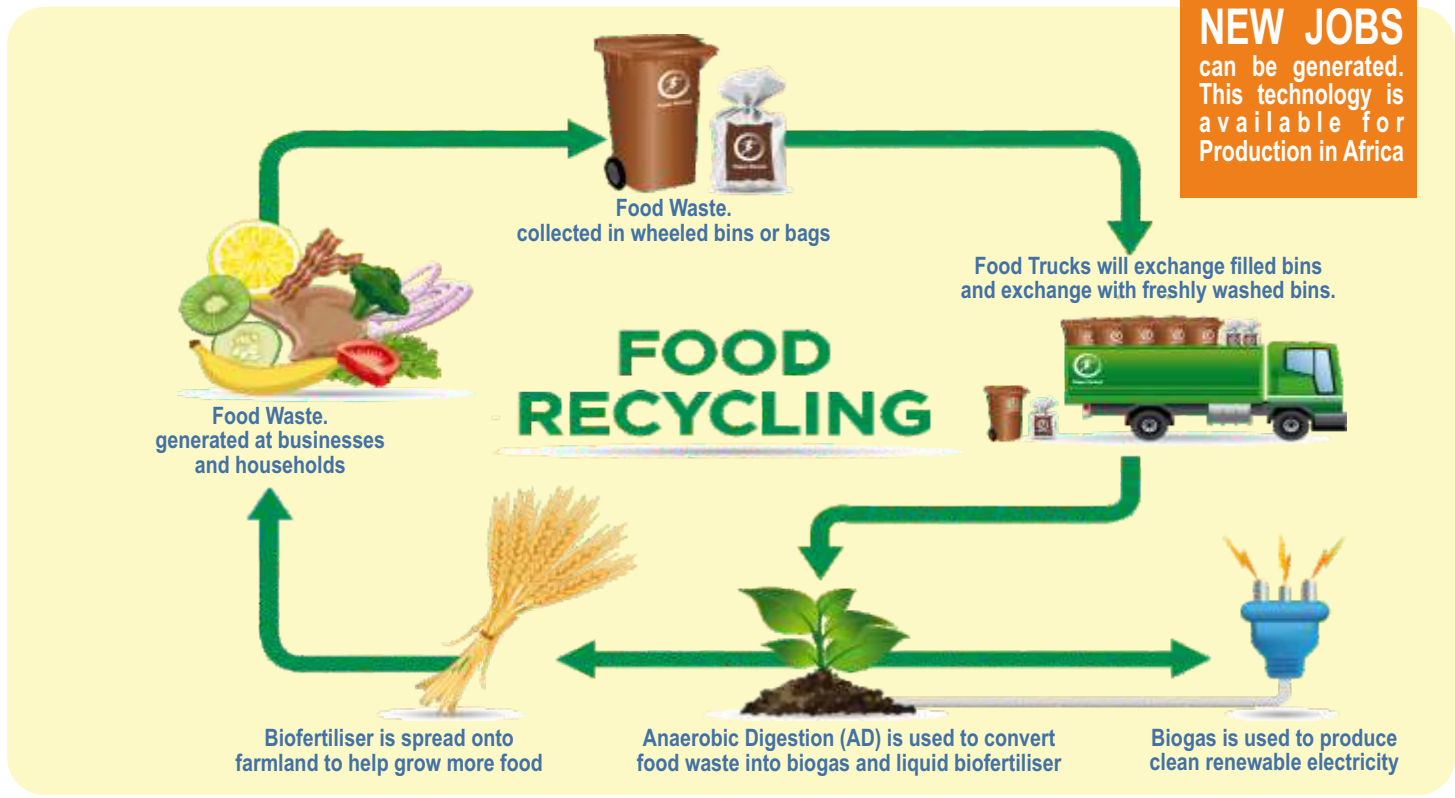
Our Partners Energy Recovery Facility operates 24/7 within the EU standards for emissions to atmosphere. When all the recyclables have been removed the remaining waste is burnt in carefully controlled conditions. The heat from the combustion process is used to turn water into steam. The steam then power a turbine to generate Megawatts of electricity for export to the National Grid.

The water used in the process is recycled. The ash (known as Incinerator Bottom Ash) that comes out of the end of the process, which can contain gravel-like remnants of glass, brick, stone, concrete and ceramics, are recycled into construction aggregate, which replaces quarried material in the production of asphalt and cement.

Additional Benefits: Environmental education, jobs and training for local people and opportunities for local businesses are just some of the benefits that Recycling and Energy Recovery Facility offers to the community.



NEW JOBS
can be generated.
This technology is
available for
Production in Africa



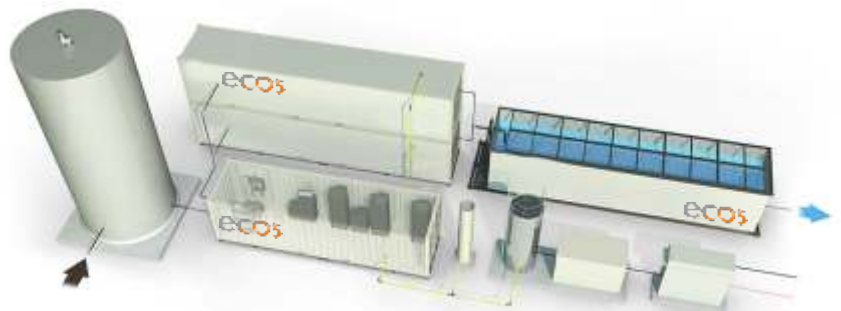
Smart Recycling Energy Concept



The **Ecos** Reactor, is the world's first bioelectrically-enhanced wastewater treatment solution, critical in the conversion of wastewater to renewable energy. Efficiently treats wastewater while extracting clean energy and clean water, allowing to cut wastewater management costs and achieve sustainability goals.

The Proprietary internal architecture performs high-rate:

- Bulk BOD removal (>80% removal)
- producing high-quality biogas (>80% methane fraction).
- typical installation generate net 30-200 kW of power.



- modular, stackable,
- containerized low-impact installation,
- rapid procurement,
- flexible capacity increase.
- treat 30,000 to 900,000 Liter wastewater/day

EcoVolt Reactor



The **Ecos** Reactor, the award-winning flagship product, is the world's first bioelectrically-enhanced wastewater treatment solution, critical in the conversion of wastewater to renewable energy. Leveraging electrically-active microbes, the **Ecos** Reactor efficiently treats wastewater while extracting clean energy and clean water, allowing partners to both cut wastewater management costs and achieve sustainability goals.

Our proprietary internal architecture performs high-rate, bulk BOD removal (>80% removal) while producing high-quality biogas (>80% methane fraction). Through combined heat and power cogeneration, a typical installation will generate net 30-200 kW of power.

The **Ecos** Reactor's modular, stackable, and containerized prefabricated architecture allows for low-impact installation, rapid procurement, and flexible capacity increase. EcoVolt Reactor installations are designed to treat wastewater flows between 10,000 to 300,000 gallons per day and are managed by the headworks, a containerized unit acting as a centralized distribution and controls system.

Ecos MBR

The **Ecos** MBR (membrane bioreactor) is an aerobic digester using state-of-the-art aeration, robust membrane filtration, and a dynamically integrated controls architecture to remove >99% of contaminants from wastewater streams.

The **Ecos** MBR seamlessly integrates with the **Ecos** Reactor and controls architecture to provide fully-powered treatment in the wastewater to energy process. It can be flexibly stacked to match facility capacity increase and can be remotely managed.

For facilities with a low concentration of organics in their wastewater, the **Ecos** MBR is a highly-efficient, standalone treatment solution that cleans water for onsite reuse or sewer discharge. When coupled with the bioelectrically-enhanced **Ecos** Reactor, the net result is wastewater treatment and water reuse at a fraction of the energy demand of existing systems.



Ecos MINI

The **Ecos** MINI is an all-in-one wastewater treatment and water reuse container. Designed for smaller, growing industrial businesses with wastewater flows between 2,000 and 15,000 gallons per day, the solution requires an ultra-low footprint and flexibly incorporates **Ecos** Reactor and **Ecos** MBR technology to achieve desired removal.

Housed entirely within a 53' x 8.5' shipping container, the EcoVolt **Ecos** MINI performs high-rate, total contaminant removal, and can cut a facility's potable water consumption by up to 50%.



Smart Wastewater Recycling

The wastewater sludge gasification power generation system is used to achieve high-efficiency power generation by recovering combustible components of sludge as useful gas mainly comprised of H₂ and CO through gasification and modification reaction. Thus, emissions of greenhouse gases (N₂O, CO₂) can be drastically reduced.



Characteristics

High-efficiency use of energy

Through partial combustion using oxygen, the organic contents can be efficiently modified to a clean fuel gas, realizing high-efficiency power generation by gas engine power generation, etc. though small in scale.

Reduction of environmental impact

Because gasification and modification reactions are operated at high temperature in a reducing atmosphere, the system does not emit N₂O, a gas known for its high global warming factor. Further, by realizing high-efficiency power generation, use of fossil fuels is drastically decreased.

Application in various bio-mass systems

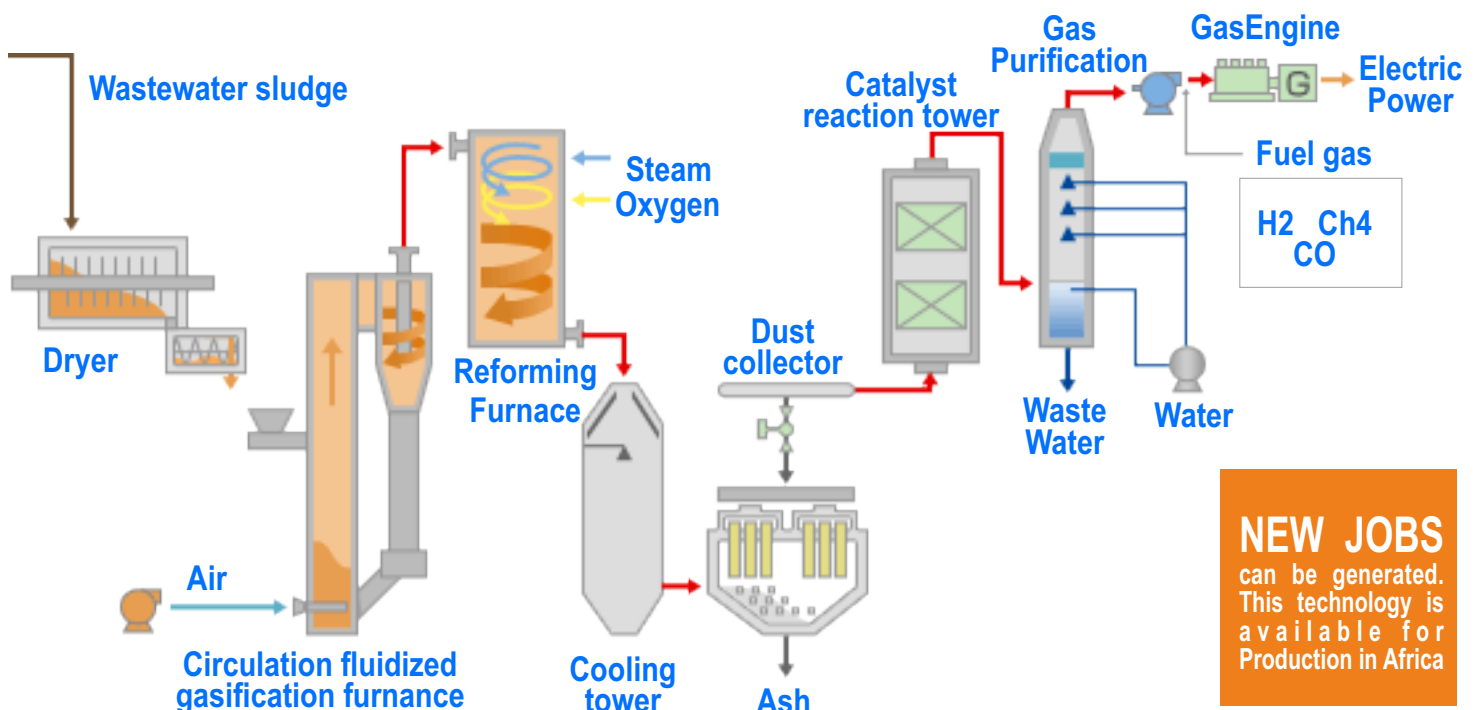
Energy recovery with increased efficiency is possible, if bio-mass such as wood, etc. is mixed for gasification besides wastewater sludge.

Diversification of energy utilization mode

The fuel gas can be used in fuel cells and so forth besides being used for gas engines.



Wastewater sludge gasification power generation system Flow Example



NEW JOBS
can be generated.
This technology is
available for
Production in Africa

Smart Wastewater Recycling

Wastewater contains valuable nutrients. As resources worldwide become scarce, expensive and environmentally costly to produce, it is important to recover what we can from our waste. Wastewater (sewage) is increasingly recognized as a source of nutrients, energy and water that can be recovered and reused.

The highest and best use of the nutrients in our wastewater is to return them safely to the environment. REAP recycles treated wastewater safely and responsibly to create **BIOSOL**, a fertilizer made from biosolids. Adding **BIOSOL** to land provides valuable nutrients and builds healthy soil.



SUCCESS CASES ABOUT USAGE OF BIOSOLIDS:



Studies conducted by Agriculture Canada on these lands have shown that biosolids use improved soil health and increased the amount and quality of grasses available as forage for livestock. At OK Ranch north of Clinton, research conducted by the Ministry of Forests shows that grasslands in poor condition have been restored to a healthy, productive state with only one application of BIOSOL.

Reference: Salmon Arm landfill

The Columbia Shuswap Regional District received the 2011 Sustainability Award from the Federation of Canadian Municipalities for their Phase 1 closure of the Salmon Arm Landfill in 2010. Our Partners provided BIOSOL to cap the closed landfill. Hybrid poplar trees, proven to grow successfully in biosolids, were planted to naturally treat liquids that can leach out of the landfill and cause environmental harm.



Salmon Arm landfill in 2010

Salmon Arm landfill in 2011 after application of BIOSOL

Reference: Rey Creek Ranch

The Ranch in Logan Lake, Canada, has been using BIOSOL to fertilize fields to grow forage for cattle since 1997. To date, over 500 hectares have been fertilized, resulting in healthier plants and soil. Studies of the land where biosolids are used consistently show increases in plant growth and that plants contain more protein than average. The Ministry of Forests continues to study the area to look at the long-term effects of biosolids on plants and soils.

Why using BIOSOL as a fertilizer?

BIOSOL, which are a non-chemical, slow release alternative to conventional chemical fertilizer. BIOSOL are produced from sewage solids that have been treated to eliminate harmful bacteria. These materials are broken down by microorganisms and high heat to eliminate harmful bacteria and reduce odours. The final product is an earth-like material that can be directly applied to land as a fertilizer.

Using BIOSOL:

- increases plant growth
- provides essential nutrients such as nitrogen, phosphorous, as well as a range of micronutrients, such as copper, iron, molybdenum, zinc
- provides essential nutrients such as nitrogen, phosphorous, as well
- improves soil health by adding organic matter and creating a healthy environment for soil organisms
- improves the ability of soils to hold water
- reduces the need for chemical fertilizers and the heavy use of energy and resources required to produce them.

How BIOSOL are used:

Communities are using BIOSOL at its own facilities and parks. But there are also farmers, mine operators and many others use BIOSOL to:

- provide nutrients and organic matter to rebuild soil and
- re-introduce Vegetation to mine sites and gravel pits
- fertilize rangeland, hayfields and forests
- make high-quality topsoil for landscaping and landfill closures
- create a soil that is placed on landfills to absorb methane gas and reduce greenhouse gas emissions
- fertilize forests and tree farms



Applying of BIOSOL

Smart Agriculture Concept.

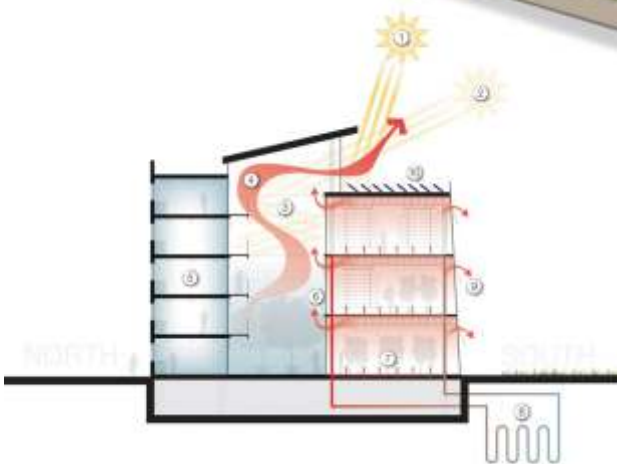
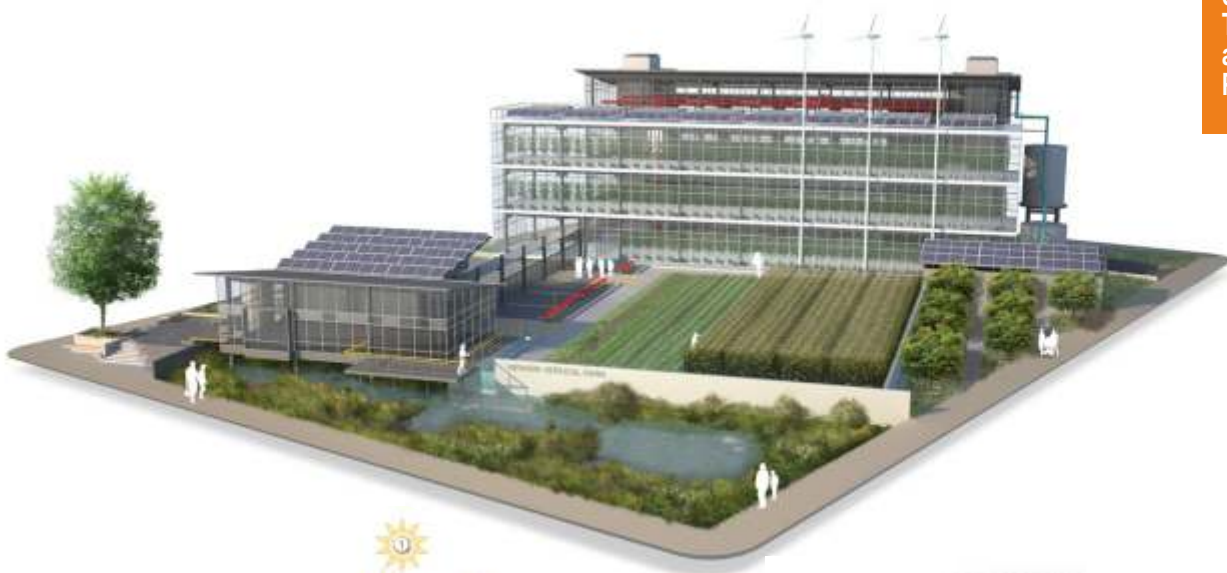
This Vertical Farm represents not only the next generation for Urban Agriculture and Vertical Farming but also an approach to design which incorporates integrated and overlapping sustainable design features. More than just a Vertical Farm, it is a research and development program for sustainable design in an urban context.

The main building contains the vertical greenhouse, and research labs separated by a full height atrium for light and ventilation. The greenhouse space contains high intensity soilless growing systems and is designed to be flexible and adaptable.

The ground floor showcases a demonstration green house for public interaction while the upper floors serve as an agricultural laboratory. The purpose of the building is to develop, test, and educate with the ultimate goal of a commercially viable building type.



NEW JOBS
can be generated.
This technology is
available for
Production in Africa



Vertical Farm. ENERGY SYSTEM

1. summer sun
2. winter sun
3. reflected light
4. thermal stack
5. north side. cool thermal mass
6. warm air vented from greenhouse
7. radiant floor
8. ground source Loop
9. operable vents
10. Photovoltaic Panels



Vertical Farm. WATER SYSTEM

1. rain water collection
2. cistern
3. purification filter
4. potable water
5. grey / black water
6. on site wastewater treatment
7. output water to Wetland system
8. rain water for urban farm
9. on—site infiltration
10. nutrient supply for growing systems
11. hydroponic, aeroponic growing facility

Smart Agriculture Concept.

As population growth increases the need to ramp up food production. Our hi tech agriculture partners are creating a range of agricultural software, services, farming techniques, and more aimed at bringing more data and efficiency to the sector.

- higher yield (as much as 25 to 40%)
- saving in water (as much as 35 to 60%)
- better grain quality
- lower labor costs
- low operating pressures
- No water is wasted to evaporation, wind drift.



With proper usage and smart combination of **bio-energy, geothermal energy sources, fertilization, irrigation and green house technology** growers can produce more with less and **work with nature and not against it.**

Our Partners trying to teach the growers world wide how to provide to each specific plant exactly what it needs **exactly the amount of water and nutrients it needs** and assure the most optimal environmental conditions supported by the most innovative, environmental friend and efficient green house technology for a better sustainable future in horticulture.

Our Partners continuously engineering successful projects under the **most extreme climatic conditions.** The below pictured project was made in Africa. In one of Senegal's most dry and poor area. The pictures are about how to turn the dry dessert into GREEN by **smart irrigation and water management technology** creating new large size open field plantations in the developing countries.



The Project contains a comprehensive drip solution, including infrastructure, covering 1,150 hectares. The complex High Tech sugarcane solution was completed in just one year. Since implementation, the sustainable solution has increased yields to 180-200 tons/hectare compared to 120 tons/hectare, while reducing water, nutrient and chemicals, energy and labor costs. In light of the project's success, the project owner decided to expand the solution across an additional 1,450 hectares in 2015-2016 by leveraging current infrastructure. The infrastructure includes a primary pump station, two reservoirs, two secondary pump stations, and a network of flexible water distribution pipes. Transmitting operational instructions by radio between the back office and the field, the fully automated river-to-plantation solution is the most innovative of its kind in the region.

Strategic Support

Our strategic support comprises of guidance, strategic direction and advice on microirrigated crops, water and nutrigation management technologies. We offer our support to influential agricultural water management organizations, academic research, teaching institutions and policy and decision-makers by organizing consultant and expert meetings, seminars, symposia, international conferences and training and capacity building courses.

Feasibility Study

Detailed Design

Procurement

Implementation

Training & Support

In addition, we conduct technical feasibility, risk assessments and cost-benefit studies of various agricultural water management and conservation alternatives. We also provide strategic perspectives for better planning and implementation of diverse microirrigation projects.

Technology & Project Design

The success of modern agricultural projects in producing high yields while maintaining sustainability and efficiency depends not only on the technology that is being implemented, but also on the knowledge, expertise and experience of those implementing it. Even the world's best products still depend on their implementation. They must be suitable for the specific type of water, climate and soil, the application rate has to be properly calculated, the soil must be prepared and much more.

Unparallel knowledge and best practices

For over four decades and across 110 countries, our partner developed unparallel knowledge and best practices in the implementation of advanced irrigation technologies for a wide variety of crops. This unique perspective is implemented in our projects and shared with our clients. We have had experience with almost every type of climate, soil, landscape, water source, and culture. There is one thing that is always certain in agriculture - there is no single solution for every need. Knowing what to implement and how to do it amidst all these parameters is a key factor in our competitive advantage and plays a pivotal role in the success of the projects.

Combining advanced agronomics with superb engineering

Comprehensive support solution, closely accompanying the project throughout its entire lifecycle. With a wide variety of services provided by professionally certified agronomists, engineers and drafters, irrigation system technicians and more. This unique combination of advanced agronomics and superb engineering is essential to the success of the project. It allows us ensure the project's success from both its engineering and agronomic perspectives.



Smart Agriculture Concept.

The AeroFarms Difference. When it comes to achieving the best quality and yield and using as little resources as possible, the team strives to use the latest technologies. We are of the opinion that this concept can also be realized in the developing countries of Africa.

Fully-controlled agriculture means that we can control, and perfect every aspect of the color, texture, nutrition and most importantly, flavor of our greens. We choose the most flavorful varieties of each green we grow and then we use data to make it taste even better. Our kale is sweeter. Our arugula is spicier. Our herbs are brighter. Top chefs agree that our greens have superior flavor, and we have 30,000 data points to prove it.

We have been charting a course toward a new standard for totally-controlled agriculture since 2004. We disrupt traditional supply chains by building farms on major distribution routes and near population centers. We defy traditional growing seasons by enabling local farming at commercial scale all-year round. We set a new standard for traceability by managing our greens from seed to package. And we do it all while using 95% less water

Smart Aeroponics

We use aeroponics to mist the roots of our greens with nutrients, water, and oxygen. Our aeroponic system is a closed loop system, using 95% less water than field farming, 40% less than hydroponics, and zero pesticides.

Smart Light

We use LED lights to create a specific light recipe for each plant, giving the greens exactly the spectrum, intensity, and frequency they need for photosynthesis in the most energy-efficient way possible. This engineered lighting allows us to control size, shape, texture, color, flavor, and nutrition with razor-sharp precision and increased productivity.

Smart Nutrition

We are constantly monitoring all of the macro- and micronutrients for our plants to provide them with everything that they need to thrive. We are able to take the exact same seed from the field and grow it in half the time as a traditional field farmer, leading to 130 times more productivity per square foot than a commercial field farm.

Smart Data

Our plant scientists monitor more than 130,000 data points every harvest. They are constantly reviewing, testing and improving our growing system using predictive analytics to create a superior and consistent result. With remote monitoring and controls in place, we have minimized the typical risks associated with traditional agriculture.

Smart Substrate

We have developed a patented, reusable cloth medium for seeding, germinating, growing, and harvesting. Our growing cloth medium is made out of BPA-free, post-consumer recycled plastic, each taking 350 (16.9 oz) water bottles out of the waste stream. The cloth can be fully sanitized after harvest and reseeded with no risk of contamination. Acting as a barrier between the mist and the plants, the cloth allows us to harvest a clean, dry and ready to eat product.

Smart Pest Management

Every aspect of our growing process has been optimized to mitigate pest proliferation with no need for pesticides. In addition to our controlled, indoor environment, our growing methods disrupt the normal life cycle of common indoor pests so that they never get started. With our pest-resistant design, pesticides, herbicides and fungicides are unnecessary.

Smart Scaling

The size and configuration of an AeroFarms system are highly customizable. The systems are comprised of modules that serve as building blocks that can be stacked vertically or lengthwise. This allows us to grow in varied locations and achieve ultimate yield per square foot, no matter the space, with quick installation.

Consumer Benefits

- Harvested at Peak Flavor
- Locally Grown
- No Pesticides
- Highly Nutritious
- Uses over 95% Less Water
- Grown from non-GMO Seed
- Ready to Eat
- Soil and Land Conservation
- Committed to the Community

Food Service Benefits

- Year-Round Availability
- Consistent Pricing
- Longer Shelf Life
- Less Shrink
- Safely Grown
- Wide Variety
- Hard-to-Find Varieties
- Customizable Mixes
- No Weather Issues

than field farmed-food and with yields 130 times higher per square foot annually.

Our passion is great tasting food and sharing our harvest with the world. We recently began growing at our ninth farm — the world's largest indoor vertical farm and our new global headquarters in Newark, NJ (pictured). There has been tremendous demand for our locally grown, delicious, produce, and we have farms in development in multiple US states and on four continents. There has never been a greater need for safe, dependable, nutritious food, and we are scaling quickly to transform agriculture around the world.



Food Service

With our patented, data-driven growing approach, we are able to grow over 250 different varieties of leafy greens and herbs and harvest for peak flavor. We offer standard mixes and custom blends for endless culinary possibilities. Our greens have longer shelf life and the highest possible food safety controls from seed to package.

FINANCIALS

THE ESTIMATED PROJECT COSTS.

Aqua Solar Plants (Water for 2,5 Million and Power for 400.000 Residents all over Ghana)	38
Smart Eco Centers in Ghana. (The Heart and Beginning of each Smart Eco City)	39
Smart Eco City (The sustainable Future for Ghana)	40
Smart Lighting Concept (how to save an entire 33 Megawatt PV Power Plant at a blow)	41

Smart AQUA SOLAR Water & Power Plant

ESTIMATED PROJECT COSTS.



Qty.	Districts Plants	Pipeline KM	AQS Units	JOBS AQS	JOBS Pipeline	Investment AQS(Aqua Solar)	Kwh Day	Kwh Year	Kwh 30 Years	Cbm Day	Cbm Year	Cbm In 30 yrs
1	1,0	280	4	200	112	€ 48.000.000	66.000	24.090.000	722.700.000	2.000	730.000	21.900.000
2	1,1	310	4	200	124	€ 48.000.000	66.000	24.090.000	722.700.000	2.000	730.000	21.900.000
3	2,0	160	1	100	64	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
4	2,1	220	1	100	88	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
5	2,2	360	5	230	144	€ 60.000.000	82.500	30.112.500	903.375.000	2.500	912.500	27.375.000
6	3,0	250	5	230	100	€ 60.000.000	82.500	30.112.500	903.375.000	2.500	912.500	27.375.000
7	4,0	240	4	200	96	€ 48.000.000	66.000	24.090.000	722.700.000	2.000	730.000	21.900.000
8	5,0	100	2	150	40	€ 24.000.000	33.000	12.045.000	361.350.000	1.000	365.000	10.950.000
9	5,1	330	6	280	132	€ 72.000.000	99.000	36.135.000	1.084.050.000	3.000	1.095.000	32.850.000
10	6,0	160	3	180	64	€ 36.000.000	49.500	18.067.500	542.025.000	1.500	547.500	16.425.000
11	6,2	130	1	100	52	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
12	6,3	150	1	100	60	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
13	7,0	470	3	180	188	€ 36.000.000	49.500	18.067.500	542.025.000	1.500	547.500	16.425.000
14	8,0	270	1	100	108	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
15	9,0	190	1	100	76	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
16	9,1	110	3	180	44	€ 36.000.000	49.500	18.067.500	542.025.000	1.500	547.500	16.425.000
17	9,2	70	1	100	28	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
18	10,0	390	2	150	156	€ 24.000.000	33.000	12.045.000	361.350.000	1.000	365.000	10.950.000
19	10,1	260	1	100	104	€ 12.000.000	16.500	6.022.500	180.675.000	500	182.500	5.475.000
		4450	49	2980	1780	€ 588.000.000	808.500	295.102.500	8.853.075.000	24.500	8.942.500	268.275.000

Investment : Powerplant	€ 470.400.000	Costs per Kwh	€ 0,053
Investments : Waterplant	€ 117.600.000	Costs per 1000 Liter	€ 0,438
Investment : Pipeline	€ 356.000.000		
Total Investment	€ 944.000.000		

Supplied Households with Power (if each Household use 2 Kwh / Day) 404.250 Households
 Supplied Households with Water (if each Household use 10 Liter / Day) 2.450.000 Households



ESTIMATED PROJECT COSTS for 1 Smart Eco CENTER

Functional Area	Qty.	Units	Estimated Investment	JOBS
Health Center	500	Sqm.	€ 500.000	20
Agro Education Center	500	Sqm.	€ 350.000	20
E Learning Center	500	Sqm.	€ 350.000	10
Smart Eco CENTER Investment	1	Unit	€ 1.200.000	50
Aqua Solar Plant	1	Units	€ 12.000.000	60
Pipeline in average per City	225	KM	€ 18.000.000	90
AQS Investment Summary			€ 30.000.000	150
Eco CENTER incl. AQS Total Investment	1	Units	€ 31.200.000	200

ESTIMATED PROJECT COSTS for 18 Smart Eco CENTERS

Eco CENTERS incl. AQS Total Investment	18	Units	€ 561.600.000	3.600
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ESTIMATED PROJECT COSTS

for 1 Smart EcoCity with 6400 Residents

Functional Area	Qty.	Units	Estimated Investment	JOBS
Apartments	1600	Units	€ 64.000.000	320
Infrastructure Roads & Places	8	KM	€ 3.840.000	40
Infrastructure water, wastewater	200	KM	€ 8.000.000	40
Infrastructure power, Internet	200	KM	€ 4.000.000	20
Infrastructure E mobility	200	KM	€ 1.000.000	5
Infrastructure Intelligent Lighting	200	KM	€ 2.000.000	10
School	3200	Sqm.	€ 1.920.000	40
Kids Care Center	500	Sqm.	€ 350.000	20
Health Center	500	Sqm.	€ 500.000	20
Agro Education Center	1500	Sqm.	€ 1.050.000	20
E Learning Center	1500	Sqm.	€ 1.050.000	10
Multi Event Center	1000	Sqm.	€ 500.000	10
Market Hall	2000	Sqm.	€ 800.000	20
Sport Center	4000	Sqm.	€ 800.000	40
Receycling Center	1	Unit	€ 5.000.000	100
Power to Wastewater Facility	1	Unit	€ 5.000.000	100
Eco City Investment	1	Unit	€ 99.810.000	815
Aqua Solar Plant	2,5	Units	€ 30.000.000	150
Pipeline in average per City	225	KM	€ 18.000.000	90
AQS Investment Summary			€ 48.000.000	240
Eco City incl. AQS Total Investment	1	Units	€ 147.810.000	1.055

ESTIMATED PROJECT COSTS

for 18 Smart EcoCities with total 115.200 Residents

Eco Cities incl. AQS Total Investment	18	Units	€ 2.660.580.000	18.990
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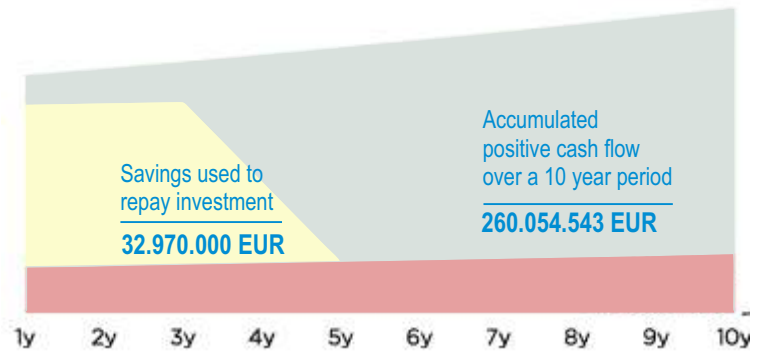


Smart Lighting Concept

Adding wireless remote control for street, roadway and area lighting makes financial sense, whether you are switching to LED or retro-fitting to existing fixtures. With remote control, the community can save energy by only using the precise amount of light they need and by accurately measuring every watt used. The community can cut maintenance costs with real-time fault monitoring and by using detailed operational intelligence to improve day-to-day effectiveness and planning. What's more, the smart lighting concept is the forefront of the Internet of Things (IoT), enabling the city management to add smart city sensors to streetlights, and to add smart city applications, such as parking and more.

With a focus on energy efficient lighting, reduced operational costs and the high demands for lighting-output, REAP Light has chosen to present a lighting solution that matches the current-day lighting requirements. The solution has a significantly reduced energy consumption and CO2 emissions.

We have assumed that we are replacing around **100.000 lamps** throughout the country. The proposed LED lighting solution will greatly reduce Ghana's energy consumption, equated with the saving of an entire **33 MW PV power plant!**



Example:	Watt	Quantity	Investment	€ 32.970.000
Replaced Lights	139	100.000	Savings	€ 260.054.543
New LED Lights	40	100.000		

Year	Current Costs incl. Power & Maintenance	Current Consumption Kwh	Future Power Costs	Future Consumption Kwh	Saved Power Kwh	saved PV Power Plant in MW	Repayment Investor	Savings
1	13.640.000 €	59.304.348	2.580.000 €	11.217.391	48.086.957	32,9	9.420.000 €	1.640.000 €
2	14.020.000 €	60.956.522	2.660.000 €	11.565.217	49.391.304	33,8	9.420.000 €	1.940.000 €
3	14.420.000 €	62.695.652	2.740.000 €	11.913.043	50.782.609	34,8	9.420.000 €	2.260.000 €
4	14.820.000 €	64.434.783	2.820.000 €	12.260.870	52.173.913	35,7	4.700.000 €	7.300.000 €
5	15.240.000 €	66.260.870	2.900.000 €	12.608.696	53.652.174	36,7		12.340.000 €
6	15.680.000 €	68.173.913	2.980.000 €	12.956.522	55.217.391	37,8		12.700.000 €
7	16.120.000 €	70.086.957	3.080.000 €	13.391.304	56.695.652	38,8		13.040.000 €
8	16.580.000 €	72.086.957	3.160.000 €	13.739.130	58.347.826	40,0		13.420.000 €
9	17.060.000 €	74.173.913	3.260.000 €	14.173.913	60.000.000	41,1		13.800.000 €
10	17.540.000 €	76.260.870	3.360.000 €	14.608.696	61.652.174	42,2		14.180.000 €
11	18.066.200 €	78.548.696	3.460.800 €	15.046.957	63.501.739	43,5		14.605.400 €
12	18.608.186 €	80.905.157	3.564.624 €	15.498.365	65.406.791	44,8		15.043.562 €
13	19.166.432 €	83.332.311	3.671.563 €	15.963.316	67.368.995	46,1		15.494.869 €
14	19.741.425 €	85.832.281	3.781.710 €	16.442.216	69.390.065	47,5		15.959.715 €
15	20.333.667 €	88.407.249	3.895.161 €	16.935.482	71.471.767	49,0		16.438.506 €
16	20.943.677 €	91.059.466	4.012.016 €	17.443.547	73.615.920	50,4		16.931.662 €
17	21.571.988 €	93.791.250	4.132.376 €	17.966.853	75.824.397	51,9		17.439.611 €
18	22.219.147 €	96.604.988	4.256.347 €	18.505.859	78.099.129	53,5		17.962.800 €
19	22.885.722 €	99.503.138	4.384.038 €	19.061.034	80.442.103	55,1		18.501.684 €
20	23.572.293 €	102.488.232	4.515.559 €	19.632.865	82.855.366	56,8		19.056.734 €
	362.228.736 €	1.574.907.550	69.214.194 €	300.931.276			Total Savings	260.054.543 €

Assumptions

Price / Kwh	€ 0,25	ON Hours / Before	77
Inflation Rate	3%	ON Hours / After Replacement	54



ANOTHER IMPORTANT INFRASTRUCTURE PROJECTS

Aerotropolis 43

Map of the Railway & Highway Masterplan 54



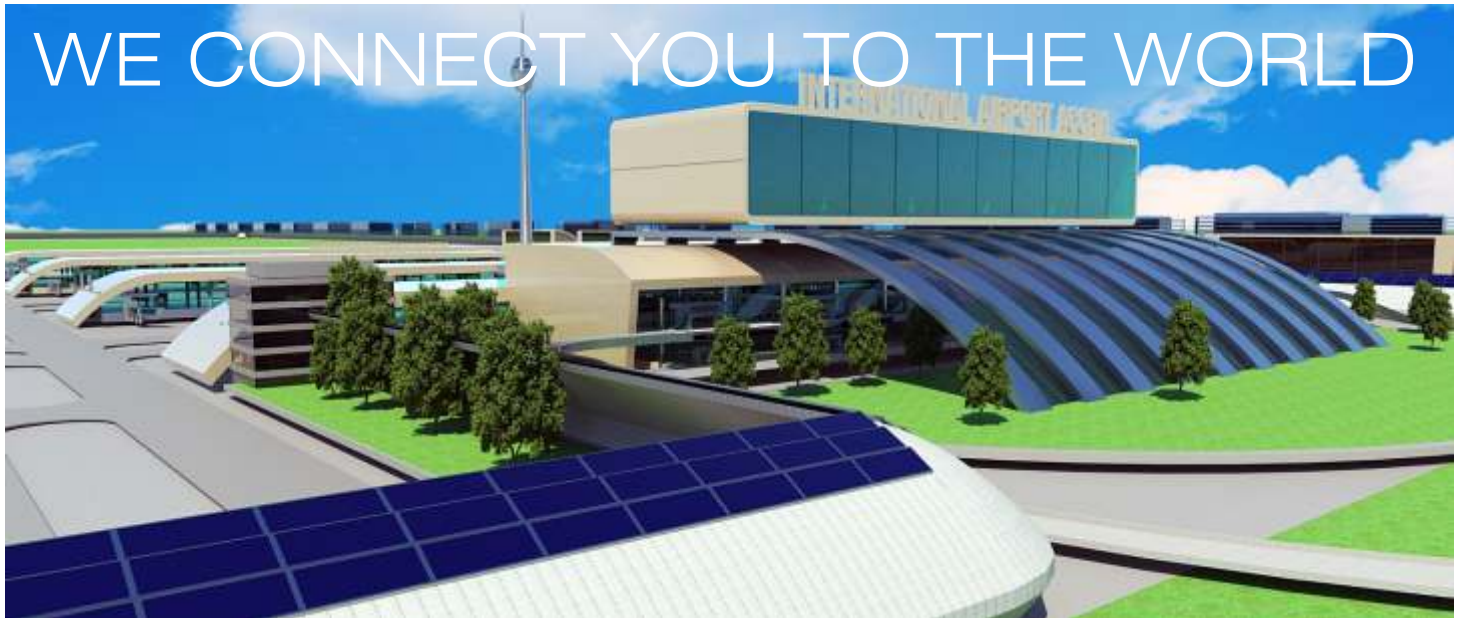
WE CONNECT YOU TO THE WORLD

The Government of Ghana is seeking proposals from experienced and qualified Bidders to undertake the design, finance and construction of an ultra-modern state-of-the-art aerotropolis in Accra.

The projects in the transport sector include the construction of a new international airport in Accra based on aerotropolis concept three regional airports and the upgrade/renovation or relocation of five existing regional airports.

Consistent with the national development agenda and GACL role as a frontline agency of the Gateway Programme, the new airport facility planned for Ningo site for the Accra capital city

area will be modeled on the Aerotropolis concept. This is a broadening of an Airport City concept. While an airport city is an airport-related urban development which provides for commercial, logistic and other infrastructure that enables the airport to perform functions beyond the traditional transport terminal concept to include, hospitality, entertainment, commercial, sports, industrial and other social and economic zones or destinations crucial in contemporary socio-economic progress of countries. This implies providing adequate land for the various facilities and other requirements to assure the efficient delivery of the varied infrastructure of adequate capacities.



Developments associated with an aerotropolis are crucial economic growth nodes central to overall development as they are associated with employment creation, high value logistic operations and quality urban infrastructure that attract investment and will help Accra as a Hub for the sub-region.

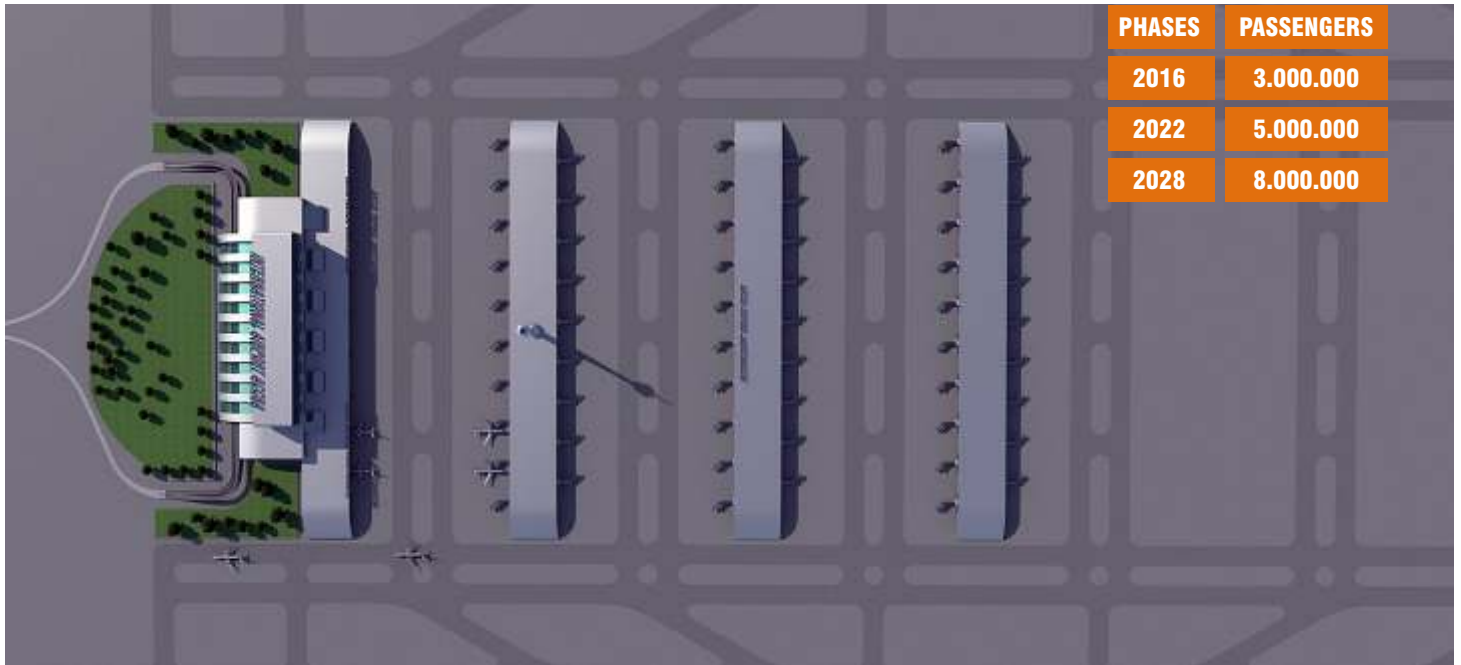
As part of the President's Priority Projects, the construction of the new aerotropolis comes under the direct supervision of the Ministry of

Aviation together with a high-level team comprising the Ministers of Transport, Finance and Economic Planning, Justice and Attorney General and their relevant agencies

A technical team of the Ministry of Aviation with supporting European Consultants and the Ghana Institution of Engineers and representatives from the Ministry of Transport will carry out the technical work together to secure the best for Ghana.



PROJECT PHASES



Airport development projects have emerged as important vehicles for urban (re)development programmes to improve city landscapes and establish new urban settlements with the requisite infrastructure. Airport projects of necessity go through the strict processes of Land-use and Master Planning and project management to deliver top quality, high value infrastructure, real estate and services. Airports serve as vehicles for delivering socio-economic infrastructure for the benefit of society. Such facilities include:

- Site and Services
- Airport and other inter-modal transport infrastructure
- Residential
- Mixed-commercial properties
- Hotel and Tourist Facilities
- Business/Conference Facilities
- Sports and recreational facilities
- Medical and Educational Facilities
- Logistic Parks and Light Industrial enclaves



PROJECT AREA

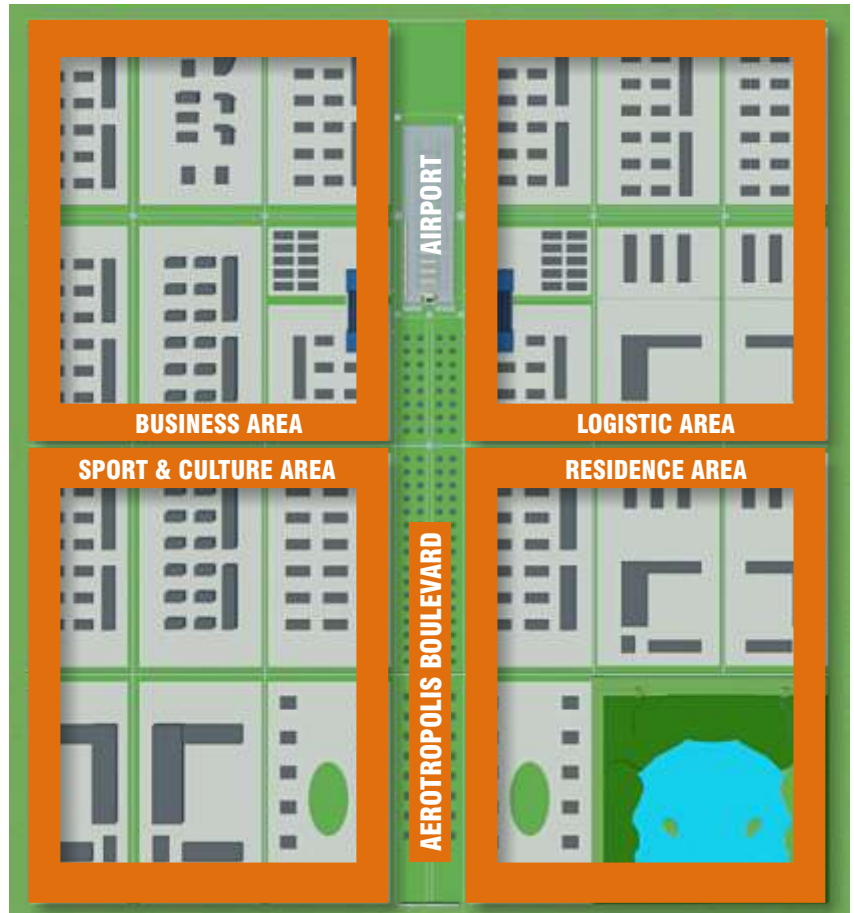
AREA : 25 x 24 Kilometers = 600 km²

The Government of Ghana will provide 600 Square Kilometers of land for the aerotropolis and will take charge of obtaining licenses and permits that are required for the projects. It is expected that the proposed Terminal Building shall be used to facilitate ten million passengers per year.





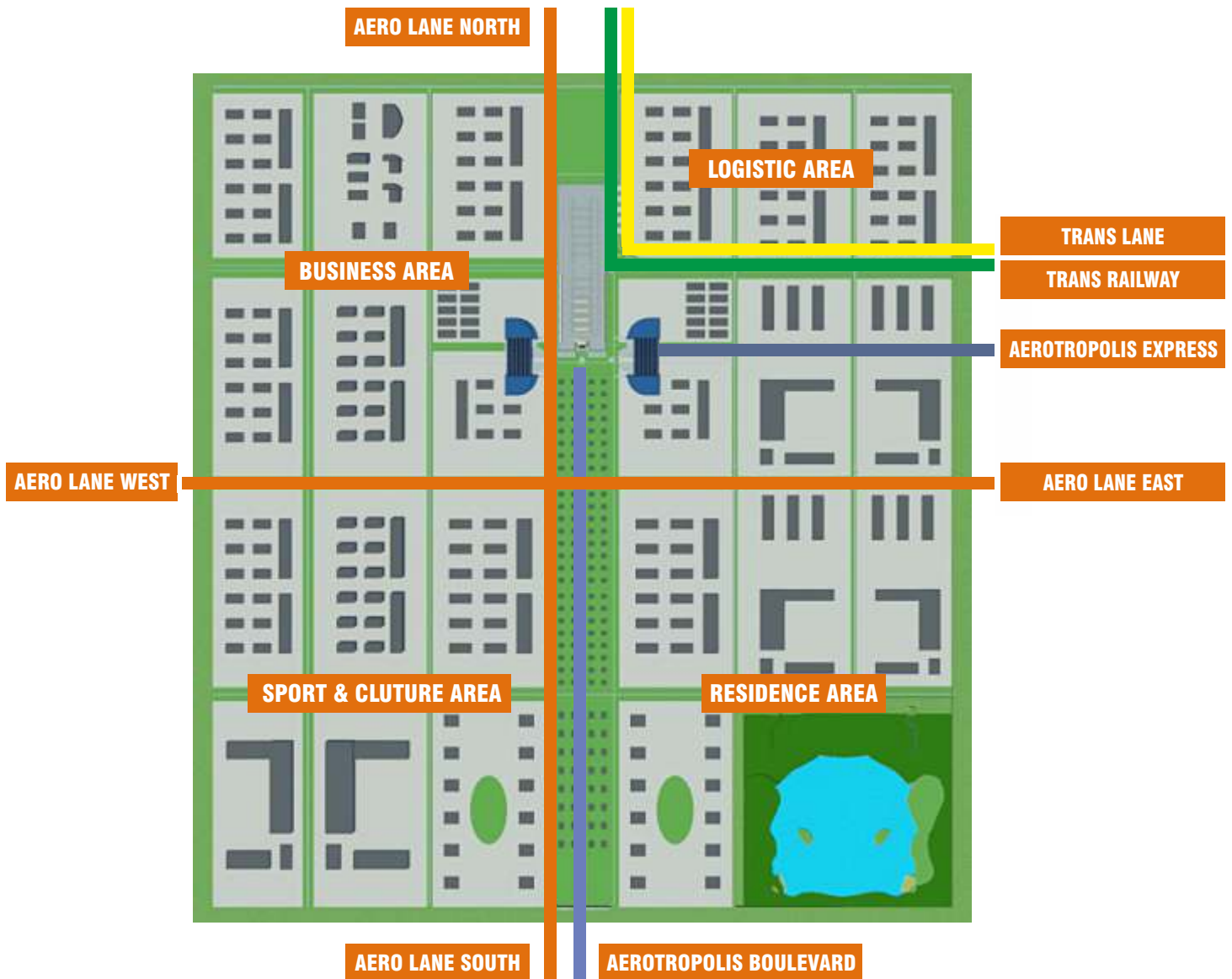
FUNCTIONAL AREAS



BUSINESS AREA	
University Campus	200.000
Research Technology Park	30.000
Office Corridor – 500 Offices	40.000
Exhibition Halls	20.000
World Trade Complex – 2500 Offices	120.000
Commercial Buildings – 500 Offices	40.000
Factory Outlets – 500 Shops	40.000
Wholesale Merchandise Marts	30.000
SPORT & CULTURE AREA	
Convention Center	30.000
Hotel District – 1000 Beds	25.000
Entertainment District	15.000
Info Communications Techn. (ICT)	30.000
Medical and Wellness Cluster	90.000
Sports Complex	15.000
Shopping Arcades	60.000
LOGISTIC AREA	
Hub inter-modal transport	200.000
Bonded Warehouse District	30.000
Express Couriers	15.000
Just in Time Manufacturing	15.000
Flex Tech	15.000
E-Fulfillment Facilities	20.000
Logistic Park Free Trade Zone	20.000
Intermodal Freigh Hub	20.000
Industrial Park	15.000
Distribution Centers	30.000
RESIDENCE AREA	
Solarcity Appartments-2000 Fam.	90.000
Solarvillage 1000 Families	180.000
Golf Area with Lake	25 km ²
Multifuntional Sport Arena	5.000
Multifuntional Swimming Arena	5.000

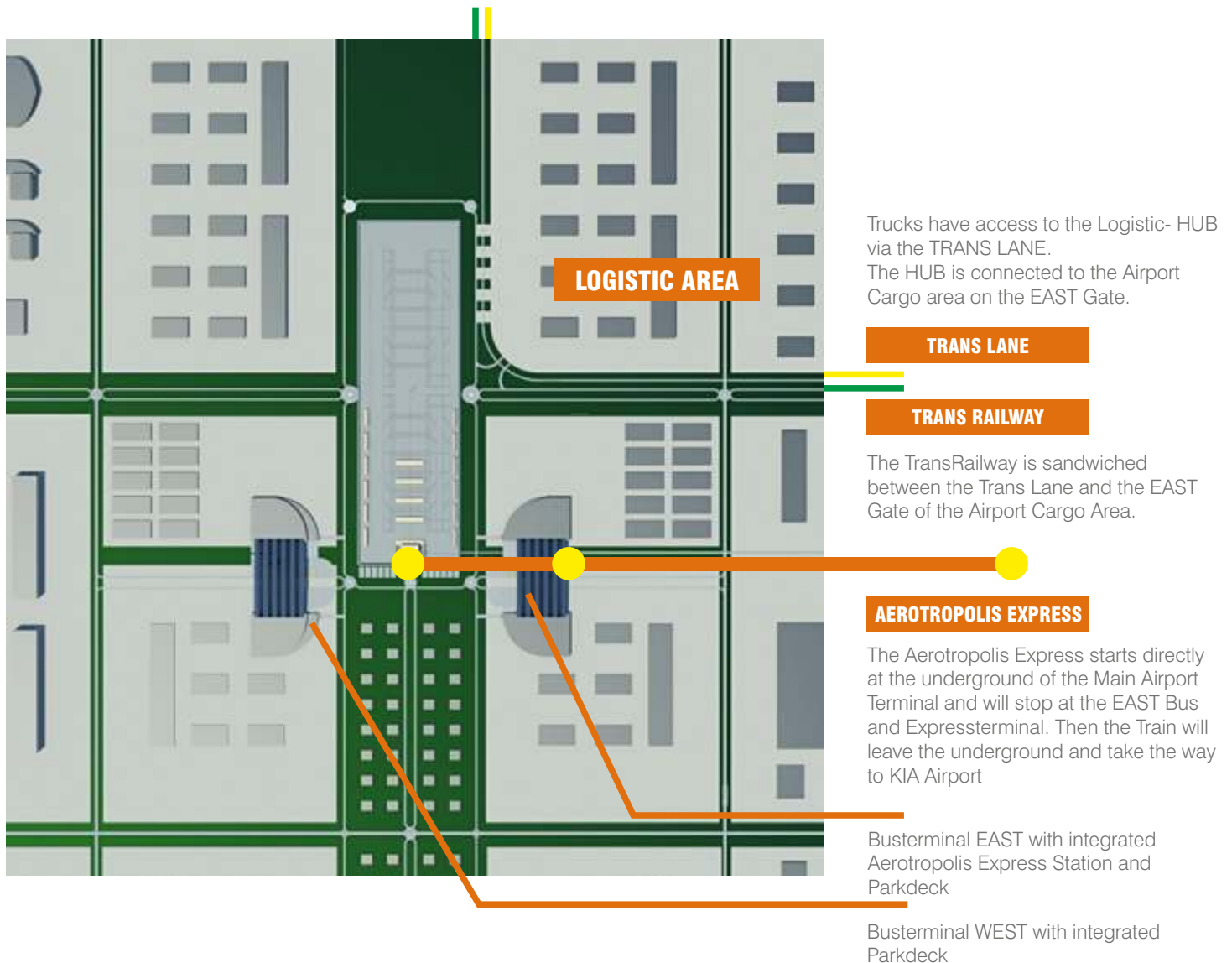


TRAFFIC SYSTEM



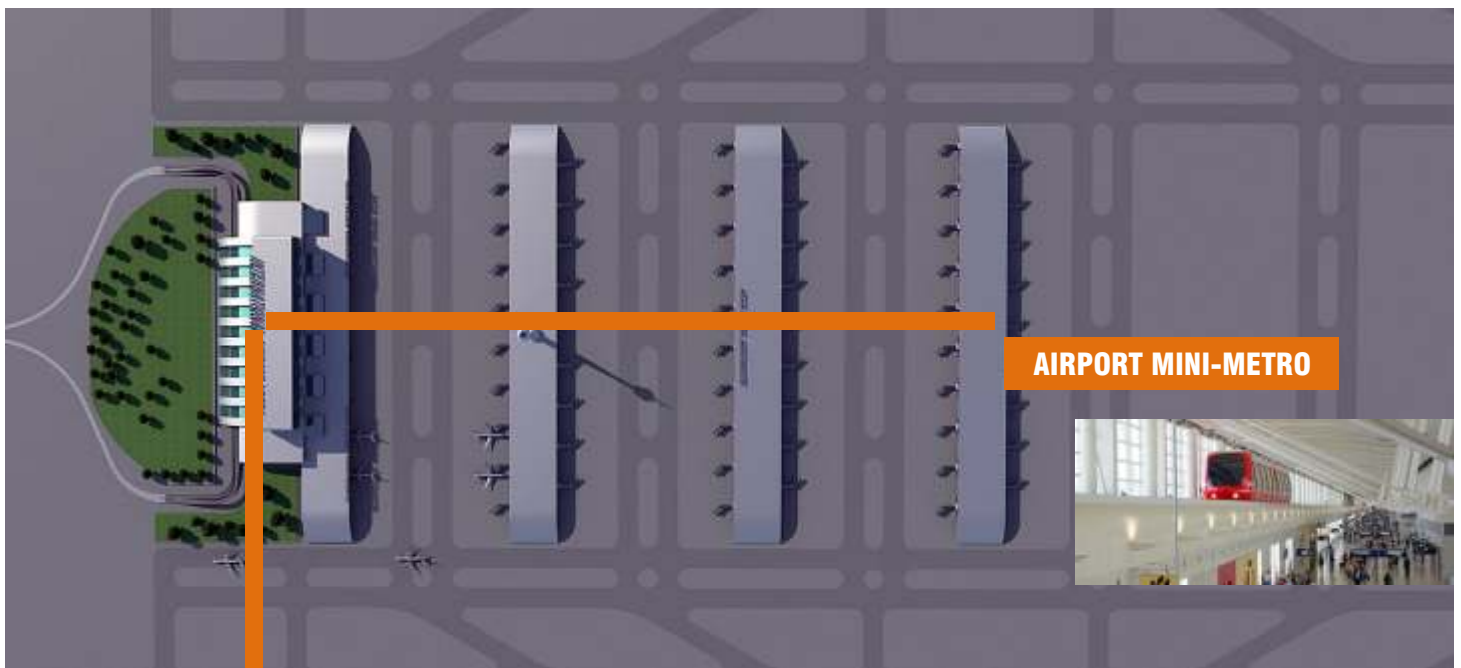


LOGISTIC AND TRANSPORT





AEROTROPOLIS EXPRESS MINI-METRO



AIRPORT MINI-METRO

AEROTROPOLIS EXPRESS



The High Speed Aerotropolis Express connect the the new Airport with the existing Kotoka Airport KIA. For the 55 Kilometer Route the Passengers will need about 20 minutes only.

MINIMETRO. used on circulating short-distance passenger transport systems. Here, the train connects the Mainterminals with the Subterminals. Stop and open the Doors automatically at every Terminal. The Minimetro is completely driverless and can be on top of the Terminals or underground.



AEROTROPOLIS EXPRESS MINI-METRO



MINIMETRO. Driverless Terminal Connction

Funiculars can be designed for either circulating or jig-back operation. In the circulating design the haul rope forms an endless loop, with the cabins or cars evenly spaced along the cable and rotating along the track always in the same direction. Circular operation is continuous, with transport capacity depending on carrier size and interval. The cable grip which connects the

carrier to the haul rope is an automatically detachable, used on circulating short-distance passenger transport systems. Here, the grip opens automatically at the station entrance, transferring the carrier to a conveyor system which decelerates or completely stops the carrier for comfortable passenger entry and exit.

SIEMENS DESIRO High Speed Train

The Siemens-Desiro platform combines comfort with a high level of safety and reliability in an extremely innovative design – resulting in greater customer appeal and customer satisfaction. High flexibility and quality combined with optimized costs also ensure maximum economy. You are perfectly equipped for the future with this trendsetting family of trains, which can be deployed in commuter networks, regional railways, or for feeder services.



The Rosenbauer Firefightertruck „PANTHER“



The top class of the ARFF vehicles meet standards and airport requirements of all continents worldwide. The Rosenbauer PANTHER fire truck has been synonymous with speed, safety, design and outstanding firefighting performance for over 20 years. It proves its quality daily in 81 countries. Only the original can do that.

Everything from a single source:

- on-site analysis.
- Consultation. Conception.
- Production. Maintenance.
- Complete provider with own chassis
- Innovative and efficient
- Efficient fire and disaster protection

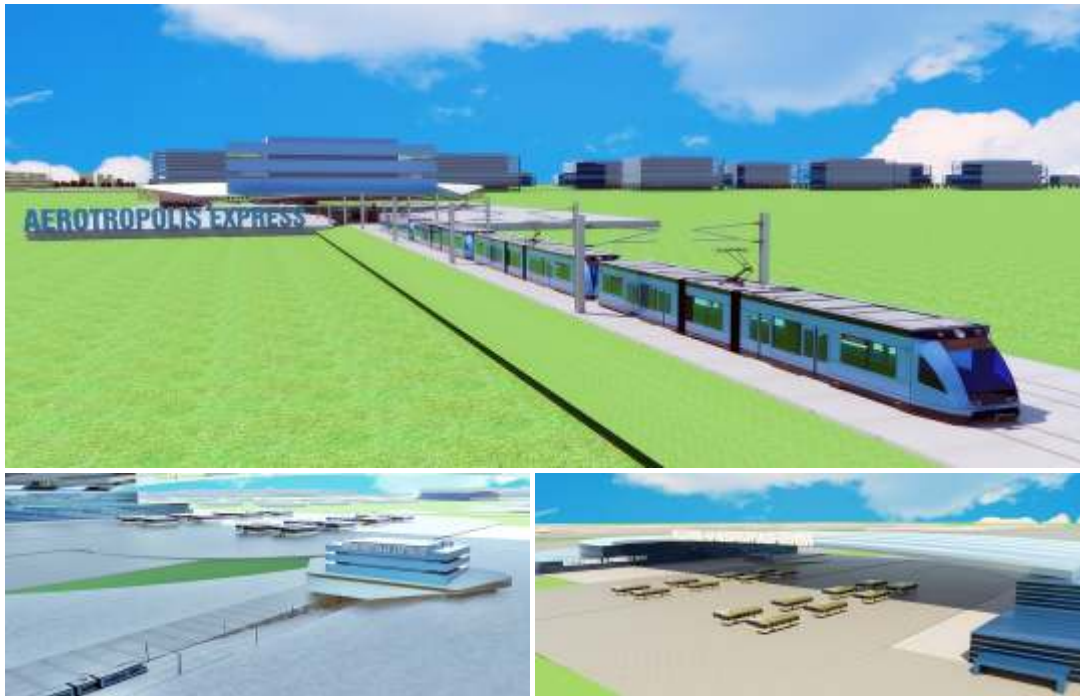
Water: 16,800 l
Foam: 2,200 l
Powder: 250 kg (optional)

Pump unit:
Type: Rosenbauer N100
Output: 9,000 l/min at 11 bar

Roof turret: Rosenbauer Rm60
Output: 7,000 l/min at 10 bar
Bumper turret: Rosenbauer Rm15
Output: 1,500 l/min at 10 bar
Driving performance
Acceleration from 0 to 80 km/h within 25 sec.
Top speed 135 km/h



Busterminal with integrated Aerotropolis Express Station and Parkdeck



Interior Views

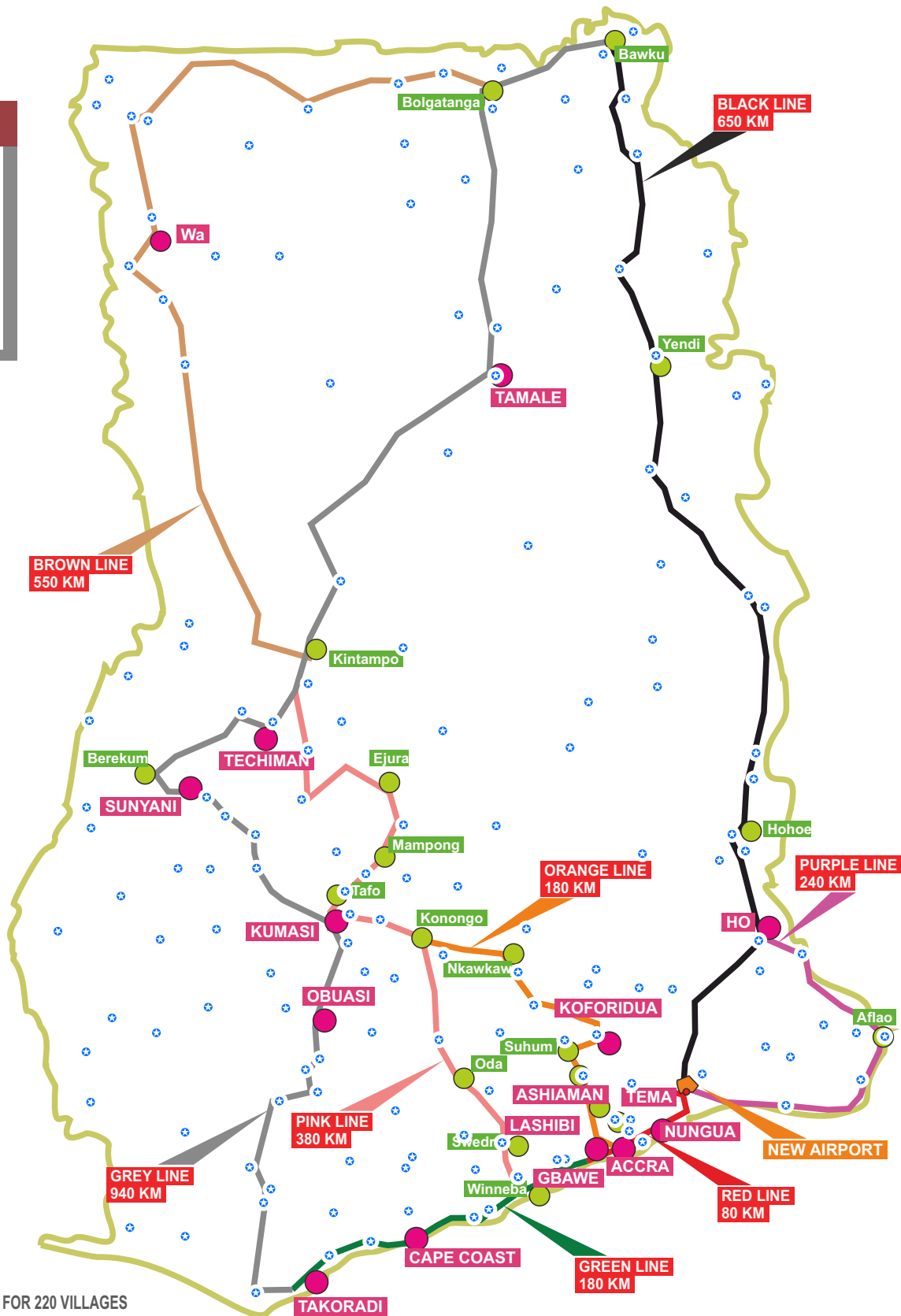


**INFRASTRUCTURE
MASTERPLAN FOR GHANA**

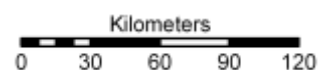
RAILWAYS

In the continuation of the line Aerotropolis Express (RED LINE), we have developed a nationwide railway network. The expansion should be completed by 2030.

RAILWAY NETWORK	
RED LINE	80
GREEN LINE	180
BLACK LINE	650
GREY LINE	940
ORANGE LINE	180
PINK LINE	380
BROWN LINE	550
PURPLE LINE	240
TOTAL KM:	3200



- GOG WATER/POWER PROGRAM FOR 220 VILLAGES
- COUNTRY BORDER OF GHANA
- NEW PIPELINE FOR : WATER, POWER, FIBER OPTIC INTERNET
- TOP 20 CITIES OF GHANA . Population
- TOP 21 to 40 CITIES OF GHANA . Population



2020

**INFRASTRUCTURE
MASTERPLAN FOR GHANA**

PROTECTION OF CONFIDENTIAL INFORMATION.

This Masterplan (55 pages) has been exclusively created for the Government of the Republic of Ghana. The Signatory understands and acknowledges that the entire Information in this Masterplan has been developed or obtained by REAP AQUA SOLAR HYBRID LIMITED through the contribution of time, effort, expense and creativity, and that the Information is a valuable asset of REAP AQUA SOLAR HYBRID LIMITED, which provides the Government of the Republic of Ghana with a significant advantage, therefore Confidential Information.

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Date and Signature