



ECOPARK FOR MASS SUPPLY OF AFFORDABLE HOUSING: LOW-CARBON CONSTRUCTION MATERIALS

REALIZING URBANIZATION WITH GREEN ECONOMIC DEVELOPMENT, SAFE NEIGHBORHOODS AND DECENT JOBS



Schweizerische Eidgenossenschaft
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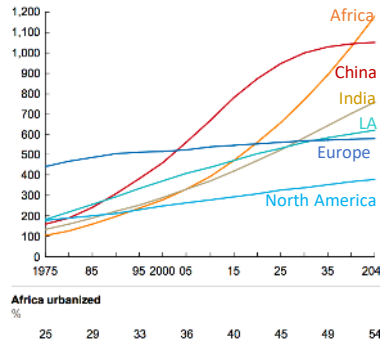
Swiss Agency for Development
and Cooperation SDC

skat Swiss Resource Centre and
Consultancies for Development

PROECCO PROmoting EMployment through
CLimate Responsive COnstruction



Size of the urbanized population¹ Million



Africa urbanized

%

25 29 33 36 40 45 49 54

Additional people living in urban areas per year, 2015–45 Million

Africa	24	} 24
China	9	
India	11	} 29
Latin America	1	
Europe	5	
North America	3	

About the Swiss efforts to strengthen Africa's housing supply chains

The Swiss Confederation

The Swiss Agency for Development and Cooperation (SDC) has supported the construction industry in Africa, Asia and Latin America for several decades and triggered many local and regional initiatives for green building material production, that are now promoted and coordinated at global level.

Skat Consulting Ltd

Skat, a Swiss resource center of technical experts and project managers, designed its first green building material factory in Rwanda in 1982. Skat supports the private and public sector across Asia and Africa in introducing energy efficient technologies for clean production, affordable construction and inclusive urban renewal.

The PROECCO Project

SDC entrusted Skat to implement the Project Promoting Employment through Climate-responsive Construction in Africa's Great Lakes Region. Since 2013 the project facilitates the transformation of the region's construction sector and promotes the introduction of affordable housing and inclusive solutions for urban renewal and expansion.

A special focus area is the creation of business environments that promote the local private sector. It serves as an answer to keep up with the exponential urban growth and to supply locally sourced building material and affordable houses on mass scale, in order to become a major growth engine for a sustainable national economy.

01



About the benefits of EcoParks: Low-Carbon Building Industry Clusters



ECOPARK CONCEPT

EcoParks are based on the cluster theory and experiences. Industry clusters are groups of similar and related businesses located in close geographic proximity. They integrate several players along the supply chain and thereby improve the productivity of all involved businesses.

Clusters are a proven successful concept. They can be found across the world. Prominent examples are the Silicon Valley for tech companies in California or car engineering firms in the South of Germany.

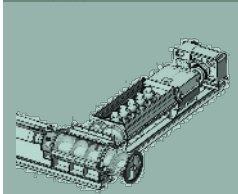
Some clusters develop naturally, for example close to specific natural resources. However, government regulations may also artificially create or promote clustering incentives by encouraging or discouraging business placement, such as through zoning laws or infrastructure support.

ECOPARK DYNAMICS

Introducing EcoParks as industry clusters creates both competitive and cooperative dynamics in the industry. These dynamics appear both horizontally (among competitors) and vertically (to suppliers). Together, this combination creates an exceptionally powerful concept to establish well-functioning industries.

Competition in the cluster leads to market pressure. This will drive technical advancement, innovation and skill development. Businesses will be more efficient in their production and potentially compete about prices.

Collaboration enables producers to better access machinery and raw materials. Down the supply chain, collaboration will also allow companies to realize larger scale projects. Spillover from skill- and knowledge sharing will benefit the efficiency as well.



Access to locally adapted technology

- Warehouses for consumables
- Resellers of spare parts
- Mechanic workshops
- Builders' warehouses
- Occupational health center

50 medium-sized or 25 large sized factories (bricks, timber, LC2, etc.)

Hydro-Power Plant (if existing)

Model Houses

- Cluster Reception
- Sales Services
- Planners offices
- CO2-Certifiers

Clay quarries / Fish-farming ponds

Technische Universität
Darmstadt
skat
State Building Centre and
Construction

KEY FEATURES OF A LOW-CARBON CLUSTER FOR THE BUILDING INDUSTRY

ECOPARK BENEFITS

Successful clusters yield both immediate benefits - in the form of increased economic efficiency, heightened productivity, and employment - and also long-term benefits - as regions establish valuable expertise and reap the rewards of consistent research and development and streamlined production processes.

Together, businesses of a cluster generate expertise, motivation and access to professional networks that an individual market player cannot provide alone.

Establishing clusters is also a successful concept because it lowers the entry ticket price for local entrepreneurs by de-risking their engagement. The cluster provides infrastructure and services and allows them to follow a pre-defined path.

VISION AND IMPACT

Clusters are an ideal solution to close the growing building material gap in Africa. They combine an answer to increase productivity and efficiency in the industry, and they create local jobs.

EcoParks are Low-Carbon Construction Industry Clusters. They will :

1. Reduce cost for material due to increased efficiency and economies of scale
2. Formalize production and improve product quality
3. Create permanent and better paid local jobs
4. Drive technological progress and innovation
5. Bring Independence from international markets
6. Generate local tax and keep domestic capital
7. Promote Affordable Housing solutions

02

How the new Low-Carbon Building Industry in Rwanda changes Kigali's urbanization



2012: The situation 11 years ago

In 2012, most houses were built with mud blocks and or substandard cement blocks, while the two brick factories supplied a small high-end market. These two factories controlled the market prices which led to high construction cost and caused a widening formal housing gap and urban sprawl of substandard buildings.

In the World Urban Prospects Report (2018 update), Rwanda and Burundi were listed as the world's fastest urbanizing countries. Because of a largely underperforming domestic construction industry, building material (namely cement and steel) are the largest import items and source for massive unnecessary loss of national capital.

2013: Introduction of efficient technologies for SMEs

In 2013, Skat opened its PROECCO-offices in Rwanda, Burundi and DRC. The Swiss PROECCO Project introduced both: 1) Advanced technologies for new and stronger material production, namely walling, slabs and roofing material. 2.) New, more cost-efficient construction systems, which make best use of the new material's improved quality.

These new production technologies and construction systems are calibrated for the use by local SMEs, which supply for the lion's share of new urban homes but struggle to meet the requirements for safe storied buildings.

In 2016, PROECCO worked on market preparation and scaling existing technologies throughout Rwanda.



2017: Modern Brickhouse become affordable

While a small group of pioneer-minded urban entrepreneurs established first modern and green brick factories in 2017, the local homeowner's and real estate developer's enthusiasm for the modern brickhouse grew very rapidly. Within less than 2 years after the presentation of the modern brick house at the Kigali Trade Fair, this model house was already freely copied 2000 times.

With the help of lean support services, offered by Skat, jointly with the first generation of trained professionals, the affordable storied brickhouse became a strong element in Kigali's urban landscape. This city-scape is not only shaped by middle class real estate developers, but also low-income families in unplanned neighbourhoods.

Since 2020: Addressing the Supply Gap

Despite the increasing supply capacities, an even faster growing demand for modern brick houses creates a brick shortage, which cannot be addressed by simple market mechanisms alone.

Rwanda's brickyards are scattered in different valleys, have high infrastructure costs and are unable to realize economies of scale. Thus, it is currently difficult to take advantage of market opportunities and related benefits.

In order to address these obstacles, Skat's PROECCO team designed the concept of EcoParks to introduce Low-Carbon Building Material Clusters. In Rwanda, the preparations are currently at an advanced stage.

03

Creating a supportive environment for the EcoPark

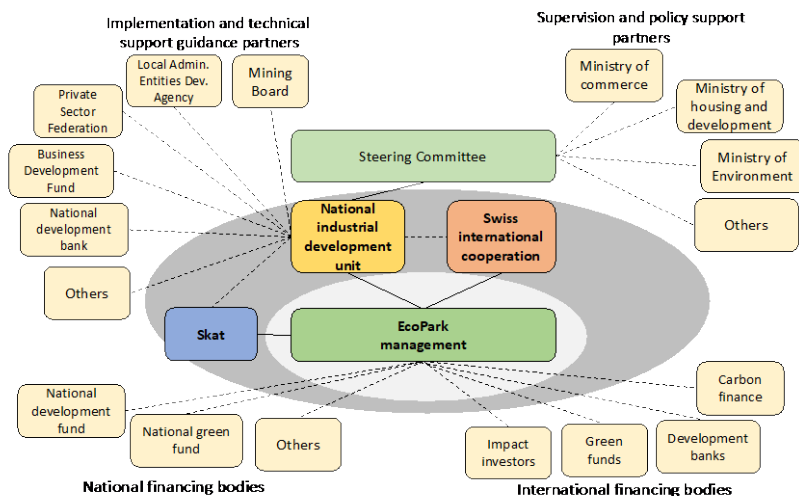
Support from institutional players

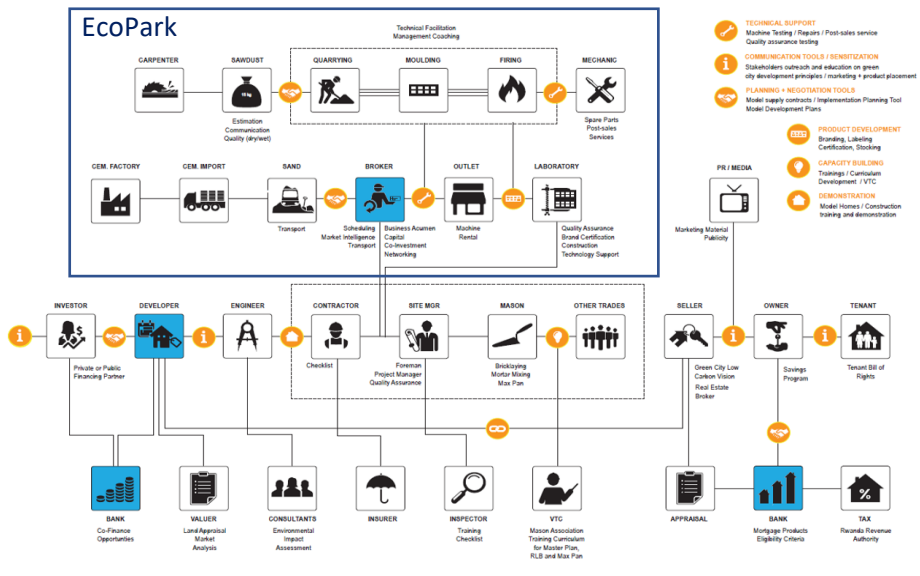
Skat is an experienced network creator and project implementer. With the experience of PROECCO, Skat enhanced its skills on achieving change with multi-level stakeholder engagement.

For the fast introduction of EcoParks, it is crucial to create a supportive environment on all relevant levels. Typically, the communities where an EcoPark will be created are most crucial to be in favour of a project at an industrial scale. In addition, the support of local politicians such as mayors needs to be assured. Finally regional district politicians and national authorities are key to bring projects from idea to realization.

Skat offers support in advocating for EcoPark-concepts at national and international financial institutions. National authorities can access either development or climate funds. The EcoPark-concept falls within both and opens possibilities to combine it with social impact through local job creation and affordable housing.

In addition, the EcoPark concept is also an attractive solution for impact investors and carbon financing institutions. This can further boost the realization of projects. Skat is experienced on both topics and possesses a large network of partner institutions.





Supported by Skat and their network in Switzerland and the Great Lakes Region

Skat has worked for ten years in the area of low-carbon construction and affordable housing solutions in the Great Lakes Region.

The project started with the introduction of technical expertise and training. After a few years, model houses were built and created a booster for the demand for affordable housing solutions with local materials.

From initial model houses in 2017, Skat achieved a transformation towards a diversified and increased building material sector. In addition, a large network of experts and supporters could be built who provide guidance for activities in economic, technical, legal, policy and environmental questions.

These insights will be implemented for establishing well-functioning clusters as a framework and for the operation of its members' businesses. The support of PROECCO will help entrepreneurs before and during their operations.

PROECCO formed strategic alliances for the EcoPark-idea with key policy stakeholders on the national and international level in order to provide a supportive ecosystem for a fast implementation and uptake.

Offer of support network

- Legal setup of business framework by PROECCO regarding land rights, registration and supplies
- Advisory in choosing well-suited sites for EcoParks
- Special bank conditions
- Access to government programs
- Advisory in selecting most suitable equipment
- Network of producers providing favorable working conditions and an existing supply chain
- Training on production techniques, management and strategy
- International economic, industrial and academic expert network
- Expertise of successful reference projects in the Great Lakes Region
- Access to network for maintenance and suppliers
- Contact to carbon crediting institutions and impact investors

04

Business Opportunities within Low-Carbon Building Industry Clusters

Accommodating key business along the value chain

The pilot EcoPark for low carbon building supply, designed for Kigali, Bukavu and Bujumbura will accommodate a variety of businesses that are key for a fast growing output of affordable houses.

They will be managed by a Cluster Cooperative or Management Firm which is equipped with plots for factories and avails warehouses and workshops, including the required exploitation licenses, e.g for quarrying nearby natural key resources.

For the sales, post-sales, and other key services, offices are established at prominent locations which are easily accessible for customers and investors



Business Planning Services

Investors in real estate projects, new ventures in the construction industry or government authorities and their development partners will receive information and advice on green business opportunities, and the related risks and potentials



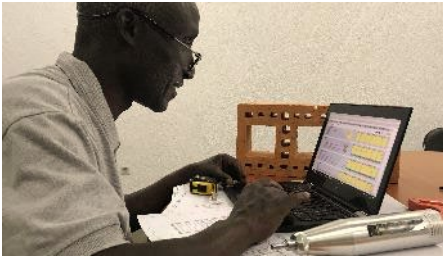
Building Material Certifiers (CO₂-emission, quality)

International carbon trading companies will reward the clusters' low carbon industry, once CO₂-certifiers confirm their climate related performance. For this purpose, a CO₂-certification office will be established in each cluster



Wood Workers / Timber Producers

Wood workers contribute to green and affordable housing supply, by producing wooden material (=carbon sinks) and selling waste as fuel for kilns



Engineering Services

Home-owners, architects or engineers who want to design and build affordable buildings can approach cluster-based design teams who will offer pre-engineered standard drawings and customize them to the clients' needs and budgets



Access to Finance

Finance institutions will share information and advice on green finance products and benefits that can be accessed when complying with green urban construction standards or the requirements of CO2-certificates for carbon finance solutions



Building Material Producers

Block-, tile- and brickmakers, producers of Low Carbon Cement and various other future-oriented industries are the key businesses of each cluster. While some will be limited on production, others might cover long portions of the supply chain



Specialized Manpower

Specialized professionals can be employed by a one company, offer their services individually or as a team in a self-employment system. The later will allow them to incrementally establish their own production unit or construction firm



Construction Firms

Construction firms, specialized in affordable and climate-responsive construction find clients from a favorable business environment within clusters



Mechanic Workshops and Maintenance Teams

Shifting from traditional production to new technologies reduces manual jobs but creates numerous advanced jobs, e.g. machine-mechanics

05

An Africa-wide Network stimulating green urban growth and local employment



ACCESSING DESIGN TOOLS AND TRAINING MATERIAL

The gap for building materials exists in nearly all of the rapidly growing cities in Africa. Hence, Modern Building Material Clusters are an effective solution for many countries and numerous cities. Numerous investors, officials and development partners from the continent's other urbanization hotspots have already visited the project sites and approached Skat for support .

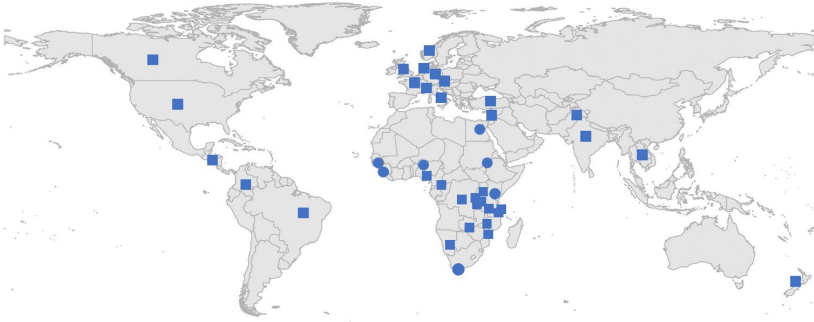
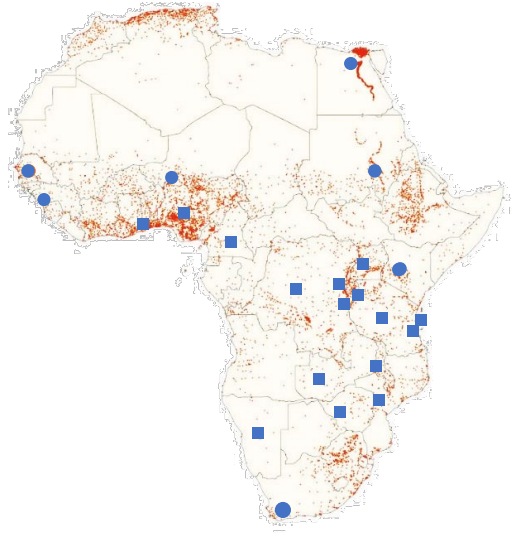
Skat's PROECCO team prepares a comprehensive set of planning and design guides for settlements and industry clusters, including catalogues for affordable housing and factories and related cost calculation tools and pre-engineered designs, production guides, skills trainings and many more.

A (PAN-) AFRICAN COMMUNITY OF PRACTICE FOR BUILDING INDUSTRY CLUSTERS

With location-specific adjustments, these tools could also be applied outside the Great Lakes Region especially in the rest of East Africa as well as Southern and Western Africa.

The PROECCO-team proudly shares its tools and experiences beyond its inner project limits, to the extent that the current Swiss Mandate allows it.

By establishing a community of practice between similar minded cities, the Great Lakes Experience could become easily accessible and key-expertise would be mobilized in a most effective way, also off Skat's limits of the current SDC Mandate.



HOW TO ENGAGE ?

If you are interested in developing and spreading the low-carbon cluster concept, we are looking forward to receiving your message.

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