



# A Manifesto for Community Driven Processes for Climate Responsive DESIGN

Proceedings of a conference on Community  
Driven Processes for Climate Responsive Design  
15th - 16th February 2023

Hyper Consulting Group(HCG) Ltd. on behalf of Enabel



**Belgium**  
partner in development



**MININFRA**  
Ministry of Infrastructure  
Republic of Rwanda



UNIVERSITY of  
RWANDA

**Enabel**

## PREFACE

In the vibrant city of Kigali, in February 2023, a diverse group of passionate individuals came together for a two-day forum focused on community-based projects. Practitioners from East Africa and Europe joined forces, sharing their experiences and insights. This book serves as a reflection of the dynamic discussions and meaningful connections that emerged during this enlightening event.

The forum took place within the walls of the Kigali architecture school, where cultures intertwined and perspectives collided. Alongside the forum, a group of architecture students from Rwanda, Uganda, Kenya, and Burundi embarked on a five-day workshop. They immersed themselves in local communities around Kigali, working hand-in-hand with the residents to create projects that would uplift and harmonize their living spaces.

Throughout those discussions, three key messages resonate strongly. First and foremost, the power of community in shaping its surroundings is undeniable. The projects showcased here serve as tools for communities to reclaim a sense of belonging and forge deep connections with their environments. It is through their collective voice that positive change emerges, transforming spaces to meet their needs, aspirations, and heritage.

Secondly, this book emphasizes the indispensable role communities play in the sustainability and success of any project. They are the driving force that breathes life into these initiatives, taking ownership and ensuring their longevity. The stories shared within these pages highlight the dedication, creativity, and resilience of communities, showcasing their ability to transform structures into vibrant, living embodiments of shared dreams.

Lastly, in an era of climate change, communities play a pivotal role in adapting and mitigating its impact. Their accumulated wisdom enables them to comprehend and respond to the nuances of changing environments. By nurturing their deep-rooted connections to their places, communities can adapt and soften the effects of climate change, fostering long-term sustainability and resilience for themselves and their surroundings.

The challenges posed by climate change are unprecedented, demanding innovative solutions that transcend traditional boundaries. As we witness the impacts of rising temperatures, extreme weather events, and ecological degradation, it becomes increasingly evident that the conventional top-down approaches to design and construction

are no longer sufficient. To effectively address these challenges, we must engage communities as active participants in the process, recognizing their invaluable knowledge, perspectives, and aspirations.

As you embark on this journey through the narratives presented here, you will encounter stories of hope, perseverance, and transformation. The projects featured serve as inspiring examples of collaboration, community resilience, and the potential of community-based initiatives. It is our sincere hope that the knowledge and insights shared in this book will inspire communities, practitioners, and change-makers worldwide to embrace the principles and practices of community-based projects.

We invite you, dear reader, to engage on this transformative journey with us. Let us join hands with communities, design professionals, and construction experts to co-create a world that thrives amidst the challenges of climate change. Together, we can build resilient communities, foster sustainable development, and leave a lasting legacy for generations to come.

Kigali, May 2023,  
Mattias Piani

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# INTRODUCTION

A growing number of actors especially architects and planners are turning to community-based processes, an approach that puts the community members at the centre of projects in order to ensure ownership and take control of their community development initiatives. Due to the significant link between development and communities with their built environment; the architects and planners have resorted to utilizing local knowledge, skills, and resources, while seeking to empower communities to be more climate responsive and to take charge of their own development within their context.

The intended outcomes of this process is to improve the lives and well-being of local people, build more sustainable communities, and promote social justice and equity. This is because community-based processes involve collaborative efforts that bring together the local population and other stakeholders in identifying, planning, and implementing projects that address their community needs and priorities.

More so, the assumption is that by involving community members in the implementation of development initiatives, they (the projects) are more likely to be sustainable, relevant,

and effective in responding to the rapidly changing world, yet becoming more climate responsive and resilient. Additionally, the processes increase and strengthen social cohesion and increase the response and resilience of communities to shocks within their built environment.

It is against this background that Enabel in partnership with the Ministry of Infrastructure, and University of Rwanda, organised a workshop on 15-16 February 2023, which tackled community driven processes for climate responsive design. The workshop attracted over 200 participants from government agencies, East African Universities and regional practitioners experienced in community based practices.

The aim of the workshop was to raise awareness around the critical importance of community-driven processes and their potential to drive a positive impact on the local ecosystem in terms of design and construction process for low-carbon, long-lasting buildings that effectively address the needs and priorities of community members. It also aimed to articulate the extent to which community members can generate inputs and feedback on the development initiatives taking place within their environs.

This manifesto therefore captures and explores these community-based processes from the design and construction, transition settlements and home grown solutions perspectives. The manifesto highlights best practices and insights of initiatives implemented across the five countries that were represented at the workshop.

Generally, all the case studies presented in this manifesto validate community based approaches as a strong alternative to overcome issues associated with conventional approaches to architecture that exclude people from the design process.

This manifesto is organised in six sections. Section one is the **introduction** that provides the background and context of this manifesto. The second section provides an overview of **community based processes**. The third section tackles **design and construction** in the context of engaging community members in the planning and implementing construction projects. The fourth section talks about helping communities to **transition** to more sustainable and resilient ways of living. And the fifth section talks about **home grown solutions** which reflects on locally developed solutions to respond to challenges faced by communities. And the final section presents **case studies** collected from across the five countries.

## 1. Introduction

## 2. Overview of Community Driven Processes

## 3. Design and Construction

## 4. Transition Settlement

## 5. Homegrown Solutions

## 6. Case Studies

1. EarthEnable
2. MASS Design Group
3. Gahinga Batwa Village
4. Ubugingo Health Post for Rwanda - ASA Studio
5. Mpazi Participatory Neighbourhood Transformation – SKAT
6. Enabel UEDi-Musanze Agakiriro Community Project
7. Population and Development Initiative(PDI), Kigoma, Tanzania
8. Umuganda: Ensuring Community Ownership in Government- mandated Programs
9. SAKiRP Stone Arch Bridges
10. Ng'ambo tuitakayo! African Architecture Matters (AAM)
11. Rwanda Trail Bridges
12. Totnes Community Development Society (TCDS)

# COMMUNITY BASED PROCESSES FORUM 2023

📅 15-16 FEBRUARY, 2023 | KIGALI, RWANDA

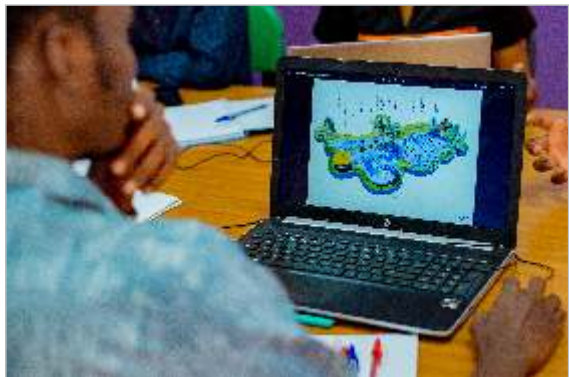


Republic of Rwanda  
Ministry of Infrastructure



Belgium  
partner in development





# What is the secret ingredient for a successful community-based approach?



## OVERVIEW

Community-driven processes for climate responsive design are increasingly becoming important in East Africa, where the effects of climate change are being felt strongly today more than ever. Across East Africa, community-driven processes for climate responsive design are being used in a variety of contexts, from small-scale projects focused on water management and sustainable agriculture, to large-scale infrastructure projects such as roads and public buildings. In Rwanda, for example, community-driven processes have been used to develop a wide range of climate-responsive solutions, including the construction of small-scale hydroelectric power plants and the development of water management systems that help farmers to adapt to changing rainfall patterns.

Even though these community-based processes are increasingly being adopted across the region, most citizens in these countries are not fully integrated and involved in identifying, planning, and implementing projects that address their community needs and priorities, especially with the design and construction of projects that have

significant impacts on climate change. Yet, when citizens are involved, there are high chances of tapping into the local knowledge base, skills and materials in building sustainable projects, practices and resilience.

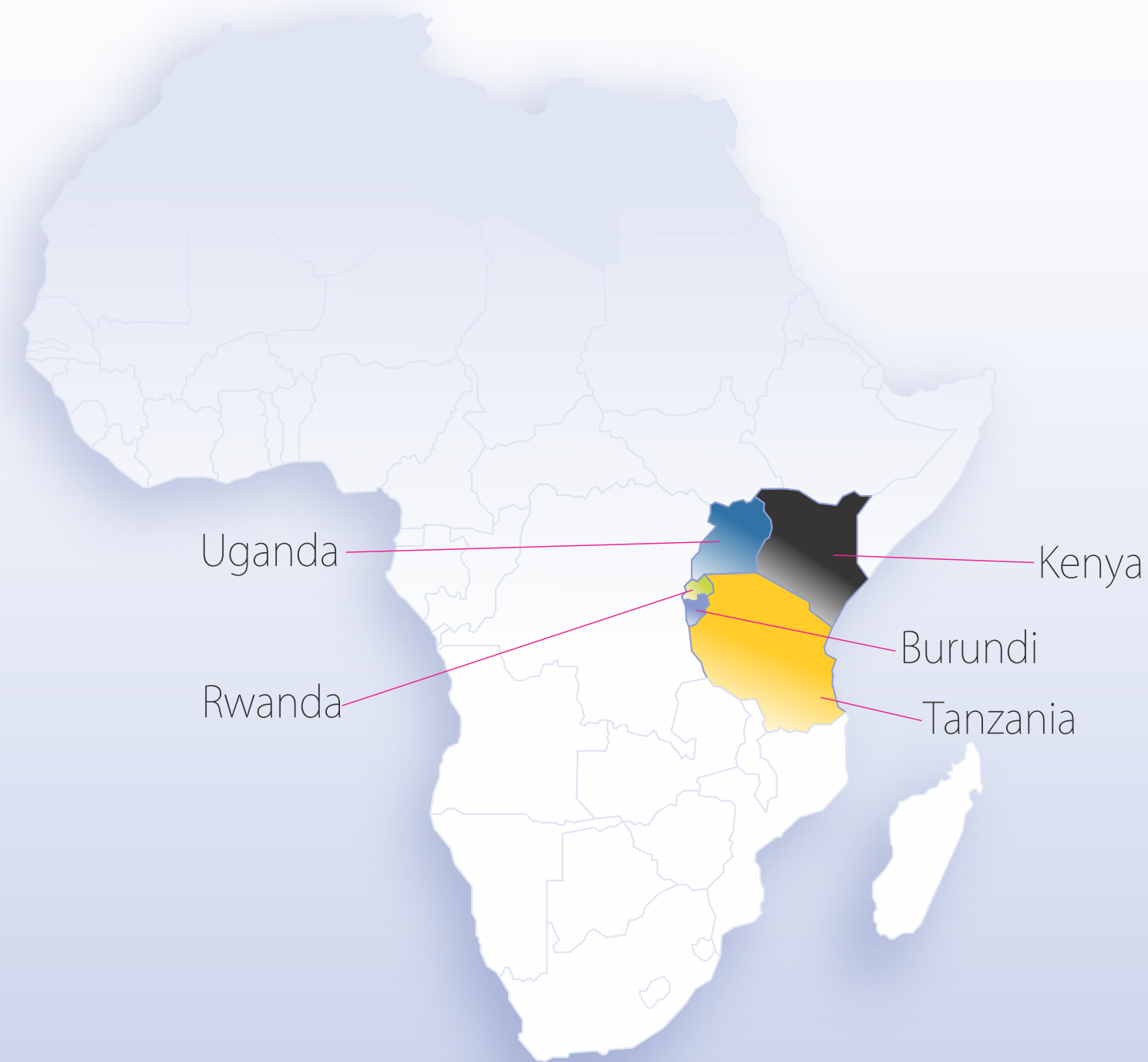
In other words, the active participation of the citizens into the design and planning process can help develop climate responsive solutions that are both effective and sustainable. Some of the key benefits of community-driven processes include but not limited to building the local capacity of community members to take charge and ownership of the solutions in line with their needs and priorities. With this approach, community members are likely to be more invested in the success of the project and to take an active role in its management and maintenance as well as monitoring and evaluation.

Community-driven processes for climate-responsive design should therefore involve working closely with communities to identify their needs and preferences, and incorporating those into the design process. It is therefore important that

architects and other stakeholders recognise that different communities have unique knowledge and experiences that can inform the design of buildings and spaces that are tailored to their specific context.

By engaging with local communities and incorporating their knowledge and expertise into the design process, communities are able to design or develop solutions that are both effective and sustainable in building a more resilient future for everyone. Conversely, by involving communities in the design process, architects and urban planners and other stakeholders can create spaces that are not only functional and sustainable, but also culturally appropriate and socially inclusive.

In so doing, this can result into increased community ownership of their built environment, while becoming more resilient and adaptive to the challenges posed by climate change within East Africa.





1

# COMMUNITY DRIVEN PROCESSES

## DESIGN & CONSTRUCTION

Design and construction for climate responsive design fundamentally involves creating buildings and structures that are in synch with local climate and environmental realities, with the objective of minimising energy consumption and maximising comfort for occupants.

The process requires an understanding the cultural and social context in which the community projects are situated. For example, buildings in hot and arid regions may incorporate traditional designs such as courtyards and thick walls to provide shade and insulation, while buildings in tropical regions may require open-air spaces and natural ventilation to maximise airflow and reduce heat.

A community-centered design and construction therefore engages community members, identifies existing community assets that can be leveraged for the project, collaborates with partners, creates designs that meet community needs, develops and implements construction plans and evaluates the project to assess its impact on the community.

Overall, the purpose of climate responsive design is to create buildings and structures that are environmentally sustainable, culturally appropriate, and comfortable for their occupants. By taking into account local climate and environmental conditions, architects, urban planners and builders can create structures that are energy-efficient and socially responsive.

## THE ROLE OF THE ARCHITECT

In culturally and socially diverse societies, architects play a crucial role in facilitating and guiding the design and construction process including bringing together the community's vision, functional requirements, and aesthetic preferences into a well-designed and functional project that meets local needs and priorities.

Architects work with the community to understand their needs and desires, and use this information to create designs that are tailored to the local climate and environment as well as materials. These further help in educating the community about sustainable design practices and the benefits of a climate-responsive design.

During the workshop, participants highlighted that architects play a vital role in bringing together local builders to ensure that the designed projects are implemented correctly and are constructed to high standards in accordance with the community and regulatory expectations. The architects do so to ensure sustainability and ownership by the community members.

Overall, the architect's role in community-driven processes for climate-responsive design is to act as a facilitator, educator, and advocate for sustainable design practices, and to work collaboratively with the community to create designs that are both functional and environmentally-responsible from concept to construction oversight. Through their efforts, architects help in ensuring that communities are fully engaged, and have access to functional, sustainable, post occupancy, safe and culturally appropriate buildings and spaces that meet their needs and priorities.



This end-to-end participatory process results in high quality, affordable and healthy buildings.

CASE STUDIES

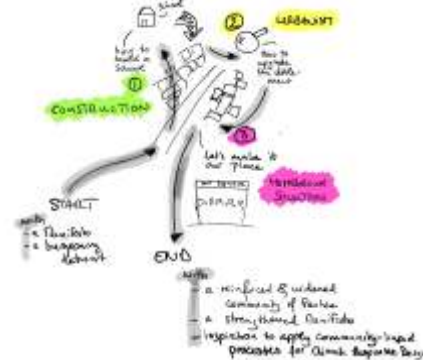
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## DESIGN METHODOLOGY

While discussing the methodology for the design and construction within the community based process during the workshop; participants highlighted that for any project to be effective and owned by community members, the process ought to analyse the environmental, social, and economic impacts of a project throughout its entire life cycle from concept to completion including post-occupancy. Further, that the project should assess all effects within the local ecosystem from energy consumption and greenhouse gas emissions, water and resource usage, waste generation, particularly in the context of sustainable and equitable development.

Additionally, impact design and construction methodology must contribute to community-based processes by prioritising the social and environmental impacts of buildings and spaces, using participatory design methods, fostering community engagement, and building capacity to community members to broaden their knowledge in building design, construction, and maintenance for sustainability.

More so, the economic impacts such as job creation, economic development, and return on investment must also be evaluated. The essence of the methodology therefore is to ensure that the design and construction of a project align with the needs and priorities of climate responsive design and contribute to the overall well-being of the community and their built environment.



Community-based process is a cycle that stimulates wider applications in making interventions more sustainable in both socio-economic and environmental aspects.

CASE STUDIES

1 2 3 5 6

## IMMERSION IN CONTEXT

During the workshop, participants discussed the immersion in community as an important aspect of community-driven processes for climate responsive design. They (participants) highlighted that involving and engaging the local community in understanding the specific social, economic, and environmental factors is key in shaping their needs and priorities, and incorporating these into the design and construction process.

Additionally, the participants highlighted that immersion in community can help ensure that the design and construction solutions are grounded in the local context and are responsive to the community's unique challenges and tap into opportunities.

In ideal community driven processes, understanding the local needs and priorities and climate conditions, including temperature, humidity, wind patterns, and precipitation levels is fundamental to the effective design and construction process. The information helps to inform the design of buildings and communities that are resilient to the local climate.

Overall, immersion in community was found to be a critical component of community-based processes, particularly in the design and construction of buildings and spaces. By spending time in the community, architects and urban planners and builders can gain a deep understanding of local needs and cultural values, build trust and establish relationships with community members, facilitate collaborative design, and transfer knowledge and skills to the community. This thus can result into the creation of spaces that are tailored to the specific needs of the community and reflect their needs and priorities.



The participatory design process must begin with an immersive pre-design phase that engages members of the community.

CASE STUDIES

1 2 3 5 6

## PARTICIPATORY TACTICS

During the workshop, participants deliberated on tools and tactics that are essential for the design and construction in community-driven processes. Among these included engaging with community members in the design and construction process, empowering them to have a voice, and incorporating their feedback into the process for tailor-made solutions.

Further, they emphasised that participatory tools and tactics were helpful especially in ensuring that the design solutions were responsive to the community's unique needs and priorities. In addition, they highlighted that participation of community members into the design and construction process supported in prototyping, scenario planning, gathering of vital information, insights, and perspectives on local climate challenges and opportunities and increased community ownership and support for the development.

In a nutshell, design and construction participation tools and tactics are critical for creating community-based processes that are participatory, inclusive, and collaborative. By involving community members in the process, architects, planners and builders can ensure that spaces reflect local context, build trust and establish a rapport with community members, and create local job opportunities and knowledge transfer. Workshops and meetings, focus groups, design competitions, interactive design tools, and construction training and apprenticeships are all effective tactics for promoting participation in the design and construction process.



In Participatory Tactics, community consultations set the pace of what exactly beneficiaries want and that informs the project progression.

CASE STUDIES

1 2 3 5 6

## POST-OCCUPANCY ANALYSIS

**Note:** Post-occupancy analysis is an evaluation process that takes place after a building or space has been occupied for a period of time after completion.

The post-occupancy analysis like other steps of the design and construction, was discussed during the community based process for climate responsive design workshop held on 15-16 February 2023. The participants highlighted the importance of post occupancy evaluation as an important step to identifying areas where the design and construction process can be improved to inform future design decisions.

The workshop made emphasis on some key important steps that should be looked at while carrying out a post occupancy analysis. These include but not limited to; identifying the strengths and weaknesses; collecting and analysing information and data; mechanisms of reducing costs for future projects; evaluating sustainability and identifying areas of improvement to guide future projects.

In summary, post-occupancy analysis was singled out as a critical process for evaluating the effectiveness of the design and construction process. And by collecting data on how a building or space is being used, it was established that architects, planners and builders could identify areas for improvement and develop recommendations for addressing such issues with the future projects.



Post Occupancy Analysis is essential for built environment and all stakeholders must embrace it as standard practice to ensure all new buildings meet intended efficiency ratings.

CASE STUDIES

1 2 3 5 6 7



## TRANSITION SETTLEMENT

In line with the theme and objectives of the workshop, participants further deliberated on transition settlements as a community based process for a climate responsive design. The participants talked of transition settlements as communities that are designed and built to help people transition towards more sustainable and resilient ways of living as compared to their previous status quo.

In other words, transition settlements are typically designed with an objective of providing the community with safe and dignified dwelling that support their health and wellbeing. As such, transition settlement interventions can take a variety of forms, but they generally include shelter, water, energy, health and education, infrastructure, security and livelihoods.

Further, it was advised during the workshop that for the transition settlements to thrive, they needed to provide the basics in terms of infrastructure services such as water, sanitation, and electricity, as well as access to community facilities such as schools, health clinics, and marketplaces. Meaning that any transition settlement has to typically involve the use of sustainable and locally sourced materials and techniques, as well as involve local communities in the planning and construction process.

Overall, a successful transition settlement in community-based processes should be designed and developed in a way that speaks to the unique needs and priorities of the community, and that promotes sustainability, resilience, and social and economic well-being. In nutshell, these can be coupled with engaging community members, especially using sustainable design methods, and building community capacity to help them create more livable, resilient, and sustainable communities.

## THE ROLE OF THE ARCHITECT

Like in the design and construction projects, architects play a critical role in the design and development of transition settlements, especially by bringing their expertise in planning, capacity building, setting up or establishing transition settlements and carrying out a post-occupancy analysis.

The workshop also found out that in transition settlements, architects fundamentally work and engage with the community to understand their needs and desires, and use such information to develop designs that are tailored to the local climate and their built environment.

More so, these act as facilitators, educators, and advocates for the effective establishment and occupancy of the transition settlements, and work collaboratively with the community to create designs that are both functional and environmentally responsible. Through working with community members and other stakeholders, architects are able to create settlements that are resilient and self-sufficient, while promoting community's social, economic, and environmental well-being.

Overall, a successful transition settlement in community-based processes should be designed and developed in a way that reflects the unique needs and priorities of the community, and that promotes resilience, and social and economic well-being of the population in the transition settlements.



CASE STUDIES

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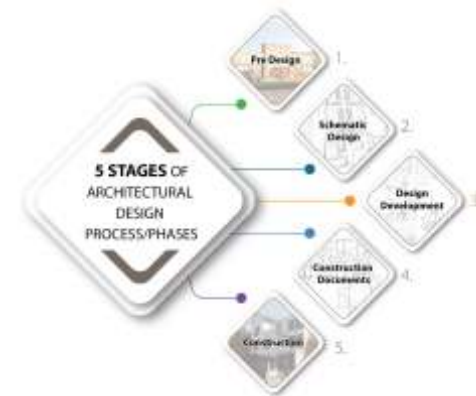
## DESIGN METHODOLOGY

In transition settlements, focus is placed on analysing the environmental, social, and economic impact of the settlement on the community throughout its entire life cycle. The methodology also includes evaluating settlement's environmental impacts on the local ecosystem.

During the workshop, participants highlighted that the social impact of a transition settlements on the community, including equity, health, and livability, must be considered. Additionally, the economic impacts such as job creation, economic development, and return on investment must also be evaluated in such transition settlements.

Therefore, all transition settlements should be inclusive, collaborative, and focused on promoting resilience, and the community well-being, especially by putting forward the needs and priorities of the people in order to create more livable, equitable, and sustainable communities.

In summary, the methodology for designing transition settlements in community-driven processes for climate responsive design involves a range of steps and considerations to ensure that the resulting settlements are sustainable, resilient, and responsive to the needs and priorities of the local community. By following this methodology, participants highlighted that architects and planners are capable of creating settlements that promote a more sustainable and resilient future for such communities.



CASE STUDIES

1 2 3 5 6 11

## IMMERSION IN CONTEXT

During the forum, it was noted that any project that intends to create or add value to a community must understand the needs and aspirations of the community in order to design settlements that are responsive to such needs and aspirations.

Literally, architects, designers and planners should immerse themselves into the community where they would wish to implement their project. Incorporating immersion into the design process, architects, designers and planners are able to gain knowledge of details like demographics, income levels, employment patterns, and social networks of such a community.

Further, it involves an active engagement with the local community to ensure that the design solutions are responsive to their community priorities. For emersion to be successful, it takes a wide range of methods, such as community meetings, workshops, and meetings etc. Through the immersion, architects and planners/designers are able gain a deeper understanding of the community's concerns, and aspirations, and through this understanding these are capable of co-creating solutions that meet the unique needs of the settlement.

Overall, immersion in context is critical for architects to gain first hand experiences and information about the site and trust of community members. In addition, by gaining a deep understanding of the physical, socio-economic, and cultural context, engaging with the local community, and leveraging local knowledge and expertise, architects, planners and designers can also be able to create more inclusive and participatory processes that take into account the community's perspective and inputs.



CASE STUDIES

1 2 3 4 5 6

## PARTICIPATORY TACTICS

After building trust and understanding of the community, the next step is to engage them, especially on the visioning and planning of the transition settlements. Various initiatives and activities can be considered especially around mechanism for sharing and gathering information and feedback about the site.

During the forum, various tactics to engage the community about transition settlements were discussed. These included but not limited to; meetings, workshops, interviews, visualization and modeling, all intended to discuss design options, solicit feedback, and build consensus around a shared vision for the settlement.

Additionally, these would help to facilitate hands-on engagement with community members, such as designing and building prototypes or conducting community mapping exercises, build community capacity, promote skill-sharing, and foster a sense of ownership and pride in the design process.

In summary, participatory tactics are critical for designing effective transition settlements in community-based processes for climate responsive design. By engaging with community members through a range of methods such as community meetings, workshops, and interviews, co-design and co-creation, and visualizations and modeling, designers can create solutions that are more sustainable, equitable, and resilient, and that promote a more sustainable and livable future for the community.



CASE STUDIES

1 2 3 5 6

## POST-OCCUPANCY ANALYSIS

As seen in previous sections, post occupancy analysis in community based process for climate responsive designs is the process of analyzing how functional and comfortable a building is after users or community members have been occupying it for some time. This concept applies to transition settlements as well.

As discussed during the workshop/forum, the architect's work doesn't end when a new structure or building is complete and handed to users. Architects and planners have an extra task of ensuring that the new structures work as intended and meets the aspirations of the occupants.

Even though this looks like an extra responsibility, post occupancy analysis gives architects and planners an opportunity to obtain feedback from occupants and helps them to have a deeper level understanding for the future structures designs and to embrace more efficient, yet innovative strategies.

Post occupancy evaluation in transition settlements are therefore as vital. The analysis does not only help architects and planners to identify potential problems, but also drive the architectural sector forward. However, these evaluations aren't just for the architect's benefit. Community members too gain a great deal from this process, especially by creating solutions that are more sustainable, equitable, and resilient, and that promote a more livable environment for the dwellers.



CASE STUDIES

1 2 3 5 6 7

## HEMGROWN SOLUTIONS

During the workshop, participants reflected on the role of homegrown solutions in building sustainable communities. In Rwanda, community-based solutions are a participatory process aimed at solving problems and improving the quality of life for communities and their members. One of the homegrown solutions in a community-based process is the "Umuganda" program.

Umuganda is a Kinyarwanda word that means "coming together for a common purpose." It's a monthly community service day where all able-bodied residents in the country including youth, and women participate in activities such as cleaning up the neighbourhood, repairing broken infrastructure, and building new community facilities.

Grounded in the country's post-colonial tradition, the Umuganda concept was reintroduced by the Government of Rwanda in 2009 as a way to promote community engagement, foster a sense of national unity, and encourage sustainable development. Since then, it has become an integral part of Rwandan culture, with millions of people participating each month.

Umuganda has had a significant impact on Rwanda's development. It has helped to reduce poverty, improve sanitation, and increase access to healthcare and education. The programme has also fostered a strong sense of community spirit, with residents working together to achieve common goals.

Homegrown solutions are locally developed solutions to problems or challenges faced by communities. Over the years, these have turned out to be effective simply because communities respond the problems based on their deep understanding of the local context and culture, and are developed with the active participation of community members.

In nutshell, the home grown solutions in Rwanda are a great example of a community-based process in climate responsive designs. These demonstrate the power of collective action and community engagement in promoting sustainable development and improving people's lives. Examples of these have included but not limited to community-based conservation efforts, locally designed and built housing, and locally adapted agricultural practices among others.

## ROLE OF CITIZENS

First, community based homegrown solutions refer to locally-led, community-based initiatives that are developed and implemented to address a specific challenge or issue.

In the context of community-based processes for climate responsive design, citizens play an important role in designing tailored responses to their unique needs and priorities.

And since these are the primary actors, these play a vital role in the effective implementation of community based home grown solutions like Umuganda in Rwanda. This is because, they apply local strategies, knowledge and practices, as well as innovations to address their own challenges. More so, using their experiences and interactions, citizens are often able to respond to challenges like food security, healthcare challenges, and other problems like those related to climate change and environmental degradation.

Overall, citizens are engaged by authorities and actively participate in planning, design, and implementation processes of community infrastructures such as roads and rehabilitation of public facilities. This citizen engagement has helped to ensure that solutions to community needs are locally and culturally appropriate, and sustainable throughout the life cycle. Further, the process has helped in inculcating a culture of ownership, sharing of pertinent information, and a sense of shared responsibility for the success of the community in particular and the country at large.



CASE STUDIES

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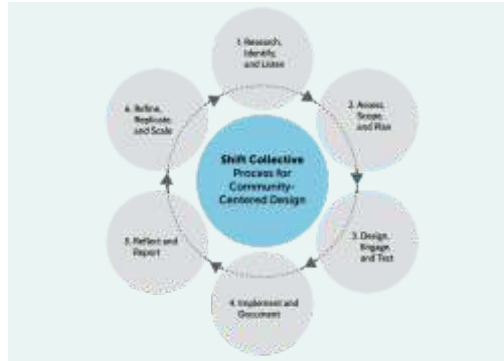
## METHODOLOGY

Community based process for homegrown solutions are an opportunity for citizens find solutions to their own challenges without external imposition and pressure.

As a matter of fact, citizen's participation in community based homegrown solutions not only facilitates and supports the development and implementation of locally-led initiatives but also nurtures the culture of working collaboratively within communities to address specific challenges they face.

This methodology is deeply rooted in the principles of participatory design, which emphasizes the active involvement of community members in responding to their needs and priorities.

Thus, the methodology emphasizes the importance of working collaboratively with the community to develop lasting solutions that are appropriate and sustainable within a community context. Therefore, engaging citizens in community based homegrown solutions supports the implementation and maintenance of these solutions, and ensuring that the resultant solutions are effective, impactful and sustainable.



CASE STUDIES

7 8 9 12

## IMMERSION IN CONTEXT

Even with the homegrown solutions, context is critical. This helps in telling a story about community needs and priorities and most importantly, it helps to contextualise the message targeting the community members.

During the forum, it was observed that the immersion's success heavily depends on building trust and meaningful relationships with community members who participate in community-based homegrown solutions.

To achieve this and secure the activate participation of citizens, community members have to see value addition to their efforts into the community work. This is an essential step in the immersion, as it helps to ensure that the resulting solutions are tailored to the specific needs and circumstances of the community.

Therefore, immersion in homegrown solutions should typically involve spending time in the community, obtaining insights and inputs to the process, building social cohesion and relationships as well as exchanging knowledge in order to sustain homegrown solutions that community members see fit and purposeful to their needs and priorities.

Overall, this has to be carried out by demonstrating a genuine interest in the community's needs and concerns, through actively listening to their perspectives, while involving them in the whole process.



CASE STUDIES

1 2 3 4 5 6

## PARTICIPATORY TACTICS

In community-based processes for homegrown solutions, community involvement and collaboration plays a very crucial role in how communities are built and developed. It is well understood that citizen participation is a cornerstone of any community but tactics to attract and maintain the community's full engagement are vital.

This implies therefore that successful participation tactics and maintenance go beyond community groupings or listening to their voices during community-based processes. Rather, participation tactics take a full spectrum of inclusive participation efforts and considers the cultural and language needs and priorities of community members. Thus, a tactic is considered successful if it ensures that any approach used to engage community members addresses issues that stakeholders have identified as important and priority.

In summary, community members need evidence that the designs and interventions are viable in terms of responding to their needs and challenges. Participatory tactics such as community meetings, focus groups, interviews, workshops and participatory mapping must capitalize on opportunities for quick returns and let the community members know that their efforts will pay off. These tactics too must be backed by a clear purpose and scope, inclusiveness, respect and recognition of the local knowledge and skills, building relationships, trust, sustained engagement and results.



CASE STUDIES

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## MAINTENANCE

Maintenance and sustainability are some of the vital and most important components of community-based homegrown solutions. When designing solutions for a community, it is essential to ensure that they are not only effective in addressing the immediate needs but can also stand the test of time.

To achieve maintenance and sustainability, actors and facilitators must ensure that the community based solutions continue to function as intended and remain relevant and useful to the community as expected.

Since community members are always at the centre of the entire process, building ownership and encouraging community members to take an active role in maintaining and sustaining the solutions becomes much easier. However, to sustain this momentum, the drivers of the process need to keep communicating about the relevance of the initiative repetitively. This values-based messaging inculcates ownership and meaningful participation of community members including during the maintenance phase.

Over all, maintenance and sustainability are important components of homegrown solutions. Therefore, involving community members in the design and implementation process, using locally available resources and materials, and implementing monitoring and evaluation processes, homegrown solutions turn out to be effective and sustainable for a longer term.



CASE STUDIES

7 8 9 11 12



12

CASE  
STUDIES

# 1 Earthen floors that are sustainable & affordable by EarthEnable

<b>Location of the project:</b>	Nyabihu District, western province, in Rwanda, expanded to 22 districts of Rwanda and 17 districts of Uganda.
<b>Architect of the project:</b>	Sylvere Nsengimana
<b>Client:</b>	Community Consultant Quality Assurance Team of Earthenable.
<b>Size of the project:</b>	Large
<b>Cost of the Project:</b>	US\$250,000
<b>Year of Implementation:</b>	From September 2019, ongoing

EarthEnable is a social enterprise with the mission of improving health and housing in low-income communities by eliminating unsanitary dirt floors. Millions of families globally live on dirt floors, which is a major cause of infectious diseases, respiratory illnesses, and vector-borne diseases, among others.

In Rwanda, statistics show that 80% of Rwandans, mainly in rural areas, live in homes with dirt floors. Science shows that replacing a dirt floor with concrete has significant health benefits, including but not limited to reducing diarrhea incidence by 50% and parasitic infections by 80%). However, as it is, concrete is unaffordable for many who need it.

To mitigate this, EarthEnable builds high-quality, locally sourced, earthen floors that are 70% cheaper than concrete floors.

Earthen floors are already prevalent in modern homes in the United States and are composed of natural materials (gravel, clay, sand, and laterite). EarthEnable trains and hires local masons to install the floors which are sealed using a proprietary drying oil that makes them waterproof, strong, and polished. In its first 3 years of operations, EarthEnable has installed over 40,000 square meters of flooring and employed over 100 Rwandan staff (and generated jobs and income for an additional 100 masons).



**1.4 billion people live  
on dirty floors  
including 70% of  
Rwandans and  
Ugandans**

## ROLE OF THE ARCHITECT

Designing the good earthen floors and plaster, how they should look like, providing clear plans and views of the products structures. These floors are laid by trained masons and have a durable, waterproof surface which can be washed to remove dirt and dust. In addition to improved health, earthen floors offer socio-economic benefits as fewer work and school days are missed through illness, increasing household income and educational outcomes for children.

## DESIGN METHODOLOGY

EarthEnable's franchising model holds so much promise. The floor is easy to build and more friendly. EarthEnable developed a franchise-focused business model to complement the existing materials from customers' back yards, EarthEnable empowered masons and customer representatives to become franchisees responsible for independently selling, sourcing materials for, and building, earthen floors. This new business model helped us further lower customer costs, increase employee income, and transform our masons and customer representatives into small business owners.

Franchisees' responsibilities include onboarding customers and installing floors, managing their business model (helpers, sales and construction) and representing EarthEnable in their communities.



## IMMERSION IN CONTEXT

EarthEnable partners with interested people in both countries of operation (Rwanda and Uganda) to run flooring micro-franchises, and supports them through coaching and training. The project's responsibility is to create a rigorous franchisee certification process including construction, sales finance, and training in project management.

Communities are charged with collection of all needed local materials to use for their construction and they learn how to maintain the houses. Additionally, they are trained on repair techniques for their houses

## PARTICIPATORY TACTICS

Beneficiaries were enlightened on the benefits in having earthen floors, how they change their lives, getting aesthetic houses, avoiding dirtiness in their houses and being healthy. Beneficiaries with little income love to pay little money and engage themselves into construction.



## POST OCCUPANCY ANALYSIS

On a routine basis, staff and technocrats from EarthEnable assess the state of the completed floors. The assessment is averagely done on a monthly, quarterly, and yearly basis to evaluate customers and community satisfaction and the structural behavior of the product.

With this style, it makes it possible to amend material from around and build a good floor and plaster.

## MATERIALS USED

The materials used were locally available and within walking distance from customers' homes. EarthEnable successfully developed methods to source and treat materials from customers' backyards to construct floors. Prior to the development of this product, materials were sourced from quarries several kilometers away from the client's homes.

While this might seem like a minimal difference, transporting materials only a few kilometers in rural communities is costly and logistically difficult. Conversely, getting materials from the backyard lowered transportation costs and empowered masons to begin building floors without waiting for material deliveries from EarthEnable quarries.

## CAPACITY BUILDING

Communities were trained to know why they need a cleanable floor in their houses, they got trained about how to source materials, and how to build the floor with earthen technology, the knowledge is transferred from one person to another within a community. They also install floors in their neighboring community and get money.



## RESEARCH DESIGN

There are a number of approaches used in this research method design. In this particular one, attention was much concentrated on field assessment, interviews, practical pilot tests, evaluations, data analysis, formulation, and guides developments

## MODULAR SYSTEMS

With the unique and affordable dynamic and healthy-friendly design, the aesthetic of the floors, and platers to be built with local materials was a life changer to the beneficiary communities.

## EMPOWERMENT

The community was trained in construction techniques, sales, management, running businesses, sourcing materials locally, and equipped with skills to do post-occupational follow-ups.





# 2 Rwanda Institute for Conservation Agriculture Bugesera, Rwanda/ MASS Design Group

<b>Location:</b>	Bugesera, Rwanda
<b>Status:</b>	In Progress
<b>Size:</b>	3,400 acres
<b>Program:</b>	Agricultural campus and curriculum training Rwanda's next generation of leaders in agriculture
<b>Clients:</b>	Howard G. Buffett Foundation
<b>Partners:</b>	Rwanda Institute for Conservation Agriculture, Government of Rwanda

MASS Design Group (MASS) is a multidisciplinary design collective with a mission to research, build, and advocate for architecture that promotes justice and human dignity. A key strategy that we employ in all of our work is that of proximity – getting close, to not only our partners, but to the communities they serve. Working with our partners, we identify methods to connect, inform, and engage key stakeholders, neighbors, and other community members in our process. “Accompaniment” is an expanded concept of engagement: by immersing our team in a community, we can collaboratively work through each stage of a project's development with our partner organization, while maintaining relationships with a broader group of stakeholders over time.



## ROLE OF THE ARCHITECT

MASS partnered with the Rwanda Institute for Conservation Agriculture (RICA) to create a campus informed by principles of Conservation Agriculture and One Health, both of which emphasize the interlinking of ecological, animal, and human health. MASS led the master planning, architecture, landscape, engineering, and construction for the new campus.

## IMPACT METHODOLOGY

The Rwanda Institute for Conservation Agriculture – projected to be the first climate-positive university in the world – is designed to train Rwanda's next generation of leaders in agriculture, while supporting national priorities for agricultural development. RICA utilizes 96% of materials (by weight) from Rwanda, a 1.5MW solar farm produces 100% of RICA's electricity, and the campus sources and treats all water on-site.

MASS designed, engineered, prototyped, and tested local, low embodied-carbon materials including timber roof structures, rammed earth, and compressed stabilized earth blocks. The use of innovative green infrastructure related to storm-water management with natural bioswales, propagated from native site plants, reduces erosion and increases biodiversity. In addition to architecture, landscape architecture, engineering, and construction supervision, MASS also designed and oversaw the production of all furniture and fixtures for the campus, utilizing over 85 artisans, entrepreneurs, and cooperatives in Rwanda to design over 180 unique products and locally produce over 3,300 units for the campus.



## IMMERSION IN CONTEXT

During the immersion process; MASS began with getting to know the community around Gashora and Rweru sectors, where RICA is located. We wanted the community to be an integral part of the building process, and so, spent time engaging the community in order to develop a richer understanding of what resources were available, mainly people's expertise and building materials. As a result, 95% of the 1,700-person labor force was hired locally.

## SUSTAINABILITY APPROACH

Crucial to the success of the masterplan was a multi-disciplinary research and analysis effort to understand the existing models of agricultural education, identify opportunities and gaps in pedagogical approaches, and the landscapes that serve them. The Rwanda Institute for Conservation Agriculture campus design supports the training of the next generation of farmers and agricultural leaders in developing healthy and sustainable systems for Rwanda's future food security. The project also aims to have close to a net zero carbon footprint through landscape and building design that could have been harvested from the site, making a whole new palette of materials accessible to the Rwandan population. This campus is a functioning ecological and stormwater system, designed to harvest water, utilize human and animal waste, grow soils, increase biodiversity, and be completely petrochemical free and energy independent through the vast solar array. This breadth of interdisciplinary design has been uniquely informed by the collaborative problem-solving nature of its core principle, One Health.



## ONE - HEALTH APPROACH AND CURRICULUM

The curriculum and campus design at RICA are informed by Conservation Agriculture and One Health Principles, both of which emphasize the interlinking of ecological, animal, and human health. The campus and curriculum seek to reinforce these principles by taking an interdisciplinary, experiential approach to learning, with a campus that promotes biodiversity, ecological conservation, and community participation. RICA will soon be a world leader in experiential education, research, and conservation agriculture.



# 3 Gahinga Batwa Village

<b>Architects:</b>	Localworks
<b>Area:</b>	480 m <sup>2</sup>
<b>Year:</b>	2018
<b>Photographs:</b>	Will Boase Photography   Craig Howes ( <a href="https://www.archdaily.com/897230/gahinga-batwa-village-studio-fh-architects">https://www.archdaily.com/897230/gahinga-batwa-village-studio-fh-architects</a> )
<b>Structural Engineer:</b>	Aquila Gallery
<b>Contractor:</b>	In-house construction team of Volcanoes Safaris with community support
<b>City:</b>	Kisoro
<b>Country:</b>	Uganda

The Batwa is made up of culturally unique people who are thought to be among the oldest surviving indigenous people in the Central African Region.

Their most preferred dwellings are forests. The Batwa of the Virunga Mountains in south-western Uganda survive by hunting small game, gathering plants and fruits, living in caves and constructing huts of leaves and branches.

This was until around 1991, when Ugandan authorities, with a view to conserving the gorillas which were facing extinction world over, decided to gazette Mgahinga National Park. This meant the displacement of the Batwa from the dwelling they had occupied for generations.

Conversely, a group of about 18 Batwa families from among those that were displaced found a home in temporary shelters on a small rocky site called Musasa, about 4km from the entrance of Mgahinga National Park.

This community has benefitted from a project by Volcanoes Safaris, which set up permanent structures for these families that comprise about 100 members and the settlement, which sits on some 10 acres of land, was completed in May 2018.

The community center also came with land for agricultural and recreational use for inhabitants.



## IMMERSION IN CONTEXT

This settlement has been built for and with the full involvement of the Batwa community members.

All materials utilized for the construction were donated by Volcanoes Safaris and guests of their nearby Mount Gahinga Lodge. Studio FH Architects provided the designs and supervision services for free as part of its pro-bono programme.

The village has eighteen small houses, each measuring 20m<sup>2</sup>. The floor plans vary slightly but have all been inspired by a model house that was built by the future users themselves using branches and grass.

## MATERIALS USED

All homes have a covered veranda for cooking, a small common room, and tiny bedrooms. The houses are built on rubble stone foundations using stones collected on site. Walls are constructed with eucalyptus poles with a bamboo grid and finished with earth plaster. Roofs are made of metal sheets with a papyrus layer above.

The village layout was not drawn; instead, the placement of individual houses was done 'on the go' by the builders themselves. They were encouraged to respond to trees, rocks and other features; to avoid verandas facing the strong winds coming from the volcanoes; not to align the houses in strict rows, and to keep them tightly spaced as wind protection and to maximize the



space available for farming. This has led to an interesting, random pattern that will, over time and with the help of trees, create comfortable public spaces and niches.

To one side of the village, built into the slopes of a ravine, are two small buildings accommodating latrines. Lack of proper sanitation had been a great issue on the former site of this group and the development was seen as key to achieving a dignified and healthy environment for the dwellers. At the bottom of the site, near the main access, is the new community center. This dome-shaped structure, measuring about 100 sqm, is a multi-purpose space that can be used for assemblies, dance performances, adult education and many other uses.

Its design inspiration was the traditional forest dwelling of the Batwa which is a light-weight dome made of bent branches covered by grass. The building is made of eucalyptus poles painted with recycled engine oil; galvanized metal sheets; papyrus roof cover; translucent sheets for doors and windows; and grass mats for the ceiling. The building has a total height of 6m and features two garage-like doors that can be swung open to increase the size and flexibility of the space. Given its complex structure, the construction team was issued with basic drawings plus an 'IKEA-style' assembly manual.

# 4 Ubugingo Health Post for Rwanda -ASA Studio

<b>Location of the project:</b>	Rulindo District, Northern Province, Rwanda
<b>Architect of the project:</b>	ASA Design LTD
<b>Client:</b>	Government of Rwanda - Ministry of Health
<b>Partners/stakeholders:</b>	Health Builders Rwanda
<b>Size of the project:</b>	Small: 100m2 - Medium: 202m2 - Large: 296m2
<b>Cost of the project:</b>	Small: 22m\$ - Medium: 32m\$ - Large: 53m\$
<b>Year of Implementation:</b>	2019 – 2022 (first 3 prototypes)/Ongoing

When health centers have strong and sustainable management systems, they provide better care. And with better health care, communities thrive. When health centers are accessible and provide equitable care, people do not have to travel as far. When modern technology and equipment is available, accurate diagnosis and interventions can save lives.

This was the philosophy that led to the construction of Ubugingo Health Post, an innovative initiative where modular health post prototypes are built in small, medium, and large sizes to accommodate different community needs.



## DESIGN METHODOLOGY

The architects were involved in every phase of the project, from feasibility to design and implementation. They conducted case studies and community-based research to support their feasibility study, which was reviewed by their project partner, Health Builders Rwanda.

The research and feasibility study served as the basis for the design phase, during which they developed three design iterations to improve the design, incorporate feedback from local authorities, the community, and partners, and reduce the construction costs as much as possible.

During the fundraising stage, they organized social events in Europe to showcase the project and involve donors to fund the construction phase of the first three pilot projects. Thanks to the collaboration of Health Builders, the funds were secured, and Rulindo District authorities agreed to cover part of the construction costs. The architects then supervised the construction process, conducting weekly site visits and on-site workshops to train the local communities on construction methodologies.

After the construction, while negotiating with potential investors for the project, the architects will manage a post-construction assessment of the three prototypes to gather comprehensive lessons learned, which would serve as the basis for future design upgrades and implementations.



## IMPACT METHODOLOGY

The methodology used to implement the project involved three key approaches: community-based research, participatory design, and community-based construction. These approaches were supported by ASA reacts and Health Builders as part of a pro-bono initiative. The funding for the project was secured through private foreign donations with the contribution of Rulindo District, enabling the construction of the prototypes.

## IMMERSION IN CONTEXT

From the very beginning of the project, community engagement was a critical aspect. During the research and feasibility study, quantitative and qualitative data were collected by interviewing local authorities, nurses, patients, and managers of existing Health Posts in four different districts across Rwanda.

During the concept design phase, the community was asked to express their preferences on the proposed design through questionnaires, particularly on the program, materials, colours, and overall functionality of the facility. During the construction phase, people from the villages were trained and employed to build the infrastructure, which helped to enhance their sense of ownership and construction skills. Additionally, Health Builders is training nurses to improve the service offered at the Health Post and make it more profitable and self-sufficient. The community is also involved in additional activities organized by health volunteers and local NGOs, which operate in the health field and promote community health, family planning, balanced nutrition, antenatal care, HIV and STD awareness youth clubs, among others.



## PARTICIPATORY TACTICS

The community was highly participative even during the data collection phase, as they finally had a chance to express their opinions and preferences regarding the services they needed the health post to offer. To engage with the community during the design phase, multimedia activities and group work such as drawings, video and projected presentations, cardboard models, and wooden volumes for assembly were utilized.

This approach was preferred rather than written questionnaires, which can be less engaging. As part of the tendering process, socially driven strategies that prioritize gender equality were defined by working with the District authorities and partners. These strategies aim to provide women with more opportunities to participate in construction, receive training, and take on leadership roles.

During the construction phase, offering the opportunity to learn new construction skills while earning money was enough to attract more workers than necessary to each site. Feedback from the workers during and after the construction is normally collected, and they are always very positive. Many found new job opportunities, paid school fees for their children, or purchased animals for farming. The positive outcomes and experiences of community members make the project more attractive to the community for future implementations.



## POST OCCUPATION ANALYSIS

An initial assessment is currently underway to gather data on the number of patients served at each facility and their satisfaction with the provided service and amenities. A follow-up evaluation was scheduled for early 2023, one year after the facilities were turned over, which will focus on operational costs, maintenance, the durability of materials and technologies used, space utilization, and feedback for potential design enhancements. Additionally, over the long term (typically five years), they plan to analyze data collected from partners involved in community health and management of the health posts to gain a more comprehensive understanding of the project's actual social impact.

## MATERIALS USED

The project prioritized the use of locally sourced materials, many of which are produced by small cooperatives near the site or within the District. Materials are often processed manually or through local facilities, such as the stone for the foundations, which is sourced from Rulindo and shaped on-site. Clay bricks are moulded and cooked nearby, while the cement for plaster and reinforced concrete structures is sourced from Cimerwa, a Rwandan company, as well as the rebars for reinforcement, which are made from recycled scrap metal by SteelRWA, another local plant. Steel tubes and iron sheeting for the roof are also sourced from local factories, while a few others can be imported from East African Countries.

## CAPACITY BUILDING

Throughout the construction phase, on-site workshops were held every other week to instruct community members on how to execute each stage of the building process, from foundations and walls to roof construction, welding, and more. The workshops emphasized a hands-on approach, with workers constructing and demolishing each element until the appropriate level of quality was achieved.

In addition, the person in charge of the sites was trained as a contractor, developing skills in preparing Bills of Quantities (BoQ), quantity evaluations, invoicing, procurement, and other related tasks. The three sites' proximity facilitated collaboration between site engineers and local workers, allowing them to learn from each other's mistakes and gradually improve their skills. Meanwhile, Health Builders provided training to local nurses who directly cared for patients, administered medications, performed diagnostic tests, developed care plans, and educated patients and their families on health management, prevention, and family planning, as well as basic accounting and management skills.

## RESEARCH AND DESIGN

The research phase served as the foundation of the project. The team conducted an in-depth analysis of several case studies across different districts in Rwanda to investigate the functionality of existing health post facilities, the efficiency of current policies, and user satisfaction. Interviews were conducted with local authorities, nurses, managers, users, and global health specialists. A large amount of quantitative and qualitative data was collected, which was then analyzed by the architecture team to establish the design guidelines.

## MODULAR SYSTEMS

The Health Post (HP) prototype is designed to adapt to various site conditions, including plot size and shape, orientation, terrain, topography, and accessibility. The health post functions are



organized in compact modules that can be assembled in different ways, much like Lego blocks.

The modules can be connected linearly or shifted horizontally, arranged in two or three clusters, or placed around a private courtyard or scattered. Three different sizes of HP have been designed, namely Small, Medium, and Large, to suit various financial capacities, social contexts, target populations, health needs, and land sizes.

The District can implement the Small, Medium, or Large size or gradually expand from Small to Medium to Large. The Small unit is the smallest and most basic module, which can be run by a single nurse and provides essential health services, including reception, consultation, dispensary, lab, laundry, toilets, and storage. Through an incremental approach, the Medium and Large models comprise the Small module plus additional functions such as the maternity ward, delivery room, ward, and nurse room.

## EMPOWERMENT

The participatory processes of the Ubugingo Health Post project enhance the chances of successfully empowering the community in the long term through:

**The feeling of ownership:** when community members are given the opportunity to express their preferences for the design and functionality of a facility, they are more likely to feel heard and empowered. This sense of ownership and engagement can lead to increased support for other projects and a commitment to actively building and maintaining the building or infrastructure.

**Improved access to healthcare:** the better-designed health facility provides better access to healthcare services for community members, especially those who live in underserved areas. This improves health outcomes and overall quality of life for individuals and families.

A healthier community is, therefore, more vital and more resilient to respond to climate hazards.

**Community involvement:**

Involving community members in the design and planning process of the HP helps build a sense of ownership and pride in the project. This can lead to a stronger connection between the community and the facility, resulting in increased usage and better health outcomes.

**Employment opportunities:**

the Ubugingo project creates employment opportunities for members of the community, both during the construction phase and afterward. This helps boost the local economy and provides a sense of purpose for community members that have been offered more and better job opportunities, even in other villages. Families can rely on the additional income to pay school fees or buy a cow.

**Education and training:**

the health facility provides opportunities for education and training for members of the community. For example, the HP can offer workshops on health topics, training for healthcare workers, and other educational programs.



# 5 Mpazi Participatory Neighbourhood Transformation – Skat

<b>Location of the project:</b>	City of Kigali, Nyarugenge District, Gitega Sector, Mpazi catchment area
<b>Architect of the project:</b>	SKAT Consulting Rwanda Ltd
<b>Client</b>	City of Kigali
<b>Consultant:</b>	SKAT Consulting Rwanda Ltd
<b>Size of the project:</b>	4 ha
<b>Cost of the project:</b>	USD 7.8M (Rehousing area)
<b>Year of Implementation:</b>	2020-2024

Mpazi is a colloquial name for the selected area in Akabahizi cell, Gitega Sector, Nyarugenge District in the City of Kigali-Rwanda which intends to address existing challenges like poor housing conditions affecting health, safety, tenure security; limited vehicular and pedestrian accessibility; challenging topography; inefficient drainage system; lack of public facilities (health, nursery, public spaces, community centers, local markets, playgrounds, etc) and security problems.



## ROLE OF THE ARCHITECT

The role of an architect encompasses a diverse range of responsibilities, each critical to ensuring the successful implementation of a project. One of the primary responsibilities of an architect was to conduct an architectural survey, which involved a thorough analysis of the site and the surrounding environment. This survey provided critical insights that inform the design process and ensure that the final design is both functional and sustainable.

Another important responsibility of architects was to design neighborhoods and block level facilities. This required a deep understanding of the needs and desires of the community and the ability to create a design that reflects these priorities. By designing neighborhoods that are inclusive and well-integrated, architects can contribute to the creation of healthy and vibrant communities.

Household co-designing sessions are also a critical component of the architect's role. By engaging with individual residents, architects can understand their unique needs and preferences and create designs that are tailored to their specific requirements. This collaborative process fosters a sense of community ownership and pride and ensures that the final design is well-suited to the needs of the residents. Community engagement is another key responsibility of architects, and requires an understanding of community engagement methodologies and tools. Effective communication, stakeholder engagement, and collaboration are all essential to ensuring that the design process is inclusive, transparent, and accountable. By engaging with the community in a meaningful way, architects can ensure that their designs are both functional and socially sustainable, contributing to the creation of healthy, vibrant, and sustainable communities.



## IMPACT METHODOLOGY

The methodology for achieving impact in community rehousing and creating inclusive and sustainable neighborhoods is done through community-based participatory approaches.

The project's objectives is to ensure most of the residents are re-housed in the same neighborhood by leveraging on existing and future land values; engage all owners in a logic of land amalgamation and allow them to maintain income-generating activities; allocate enough units for the rental market, with a focus on defining policy and legal gaps for more effective retention of the existing tenants; continued and active engagement of local communities by ensuring well-informed and active participation; increase the density of the neighborhood, while enabling the creation of green, open public spaces; allocate a portion of the newly available land (after rehousing and public spaces) to the promotion of investment in a logic of cross-financing, and formalize the participatory transformation process as a standard intervention strategy, driving institutional change and scaling-up the implementation through SPV.

## IMMERSION IN CONTEXT

The voluntary process for neighborhood planning is designed with a multi-level participatory approach, which involves engaging the community from the neighborhood scale down to the block and architectural level. This ensures that the planning process is inclusive, with the community having a say in the decisions made.

To drive the neighborhood planning, a Community Working Group is established. This group comprises representatives from different community groups, including women, elders, youth, persons with disabilities (PwD), owners, and tenants. These representatives are selected by the community, and they provide valuable insights and feedback during the planning process.

After the Community Working Group has been established, households within the community are engaged individually in co-design sessions. These sessions are conducted to ensure that each re-housing unit is customized to meet the needs of the household. This approach ensures that the community members are actively involved in the design process, and their needs and preferences are taken into account.

Overall, the voluntary process for neighborhood planning is designed to ensure that the community is engaged at every level of the planning process. This participatory approach ensures that the community's needs and preferences are reflected in the final outcome, resulting in a neighborhood that is inclusive, sustainable, and meets the needs of its residents.

## **PARTICIPATORY TACTICS**

The strategy for promoting participation was centered on transparent information provision and communication. The project consistently relied on easy-to-follow steps and regular engagement with the community. In addition, proposed improvements to the neighborhood design such as durable buildings, enhanced mobility, better green spaces, public facilities, and recreational areas were presented to the community. Community representatives were also engaged, and various tools like maps, LEGO for planning and co-designing sessions, and multiple topology options were employed to increase community engagement.



## PARTICIPATORY DESIGN

The process is designed to achieve an inclusive urban transformation by involving residents as key actors in the project life cycle. The project allows to increase the density and the quality of the neighborhood by providing high-quality housing, improved mobility network, public facilities and open green spaces in a logic of cross-financing by leveraging the increase in land values.

## PARTICIPATORY PROCESS

The participatory process starts at the neighborhood scale and then becomes more fine-grained addressing block and Dwelling Unit levels. At the neighborhood level, the participatory re-parcellation allows for a more compact development with improved living conditions for both owners and tenants. Long-term financial sustainability is achieved by unlocking land potential capable of attracting private investment. The City of Kigali invited UN-HABITAT – Participatory Upgrading Programme (PSUP) to support PROECCO in implementing an effective and inclusive neighborhood-level planning with the objective of mobilizing the community in the redesign of the neighborhood. The Community Working Group was tasked to enhance the community's ownership, organization and participation in the settlement upgrading and planning.

## RESEARCH AND DESIGN

Mpazi project hosted multiple research and study tours in collaboration with education institutions local and international: design studio of University of Rwanda, Polytechnic de Milan, ETH Zurich, among others. Optimized design to reduce cost and maximize indoor usable space in a manner that provided simplified layout to reduce construction time and ensure that the missing common block-level facilities are provided for and reduced usability of outdoor areas.



## MODULAR SYSTEMS

The Rowlock Bond construction technology is a cost-efficient method of building that utilizes RLB (Reinforced Load Bearing) bricks. The Rowlock Bond technique involves the use of bricks laid on their ends with the long sides facing outwards, creating a "zig-zag" pattern. This technique is particularly effective in situations where there is a need to build strong walls without the need for extensive reinforcement.

The use of RLB bricks in the Rowlock Bond construction method offers several advantages over other traditional construction materials. RLB bricks are designed to be stronger and more durable than traditional clay bricks, making them ideal for use in load-bearing walls. They are also lighter than concrete blocks, making them easier to handle and transport to construction sites.

In addition to their strength and durability, RLB bricks are also highly cost-efficient. They are produced using locally sourced materials and can be manufactured using simple production techniques, reducing the overall cost of production. The cost of transporting RLB bricks to construction sites is also lower due to their lighter weight, further reducing the overall cost of construction.

Overall, the Rowlock Bond construction technology using RLB bricks is an effective and cost-efficient method of building strong and durable walls. Its use can result in significant cost savings for construction projects while still providing a high level of structural integrity.

Also, the double skin façade with perforated wall provided the creation of a private space for cooking, providing drying space for all floor level, increased privacy, shading for the façade as well as increasing the ventilation and thermal comfort.



## POST OCCUPANCY ANALYSIS

According to the post occupancy evaluation conducted, the community has expressed satisfaction with the safety of the buildings. However, it has been identified that there is a need for training on the proper living style and usage of the facilities provided.

The evaluation has revealed that the community feels secure and safe within the buildings, which is a positive outcome. However, it has also highlighted a potential issue in the lack of knowledge or understanding of how to utilize the amenities and living spaces provided. This gap in knowledge may lead to inefficient or ineffective use of the facilities, which can result in dissatisfaction or even safety concerns.

Therefore, it has been recommended that a training program be implemented to educate residents on the proper usage of the facilities and encourage a better living style. This program can help improve the quality of life for the community and ensure that they are making the most of the resources available to them. By addressing this issue, the community can continue to enjoy a safe and secure environment, while also maximizing the benefits of the facilities provided.

## MATERIALS USED

The building materials employed in the project were sourced locally, with modern clay bricks being the primary material utilized.

By opting to use locally-made materials, the project was able to contribute to the local economy while minimizing transportation costs associated with importing materials from distant locations. This approach also helped to reduce the carbon footprint of the project by limiting the amount of energy required for transportation.



The decision to use modern clay bricks was based on several considerations. Clay bricks are well-known for their durability and sustainability as a building material, with a long history of use in construction. They possess excellent strength and are resistant to fire, which makes them a safe and reliable choice.

Furthermore, modern clay bricks have several advantages over traditional bricks. They are manufactured using more efficient processes, which results in less waste and energy consumption. They are also available in a range of colors and finishes, providing greater design flexibility.

In summary, the selection of locally sourced modern clay bricks as the primary building material was a practical and sustainable choice. It supported the local economy, reduced transportation costs and emissions, and offered numerous benefits over traditional building materials.

## CAPACITY BUILDING

As part of the capacity-building efforts, the project involved some of the residents in the construction process. Additionally, they provided training to the Community Working Group so that they could support other neighborhoods as peer-to-peer facilitators. This training included participation in the Participatory Urban Settlement Upgrading program.

By involving residents in the construction process, they were able to provide them with hands-on experience and develop their skills. This involvement also helped to create a sense of ownership and pride in the project, fostering a deeper connection between the community and their living spaces.

Furthermore, by training the Community Working Group to act as peer-to-peer facilitators, the implementers aimed to create a sustainable model for future



community development efforts. This training will enable them to share their knowledge and experiences with other communities, allowing for the expansion of community-led development initiatives.

The participation of the Community Working Group in the Participatory Urban Settlement Upgrading program was a crucial part of capacity-building efforts. This program provided them with the necessary tools and knowledge to lead the development of their communities and ensure that their needs and preferences were taken into account.

In conclusion, our capacity-building efforts included involving residents in the construction process, training the Community Working Group to act as peer-to-peer facilitators, and participation in the Participatory Urban Settlement Upgrading program. These efforts aimed to create a sustainable model for community development and empower the community to take a more active role in shaping their living spaces.

## EMPOWERMENT

The process of transformation starts with community empowerment, which involves co-designing units, redesigning blocks at the local level, envisioning neighborhoods, and developing plans for neighborhood layouts. This empowers community members throughout the transformation process.

# 6 Enabel UEDi- Musanze Agakiriro Community Project

Location of the project:	Musanze districts, Northern Province, Rwanda
Architect of the project:	N/A
Client:	Enabel/Musanze district and Loda
Consultant:	N/A
Size of the project:	N/A
Cost of the project:	N/A
Year of Implementation:	2022/2023

Enabel's intervention in the urbanization sector – the Urban Economic Development initiative (UEDi) – aimed at providing functional urban infrastructure for inclusive and sustainable economic development.

It used a holistic approach that combined both infrastructure and skills development by focusing, among other things, on human capacity and ensuring that partners have the requisite skills to put in place and maintain the required infrastructure.

In the districts of Musanze, Rubavu, and Rwamagana, the first objective of UEDi was to support “sustainable and resilient urban infrastructure development”.



## ROLE OF THE ARCHITECT

The architects and engineers played a significant role in the project design and branding. They worked closely with the users-community to understand their needs and desires for the market. This process is known as user-centered design, and it involves engaging with the end-users of a space or structure to ensure that it meets their needs.

The architects and engineers listened carefully to the beneficiaries and incorporated their feedback into the design process. They took into account the specific requirements of the market, such as the need for space for vendors to sell their goods, storage facilities, and a comfortable and safe environment for customers. The architects also considered the local climate, topography, and culture when designing the market.

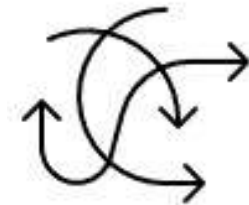
## DESIGN METHODOLOGY

The methodology was structured using a participatory approach. The process includes the identification of community representatives, urban walks, consultations meetings, co-working and co-designing the place and the artwork with community members, technicians, donors, and local authorities.

The participatory approach is essential as it ensures that community members' needs and preferences are incorporated in the design process, leading to a more successful and sustainable outcome.

**Identification of community representatives:** The first step in the design methodology is identifying the community representatives. These representatives can be selected

- Stakeholder identification
- Call for change
- Defining priorities
- Build energy field



- Ownership development
- Operationalization/Impact
- Place evolution
- Readiness for next project



- Needs assessment
- Identify potential
- Imaging end state
- Project design



- Participate in project implementation
- Skills development
- Job creation
- Build ownership



based on various criteria, including their involvement in community activities, leadership qualities, and level of community engagement. These representatives will act as the voice of the community throughout the design process.

**Urban walks:** The second step is conducting urban walks. Urban walks involve walking through the market area and the surrounding community to observe and identify the challenges and opportunities. This step is crucial in identifying the existing problems in the community and understanding the needs, which is critical to the design process.

**Consultative meetings:** The third step is conducting consultative meetings with the community representatives, local authorities, donors, and technicians. The meetings are crucial in understanding the stakeholders' perspectives and bringing them together to co-create solutions.

**Co-work and co-design:** The fourth step is co-working and co-designing the place and the artwork. This process involves brainstorming and developing ideas that align with the community's needs and preferences. Co-designing allows stakeholders to create solutions together that are contextually relevant, feasible, and sustainable.

### IMMERSION IN CONTEXT

To successfully construct the Musanze Agakiro Market, it was essential to gain a comprehensive understanding of the community's environment, culture, and social dynamics where the market was to be built.

The project team prioritized the local context and utilized locally-sourced materials. Through immersing themselves in the local community and context, the team was able to create a design that was both culturally-sensitive and responsive to the specific needs of the community.



## PARTICIPATORY TACTICS

To ensure the success of the construction of Musanze Agakiro Market, community participation was crucial. Targeted marketing campaigns were used to raise interest in the community by highlighting the benefits of the market, such as increased income for local farmers and artisans and a boost to the local economy.

Identifying opinion leaders within the community members who can then help mobilize their peers and organizing community events can also encourage participation. Building partnerships with local government officials and securing their support can provide resources, funding, and logistical support for the project, as well as facilitate access to necessary permits and licenses.

Overall, community involvement through tactics such as raising interest, mobilizing influential members, and working with local authorities is essential to ensure the success of the Agakiro Market construction project in Musanze District.

## POST OCCUPANCY ANALYSIS

This holistic approach of the UEDi project allows for the integration of WPL. Among its major benefits are the linking of candidates to employers, the coaching of candidates through learning by doing, the reinforcement of the use of MiR materials, improved access to innovation technologies, and the creation of a win-win situation between employer and trainees.

The users of Musanze Integrated Craft Production Centre (ICPC/Agakiro) entered into a Public-Private Partnership (PPP) with Musanze District. Their goal is to ensure a good management of the public facility going forward.

The infrastructure is currently occupied at a rate of 90%.

## MATERIALS USED

Project teams identified sustainable construction practices that are appropriate for the local context. This included the use of local materials like volcanic rocks (amakoro), sand or the incorporation of traditional construction methods.



## CAPACITY BUILDING

The stakeholders of Agakiro Market underwent capacity building, mobilization, and consultation sessions to ensure the project's success and ownership. The capacity building sessions equipped stakeholders with the necessary skills and knowledge to operate and manage the market efficiently. Mobilization sessions were held to promote ownership among stakeholders and encourage their active involvement in the project. Consultation sessions provided stakeholders with a platform to air their views and opinions, which were considered in the project's planning and implementation.

The capacity building program offered trainees hands-on experience with coaching at the workplace by experienced technicians, contributing to the local economy by securing employment in the host companies. The sessions played a crucial role in ensuring the success and sustainability of the market, with the practical approach of the capacity building program enhancing the impact of the market on the community.

## EMPOWERMENT

Part of the Agakiro Market's empowerment process involved consultation and capacity building sessions aimed at equipping stakeholders with the necessary resources to operate the market efficiently. The consultation sessions provided stakeholders with a voice in decision-making, while the capacity building sessions covered topics such as financial management, record-keeping, marketing skills, and customer service. The ongoing empowerment process involves continuous training and support for stakeholders, regular follow-up sessions, and partnerships with local institutions and organizations to provide additional resources. As a result, stakeholders are equipped to handle challenges and contribute to the market's long-term success.

# 7 Population and Development Initiative(PDI), Kigoma, Tanzania

<b>Location of the project:</b>	Kigoma district in Kigoma region in Tanzania
<b>Architect of the project:</b>	Kigoma district council through Agricultural Development Programs
<b>Client:</b>	Ordinary farmers at Matendo village in Kigoma district
<b>Consultant:</b>	Kigoma district council in Kigoma district
<b>Size of the project:</b>	/90 HaCost of the project 600,000,000/=TZS
<b>Year of Implementation:</b>	2011 present

Population and Development Initiative (PDI) strives to bring positive change in various sectors such as nutrition, water, sanitation, hygiene services, environmental conservation, and road safety in the communities of Kigoma and Morogoro both located in Tanzania.

The non-profit organization uses a multifaceted approach to advocate for improved nutrition, water, sanitation, and hygiene services, environmental conservation, and road safety in these two regions of Tanzania.

PDI advocates for these issues through a wide range of activities, including dialogues, training, research, school clubs, and media engagement.

The organization engages in dialogues with different stakeholders, including community leaders, policymakers, and government officials, to discuss strategies for improving these vital sectors. Through these discussions, PDI aims to create awareness of the importance of investing in these areas and encourages stakeholders to prioritize them. They also conduct training sessions for community members, including women and youth, to equip them with the knowledge and skills necessary for implementing various interventions related to nutrition, water, sanitation, and hygiene services. The training sessions focus on providing practical solutions that can be implemented at the community level.

In addition to dialogues and training, PDI carries out research to generate evidence on the impact of interventions related to the sectors of focus. Through research, they can identify gaps and challenges that need to be addressed to improve the effectiveness of interventions.

Similarly, PDI also establishes school clubs to raise awareness among young people about the importance of issues related to nutrition, water, sanitation, hygiene services, environmental conservation, and road safety. By engaging with young people, PDI aims to create a culture of sustainability and responsible citizenship from an early age.



## ROLE OF ARCHITECT

The role of the architect was to use the district architectural plans/drawings to establish/construct an irrigation scheme which will meet the requirements of the ordinary farmers at Matendo, Mlela and Kidahwe villages in Kigoma district council in Kigoma district.

## IMPACT METHODOLOGY

The project used social accountability mechanisms which is the process of holding duty bearers accountable of improved services. This process involves community members through agents of change to influence more actions of maintenance and extension of the Mkuti irrigation scheme in order to serve a larger number of ordinary farmers.

## IMMERSION IN CONTEXT

The project focused on promoting community engagement and addressing challenges in the Mkuti irrigation scheme. Through public meetings, community members had the opportunity to openly discuss the current issues faced by the scheme, such as the need for maintenance and expansion to benefit a larger number of farmers, including women and youth in Matendo village and neighboring areas.

Currently, the Mkuti irrigation scheme only serves 210 ordinary farmers, despite the area's fertile soils and the presence of the Mkuti river, which flows consistently throughout the year. In the public meetings, the community members selected 25 volunteers who received training on utilizing social accountability mechanisms and community score cards. These tools allowed them to assess the performance of duty bearers responsible for the irrigation scheme and to advocate for government commitments to improve its effectiveness.

## PARTICIPATORY TACTICS

The project used public meetings which were an opportunity for the ordinary farmers to expose the challenges of the irrigation scheme themselves. We documented the challenges which were used in training programs of the community volunteers and in the design of community score cards which were used to further measure the performance of duty bearers and collect their commitments to improve the infrastructure of the irrigation scheme, increase the number of ordinary farmers served by the scheme and increase farm productivity.



## POST OCCUPANCY EVALUATION

The transparently selected agents of change serve as monitors of day-to-day operation of the irrigation scheme and they report any challenges to village agricultural extension officers as well as at the district council for actions and need for more improvement of the irrigation scheme. They also influence monthly and quarterly reporting of the progress and challenges of the irrigation scheme by the government officials at the village and district level.

## CAPACITY BUILDING

PDI conducted capacity building to community agents of change on social accountability monitoring which will help them and the general public to monitor the irrigation scheme for many years to come. The training programs involved lessons of monitoring planning and allocation of resources, management of expenditure, management of performance and management of public integrity which are the elements of social accountability mechanism which will help them in monitoring of their irrigation scheme through collection of commitments to improve the scheme, advocate for better services and reach district, regional and national duty bearers to make the scheme productive.

## RESEARCH DESIGN

This project serves as a case study which will trigger transformation of agricultural sector in other irrigation schemes in Tanzania is implementing phase three of the Agricultural Sector Development Program which embrace the use of irrigation schemes amid climate change situation.

## MODULAR SYSTEMS

The community members working in farms in the irrigation scheme need more canals to reach far farms in the villages. This need engineers to do the designing and extend the irrigation scheme to reach more farmers

## EMPOWERMENT

The community members at Matendo village are empowered with social accountability skills to hold duty bearers accountable of improving the Mkuti irrigation scheme. There are community agents of change who have been comprehensively trained on these skills to present the whole community in monitoring the progress and challenges of the irrigation scheme and report to the authorities





# 8 Umuganda: Ensuring community ownership in government- mandated programmes

Location of the project:	Rwanda
Architect of the project:	General Public
Client:	N/A
Consultant:	N/A
Size of the project:	/Countrywide
Cost of the project:	N/A
Year of Implementation:	Ongoing

After the 1994 Genocide against the Tutsi in Rwanda, many programs, policies and laws were introduced to rebuild a country which was literally in ashes.

This was the reasoning behind the reintroduction of Umuganda, a communal practice that had been practised during the pre-colonial days. It has since emerged as one of the major drivers of the country's economic growth post genocide.

It happens every last Saturday of the month, and each community determines the activity that is to be undertaken on each particular day with activities including cleaning public spaces, building classrooms for public schools, and planting trees, among others.

Umuganda embodies the ideas of mutual assistance, social responsibility, social obligation, self-help and traditional strategies for development.

The Government of Rwanda has invested great efforts in reviving Umuganda as Home Grown Solutions (HGSs) and as a sustainable response to the challenges of the day.

Umuganda is part of a broader voluntarism culture whose intention is to galvanise mutual solidarity among members of the Rwandan community; The practice is guided by policy and strategy, law and Prime Minister's order determining the roles and responsibilities of each stakeholder in planning and implementation of Umuganda activities and projects.



## IMPACT METHODOLOGY

The impact methodology is a framework used to evaluate the effectiveness of Umuganda, a unique community service practice in Rwanda. Umuganda, which means "coming together for a common purpose" in Kinyarwanda, is a monthly day of community service that is mandatory for all able-bodied citizens aged 18-65.

The Impact methodology involves the following steps in evaluating Umuganda:

**Defining the problem:** The first step in evaluating the impact of Umuganda is to identify the specific problems it is intended to address. This involves understanding the challenges faced by the community, such as inadequate infrastructure, poor sanitation, and environmental degradation.

**Setting goals and objectives:** The second step is to set clear goals and objectives for Umuganda. These may include improving the cleanliness of public spaces, building new infrastructure, or promoting environmental sustainability.

**Designing the solution:** The third step is to design the Umuganda program, taking into account the needs of the community and the desired outcomes. This may involve identifying specific projects that will be undertaken during Umuganda and determining the resources required to complete them.

**Implementing the solution:** The fourth step is to implement Umuganda and monitor its progress. This involves organizing and coordinating the community members who will participate in the program and ensuring that the necessary resources are available to complete the projects.

**Monitoring and evaluation:** The final step in the impact methodology is to monitor and evaluate the effectiveness of Umuganda. This involves collecting data on the program's impact and comparing it to the goals and objectives that were set in step two. Based on the evaluation, adjustments may need to be made to the program to improve its effectiveness.

Through the impact methodology, it is possible to assess the impact of Umuganda in various areas, such as social cohesion, environmental sustainability, and community development. By using this approach, the government and other stakeholders can identify best practices and lessons learned from Umuganda, which can be shared with other countries and communities facing similar challenges. Ultimately, the impact methodology can help to enhance the effectiveness of Umuganda and promote sustainable development of Rwanda.



## IMMERSION IN CONTEXT

This is a process that involves fully engaging and integrating oneself into a community to gain a deeper understanding of its culture, values, and needs. In the context of Umuganda, immersion in the community is a critical aspect of the program's success, as it allows for a more holistic and empathetic approach to community service.

Communities are fully engaged in identification, planning and implementation of all related Umuganda activities and projects

The immersion process in Umuganda involves the following steps:

**Living in the community:** The first step is to live in the community that one wishes to serve during Umuganda. This may involve staying with a host family or renting a local residence to fully experience life in the community.

**Observing and listening:** The second step is to observe and listen to community members to gain insights into their daily lives, values, and needs. This may involve participating in community events and activities, attending local meetings, and conducting interviews or surveys to gather information.

**Building relationships:** The third step is to build relationships with community members to establish trust and credibility. This may involve participating in local cultural activities, volunteering for community service projects outside of Umuganda, or offering to assist with community needs outside of the official Umuganda program.

**Participating in Umuganda:** The fourth step is to actively participate in Umuganda alongside community members. This involves working side-by-side with community members on the projects and activities that have been identified as priorities for the community.

**Reflecting and learning:** The final step is to reflect on the immersion experience and apply the insights gained to future Umuganda activities. This may involve debriefing with fellow participants, sharing

insights with program organizers, or conducting further research to deepen one's understanding of the community.

In a nutshell, immersion in the community is essential to the success of Umuganda, as it allows participants to gain a deep understanding of the community's needs and priorities. This, in turn, enables the program to be more effective in its community service efforts, as it is based on a foundation of empathy, trust, and understanding. Additionally, immersion in the community helps to build a sense of community ownership and pride, as community members see that outsiders are invested in their community's well-being.

## PARTICIPATORY TACTICS

The participatory design process for Umuganda involves the following steps:

**Identifying community needs:** the first step in the participatory design process is to identify the needs and priorities of the community. This may involve conducting surveys or focus groups to gather input from community members on the types of projects and activities they would like to see implemented during Umuganda.

**Engaging community members:** the second step is to engage community members in the design and planning process. This may involve holding community meetings, workshops, or other events to discuss ideas and gather feedback on proposed projects.

**Co-creating solutions:** the third step is to co-create solutions with the community. This involves working together to develop plans for Umuganda activities that reflect the needs and priorities of the community.

**Testing and refining solutions:** the fourth step is to test and refine the proposed solutions. This may involve piloting small-scale projects or conducting feasibility studies to assess the viability of proposed activities.

**Implementing the solutions:** The final step is to implement the agreed-upon solutions during Umuganda. Community members take an active role in carrying out the projects and activities that they have helped to design.

By and large, participatory design is essential to the success of Umuganda, as it ensures that the community's needs and priorities are reflected in the program's activities. By involving community members in the design and implementation of Umuganda, the program is more likely to be well-received and to have a positive impact on the community. Additionally, it helps to build a sense of ownership and pride among community members, who feel empowered to take an active role in improving their communities.



## POST OCCUPANCY ANALYSIS

Post occupancy analysis is a process that involves evaluating the performance of a building or infrastructure project after it has been completed and occupied. In the context of Umuganda, post-occupancy analysis is an important step in assessing the effectiveness of community service projects and identifying opportunities for improvement.

Umuganda has registered tremendous achievements in socio-economic development and has made great contributions in fostering social cohesion in a nation deeply polarized by the Genocide.

The post occupancy analysis process in Umuganda involves the following steps:

**Evaluating performance:** The first step is to evaluate the performance of the community service project based on a set of predetermined criteria. This may include factors such as functionality, durability, safety, and user satisfaction.

**Collecting feedback:** The second step is to collect feedback from community members who have used or interacted with the project. This may involve conducting surveys, holding focus groups, or conducting individual interviews with community members to gather their opinions and experiences.

**Analyzing data:** the third step is to analyze the data collected during the evaluation and feedback processes to identify strengths, weaknesses, and opportunities for improvement. This may involve comparing the project's performance against established benchmarks or best practices to determine its overall effectiveness.

**Implementing improvements:** the fourth step is to implement improvements to the project based on the results of the post occupancy analysis. This may involve making design or construction changes, improving maintenance procedures, or adjusting the way the project is used or managed.



**Monitoring progress:** the final step is to monitor the progress of the project over time to ensure that the improvements made are effective and sustainable. This may involve conducting follow-up evaluations and collecting feedback from community members to track changes in performance and identify areas for further improvement.

Post occupancy analysis is an essential component of the Umuganda program, as it helps to ensure that community service projects are effective, efficient, and responsive to the needs of the community. By evaluating and improving the performance of projects over time, Umuganda can continue to have a positive impact on the lives of community members and contribute to the overall development of Rwanda.

Umuganda activities have been carried out to construct socio-economic infrastructure facilities including health facilities, education classrooms, rehabilitation of roads in rural and urban areas, building public office premises, (sector, cells and police posts), environment protection through erosion control, tree planting, building houses for the most vulnerable members of communities, as well as during the national campaign in eradication of grass thatched houses and building the decent shelters across the country; All these registered achievements have significantly supplemented the national budget on an annual basis and it has been on an upward trend.

To put this in context, available data shows that the monetary value of Umuganda in 2010 stood at Rwf7,347,720,172 and in 2021/2022 the revenues had increased threefold to Rwf22,865,855,703.

# 9 SAKiRP Stone Arch Bridges

<b>Location of the project:</b>	Kigoma region, Tanzania
<b>Architect of the project:</b>	No architect, engineers and the design manual, originally written by Steven Hollevoet
<b>Client:</b>	Enabel, TARURA
<b>Consultant:</b>	N/A
<b>Size of the project:</b>	Total number of bridges: 110 finished bridges, varying from 1.5m span to 40m span. Average around 9m.
<b>Cost of the project:</b>	Around 900,000 Euros
<b>Year of Implementation:</b>	2018-2023

The Sustainable Agriculture Kigoma Region Project (SAKiRP) has a successful component “access to agricultural commodity markets”.

The construction of stone arch bridges contributes to this component by facilitating the transportation of agricultural produce and thus reducing the cost of transportation for farmers.

Stone arches are a strong and time-tested technology that fits with the local economic reality of expensive industrial materials as opposed to a low labour cost.

Due to the elimination of all industrial materials except for cement and thanks to the support of the villages, a stone arch bridge can be built at a cost of only 15 to 20% of an equivalent concrete bridge.

At the same time, a stone arch bridge emits 50 to 80% less carbon dioxide than an equivalent concrete bridge.

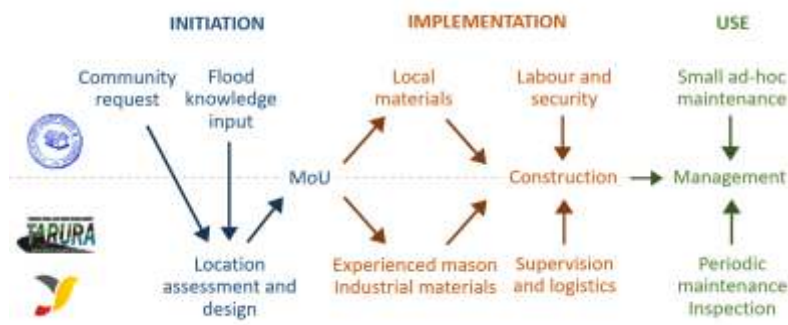


## ROLE OF ARCHITECT

Given that this is a bridge construction project, the most significant aspect pertains to the roles performed by the project team and engineers. Primarily, the project team is responsible for various tasks, including but not limited to identifying the optimal location within the vicinity suggested by the village, designing the bridge, overseeing the construction site, and engaging with the local community.

## METHODOLOGY IMPLEMENTATION

A demand-driven approach requires the village to take initial steps and listen to the needs of the people.



The implementation was carried out in collaboration with the local community and received support from TARURA (Tanzanian Rural and Urban Road Agency), the local government parastatal responsible for road construction.

By signing a Memorandum of Understanding (MOU) among all partners and establishing their respective responsibilities, a commitment was made, allowing the typical design process to commence. Once the design was approved, the construction process began, with each partner assuming their own responsibilities.

The project operates under a force-on-account model, eliminating the involvement of an external contractor, which could potentially reduce local job opportunities. The project itself plays the role of the head contractor, overseeing the purchase and arrangement of materials, hiring labor through direct contracts, and ensuring quality control of the work and materials on-site. Upon the completion of the final state and the signing of the completion certificate, the structure is handed over to TARURA, who assumes responsibility for its maintenance.



## IMMERSION IN COMMUNITY

The local community actively participates in various stages of the process. While they are not involved in the design phase, which relies heavily on technical expertise and engineering knowledge to ensure strength and optimal location, their input is crucial in other aspects. Particularly, the community plays a significant role in the initial step as they are the ones who request the bridge, possessing valuable knowledge about the needs of the village.

The community's knowledge proves invaluable during the design phase by providing insights into flood levels, past river behavior, and other relevant factors. This collaborative approach ensures that the design incorporates essential local considerations.

Another important aspect of community involvement is fostering ownership. The village actively participates in the construction process, contributing unskilled labor for tasks such as excavation and site security. They also provide local materials like stones, which further enhances their sense of ownership and investment in the project.

## PARTICIPATION TACTICS

By informing the local political authorities, the villages were made aware that they had the opportunity to request bridges. The requirement for them to actively make the requests themselves served as a strong incentive, particularly once they witnessed the positive outcomes after the initial bridges were constructed.

The collaboration is further strengthened through open discussions with the community, followed by the establishment of a way forward through a Memorandum of Understanding (MoU).

## POST OCCUPANCY EVALUATION

After the completion of certain bridges, the project endeavors to assess their effectiveness. This assessment is carried out through various methods, including callback surveys, village focus groups, traffic counts, and an annual household survey.

## MATERIALS

The project has a primary objective of utilizing locally sourced materials whenever feasible. The key construction materials employed are stone and water, supplemented by sand, cement, and timber during different phases of construction.

These materials are predominantly sourced within close proximity to the project site. The stones are obtained from locations within a 10-kilometer radius, water is locally available, and the sand is typically sourced from regions spanning 20-200 kilometers. Timber can either be acquired locally or imported from other regions within Tanzania, procured from the local market.

However, it's worth noting that cement, an essential component, is produced within Tanzania but originates from distant regions.

## CAPACITY BUILDING

Capacity building within the project was relatively limited and focused on two areas, neither of which were directly connected to the community:

Capacity building of local TARURA engineers: Efforts were made to enhance the skills and knowledge of the local TARURA engineers involved in the project. Training initiatives aimed to equip them with the necessary expertise to contribute effectively to the bridge construction process.

Training of local masons: Training programs were conducted to enable local masons to acquire the skills required for constructing stone arch bridges. While not all the masons were local, some of them received training specifically for building these types of bridges.



## RESEARCH DESIGN

The design employed in this project adheres to the guidelines outlined in the manual. This manual, developed based on empirical data and extensive experience, served as the foundation for the design approach. To ensure the wider applicability and credibility of the design, the values specified in the manual underwent verification by an external expert specializing in such structures. The expert evaluated the design and confirmed that the structures met the required safety standards.

Although the project did not undertake independent research for the design, it played a crucial role in gathering additional empirical data. Furthermore, the project served as a means to validate the design, ensuring its reliability and effectiveness.

## MODULAR DESIGN

Modular formworks were utilized in the project due to the construction of arches with fixed spans. This allowed for the reusability of the formwork across different bridges until it reached a state of significant deterioration.

A fixed design table was employed to determine all the necessary measurements of the bridge based on the span dimensions. This table served as a reference, ensuring consistency and accuracy in the design process.

## EMPOWERMENT

The community took autonomous decisions regarding the necessity of bridges and had the authority to make direct requests. They were responsible for determining the location and prioritizing multiple bridge projects, based on their specific requirements. Additionally, the community organized themselves to actively participate and provide necessary support for the construction of the bridges. This involved various methods such as collecting funds and mobilizing volunteers.

The utilization of technology empowered the community to play a significant role in their own public infrastructure development. It enabled them to exercise decision-making authority and actively engage in shaping their local infrastructure projects.

# 10 Ng'ambo tuitakayo! African Architecture Matters (AAM)

<b>Location of the project:</b>	Zanzibar Town, Zanzibar Unguja, Tanzania
<b>Architect of the project:</b>	N/A
<b>Client:</b>	Department of Urban and Rural Planning Zanzibar
<b>Consultant:</b>	African Architecture Matters, City of Amsterdam
<b>Size of the project:</b>	/approx. 215 Hectares
<b>Cost of the project:</b>	N/A
<b>Year of Implementation:</b>	2016

Ng'ambo Tuitakayo (the N'gambo that we want) is a series of projects and activities that begun back in 2013 with an ultimate objective to create a structural plan (Local Area Plan) for the development of the new city center of Zanzibar Town, Zanzibar (Republic of Tanzania), with planning instruments grounded in the notions of community participation and heritage-based urban development.

From early stages, it was decided that the Historic Urban Landscapes (HUL) methodology by UNESCO, advocating for a holistic and integrated approach to heritage based urban regeneration, would be tested and applied. In addition to the HUL methodology the team also decided to apply community-based processes by involving numerous participatory design tools for engaging the residents in a research-by-planning & planning-by-research exercise. These served as a way to increase the awareness among the stakeholders of the value of local culture and heritage in sustainable urban development.

The HUL approach presents an integrated, people and cultural landscape centered approach to urban management, where climate action, DDR, urban development, and energy transition initiatives are integrated with heritage conservation and management strategies.

In short, it encourages in-depth research into the cultural landscape of a city before any climate action or any sort of urban development activity takes place.





## ROLE OF THE ARCHITECT

Ng'ambo Tuitakayo consisted of a number of projects and activities conducted on the urban scale, hence there was no actual "Architect" work understood in the traditional sense involved in the process. The consultant team's primary responsibilities were those of a researcher, facilitator, observer, and ultimately translator of all this rich information into spatial urban design, serving as the "outline" of the Local Area Plan (LAP).

## DESIGN METHODOLOGY

Early on, it was decided to use the HUL methodology, which is a comprehensive and integrated strategy for heritage-based urban regeneration. In addition to using this methodology, the team also opted to apply community-based processes by applying participatory design tools for including the local community in a research-by-planning and planning-by-research exercise.

HUL methodology outlines an integrated, human-centred, and cultural landscape approach to urban management where activities for fighting climate change, DDR, urban development, and energy transition are combined with management and conservation techniques for cultural assets.

## IMPACT METHODOLOGY

Extensive research into the area involving community mapping and inventory of buildings formed the basis of the LAP resulting from the project. The mapping was conducted by a team consisting of local authorities, community members, international experts and students. In the process, the team mapped information on cultural activities, recreation, place-names, customs, handcrafts and others, by interviewing and walking with informants across the area. After 6 months of intensive site-work the team documented around 5000 individual buildings, consulted more than 150 people and produced 15 maps.

The maps that were created are currently open source in OpenStreetMap and wikipedia and also in our publicly accessible Ng'ambo Atlas publication.

## PARTICIPATORY TACTICS

Many residents have no background in architecture and planning and don't know how to read maps, drawings or how to design. In order to incentivize community involvement, the process needs to be fun, interesting and attractive. For that reason, more accessible tools and direct means need to be used that catch the interest of all the community groups. For example, when children are being involved, most people will be interested in what is happening.



Implementers used different tools to engage the community from scaled models to board games and painting. They were all activities that the general public could follow.

## POST OCCUPANCY ANALYSIS

There is no built structure. No formal evaluation assessment was carried out. However, some of the lessons learnt were that as within any participatory project, the concept and methodology of the project need to be suitable for the audience and difficult concepts (on urban planning) should be avoided. It is also important that there is a good understanding of the local culture, policies and manners. Having a community leader present in the team and partners within local government is also essential for a smooth process. Lastly, a long-term presence and strong local partnerships are required to ensure a sustainable project.

## CAPACITY BUILDING

Capacity building was mainly visible within the Department of Urban and Rural Planning in Zanzibar, something that was also one of the main goals of this project. Both the junior and senior staff of the DoURP got familiar with inclusive urban planning methodologies and tools. Concerning the community members, what could be regarded as capacity building in this case study, was the familiarity with tools of inclusive urban planning and in general what urban planning is really about.

## EMPOWERMENT

Empowerment of team and community members came progressively and it came mainly as one of the outcomes of the community mapping. The process of community mapping was not only there to document the area but also served to build capacity amongst core team members of stakeholders and local authorities. In the long term, this would lead to more knowledge and self-confidence about heritage and culture based urban redevelopment.



# 1 Rwanda Trail Bridges

<b>Location of the project:</b>	Rwanda
<b>Architect of the project:</b>	Bridge to Prosperity (B2P)
<b>Client:</b>	Government of Rwanda (MININFRA), GiveWell
<b>Consultant:</b>	N/A
<b>Size of the project:</b>	Countrywide
<b>Cost of the project:</b>	N/A
<b>Year of Implementation:</b>	Ongoing

In the world's rural farmlands, nearly one billion people are unable to access schools, markets, employment, finance facilities, clinics, and other services required to thrive because of a lack of reliable infrastructure. This lack of access significantly limits opportunities for growth in education, health, social cohesion, and economic outcomes, negatively influences short and long-term decision-making, and restricts poverty graduation for rural communities. Physical connection increases the development potential of rural residents by creating reliable access to more and better-quality opportunities and linking a nationwide system of resources and services with the residents who will most benefit from them.

B2P works to alleviate poverty caused by rural isolation by building trail bridges across rivers —keeping communities connected to essential resources like jobs, markets, schools, and health centres.





## ROLE OF THE ARCHITECT

B2P partners with governments and communities, to plan, design, and construct bridges that provide safe access for generations. With years of experience, they have standardised bridge designs and sustainable construction models that can be efficiently and effectively implemented in any country. All B2P bridges are resilient to extreme weather events and utilise locally sourced and repurposed materials, promoting environmental sustainability. B2P supports governments to ensure that their transport networks are integrated and inclusive at every level.

## IMPACT METHODOLOGY

B2P has partnered with several universities and research institutions in Rwanda and the US to conduct a rigorous longitudinal study to understand the effects of new trail bridges on key outcomes in poverty graduation, health, climate resilience, agriculture, and economic outcomes at the household, village, and regional level. This ground-breaking randomised control trial research will reach 15,000 households in more than 400 villages, at more than 150 bridge sites.

## IMMERSION IN CONTEXT

In Rwanda, B2P emphasises collaboration with local partners and communities, recognizing the significance of local buy-in and ownership for the success of community-driven projects. They actively engage with all levels of government to understand the specific needs and explore ways in which they can contribute to the solution. Through regional collaborations, B2P also focuses on building local capacity to ensure sustainable outcomes.

## PARTICIPATORY TACTICS

B2P employs data-driven approaches and works closely with partner communities to

determine optimal locations and strategies for their projects. This approach improves program efficiency and reduces dependence on subjective factors. By implementing lean data monitoring, B2P gathers valuable feedback from community members about their experiences with bridge construction and usage. This fast feedback loop informs future program decisions, and by leveraging impact data, B2P demonstrates the tangible value of its work to the communities they serve.

### MODULAR SYSTEMS

At every stage of the bridge construction process, from needs assessment to inauguration and inspection, B2P collects and utilises data to drive decision-making and enhance operational efficiency. This data-driven approach directly influences the bridges they build and the impact they achieve. In Rwanda, B2P conducted a comprehensive needs assessment that encompassed social, economic, and technical aspects to identify and prioritise the need for additional trail bridges. Furthermore, B2P initiated a spatial mapping project to supplement on-the-ground assessments, enabling a better understanding of rural isolation and the demand for trail bridges.



# 12 Totnes Community Development Society (TCDS)

Location of the project:	UK
Architect of the project:	Totnes Community Development Society
Client:	King Edward VI College Site Foundation
Consultant:	N/A
Size of the project:	N/A
Cost of the project:	N/A
Year of Implementation:	N/A

Totnes Community Development Society (TCDS) - a not-for-profit organization based in the United Kingdom - was established and incorporated as an Industrial and Provident Society for the Benefit of the Community.

TCDS works to bring spaces into community use, management and ownership, including working in partnership with other groups and organizations locally to achieve this and in support of local service provision.

For seven years, The Dairy Crest site - also in the United Kingdom - was left to ruin as private investors refused to buy what was deemed a liability. In 2008 the community succeeded in saving the Iconic Brunel Building. Totnes Community Developers began to formulate the Atmos Project and bring the site into community ownership.



**Preceding - Open public consultation informed by 'basic' constraints and facilitated by professionals setting parameters for the 'Community Brief'**



**January 2015 - Community Brief identifying key public spaces, 'nodes', uses and development zones. Achieved through Community Design Workshops with a steering group consultation of 20 people taken from the October 2014 Consultation representing a 'cross section' of the community.**



## ROLE OF THE ARCHITECT

Atmos Totnes was aligned to the emerging response to climate change. As a working example of transition in action, Atmos Totnes put Totnes at the forefront of the low-carbon revolution (targeting a minimum of 40% CO2 reductions).

The project was an architecturally significant, low-carbon, exemplary, development, at the transport 'gateway' for many of those who come to Totnes and the wider area. The built environment responded, by design, to the impact of climate change.

## IMPACT METHODOLOGY

The impact of the closure on an already fragile local economy raised concerns across the Totnes community, and by July 2007 a broad-based community Steering Group had been set up.

The remit of the Steering Group, with representation from Totnes Town Council and District Community Strategy Group, Totnes Development Trust, Totnes Chamber of Commerce, and Transition Town Totnes, was to consider what could be done to ensure that lost jobs were replaced and that the Creameries site was not sold for market housing. Local jobs, housing and facilities were the key drivers of this Steering Group as it established Atmos Totnes.

## IMMERSION IN CONTEXT

Over the course of resetting the project, 4,000 meaningful contributions by the local community were made, there was also a design team that facilitated over 20 consultation sessions with the community resulting in extensive pre-feasibility works.

## PARTICIPATORY TACTICS

The participatory way of developing Atmos Totnes, through the Community Right to Build Order process enabled the development of Atmos Totnes and enabled both community and design consultants to overcome and/or mitigate the constraints on site.

In short, the proposed scheme is the vision that has come out of a Community Right to Build Order process and probably would not have been possible without.



# ACKNOWLEDGEMENTS

Enabel extends its deepest appreciation and acknowledgement to all the participants and presenters who played a vital role in documenting this manifesto on community-based driven processes. Your dedication and commitment to capturing the rich tapestry of community initiatives have been truly commendable.

1. Dr Ignace Gatare University of Rwanda, Principal
2. Mr Edward Kyazze MININFRA, DG Urbanisation
3. Mr Jean- Michel Swallens Belgium Embassy
4. Koen Vanmechelen Belgian Artist
5. Rob Hopkins Co-founder of the Transition movement, England
6. Dr Mark Olweny Martyrs University, Uganda
7. Alpha Ntayomba PDI, Tanzania
8. Sylvere Nsengimana Earthenable, Rwanda
9. Semeni Ngonyani Enabel, Tanzania
10. Felix Holland Localworks, Uganda
11. Noella Nibakuze MASS Design Group, Rwanda
12. Enrico Morriello SKAT, Rwanda
13. Lambert Mugabo Bridges 2 Prosperity
14. Emmanuel Bugingo MINALOC, Rwanda
15. Dr Hakizimana, Jean pierre Enabel, Rwanda
16. Rocco Cislaghi ASA Studio, Rwanda
17. Alexandra Papadaki African Architecture Matters
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