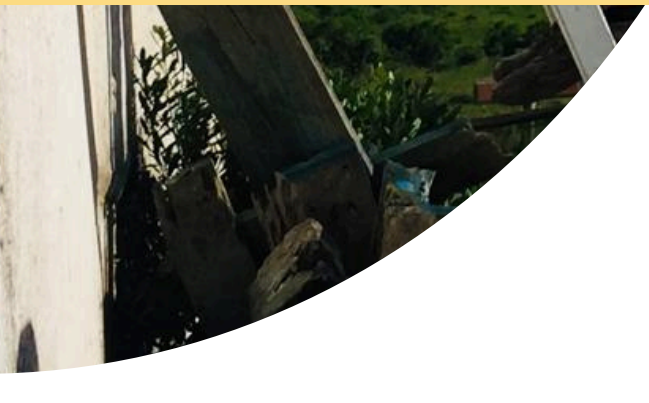
ISEA
Institute for Social Entrepreneurship in Asia

APC
ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS

RHIZOMATICA

BRIDGING THE DIGITAL DIVIDE IN RURAL SOUTH AFRICA:

The Zenzeleni Community-Centered Connectivity Initiative



May 2025

This paper was prepared by the Institute for Social Entrepreneurship in Asia (ISEA), as part of the Local Networks (LocNet) Initiative: A Comparative Study of the Financial Sustainability and Socioeconomic Impacts of Alternative Digital Infrastructure Connectivity Business Models and Technologies that is implemented by the Association for Progressive Communications and Rhizomatica. The LocNet initiative is financially supported by the Swedish International Development Cooperation Agency (Sida) and UK International Development from the UK Government through its Digital Access Programme (DAP). This case research project was additionally supported by the Internet Society. The views expressed here do not necessarily reflect the supporters' views. For further information on the issues raised in this paper, please email **secretariat@isea-group.net**.

Published by **ISEA**, **APC**, and **Rhizomatica**.

Room 407 John Gokongwei School of Management Building, Ateneo de Manila University, Katipunan Avenue, Quezon City 1108 Metro Manila, Philippines.

All photos used in this report are credited to: **Zenzeleni NPC**

Acknowledgements

This paper shares the results of a case study research project pursued by the Institute for Social Entrepreneurship in Asia (ISEA) in partnership with the Association for Progressive Communications (APC) and Rhizomatica under the Local Networks (LocNet) Initiative. It is part of a bigger initiative to undertake A Comparative Study of the Financial Sustainability and Socioeconomic Impacts of Alternative Digital Infrastructure Connectivity Business Models and Technologies. The LocNet initiative is financially supported by the Swedish International Development Cooperation Agency (Sida) and UK International Development from the UK Government through its Digital Access Programme (DAP). This case research project was additionally supported by the Internet Society.

I would like to give thanks to the partners, friends and colleagues who played key roles and supported the publication of this case research initiative:

- The Association for Progressive Communications (APC) and Rhizomatica for their institutional support as co-publishers of this case research. Special mention to its Co-Leads Dr. Carlos Rey Moreno and Ms. Kathleen Diga and Labs-Community Networks Coordinator Mr. Mike Jensen for providing their expertise on community-centered connectivity initiatives and valuable feedback on the case studies;

- The Sida and UK DAP for providing resources for the LocNet Initiative that make this project possible and the Internet Society (ISOC) for providing additional resources.

- ISEA Research Fellow, Prof. Albert Teo who also served as the project's specialist on Social Return on Investment (SROI), complementing the undersigned's expertise on Development Indexing (DI) as social impact and cost effectiveness measurement tools;

- Principal case writer, Mr. Jay Bertram Lacsamana, with assistance from Mr. Mark Lee Babaran and Ms. April Grace Garcia.

This publication would not have been possible without the expert inputs and active participation of our case subjects together with their partner communities. Special mention goes to the Zenzeleni Networks NPC: Prof. Shaun Pather (University of the Western Cape), Ms. Yumna Panday (General Manager), Ms. Zingisa Sigcau (Mankosi Community Member, Trainer, and Lab Assistant), and Mr. Apumle Makhawula (Mankosi Community Member, Trainer, and Lab Assistant).

Finally, we acknowledge the efforts of the ISEA team who contributed to the completion of this case report in various ways. Special mention goes to Ms. Catherine Tiongson-Intalan who served as the Project Coordinator, Ms. Cindy Falcutila as the Project Associate, Ms. Carmela Jessica Corado as copy editor, Ms. Bernadette Patañag for the cover design and layout, as well as Ms. Norma Gonzaga and Ms. Dolly Marcial for providing finance and administrative support.

Marie Lisa M. Dacanay
Project Director and President
Institute for Social Entrepreneurship in Asia (ISEA)

List of Abbreviations

APC	Association for Progressive Communications
CBI	Community-based institutions
CCCI	Community-Centered Connectivity Initiatives
CIPESA	Collaboration on International ICT Policy for East and Southern Africa
CN	Community Network
CNSA	Community Networks South Africa
DCDT	Department of Communications and Digital Technologies
DI	Development Indexing
ECNS	Electronic Communications Network Service
ECS	Electronic Communications Service
ID	Identification
IEC	Information, education, and communication
ICASA	Independent Communications Authority of South Africa
ICDL	International Computer Driver's License
ICT	Information Communications Technology
ISEA	Institute for Social Entrepreneurship in Asia
ISOC	Internet Society
ISP	Internet Service Provider
KRA	Key Result Area
NDP	National Development Plan
NGO	Non-government Organizations
NPC	Not-for-Profit Company
PBO	Public Benefit Organization
PI	Performance Indicators

List of Abbreviations

PV	Present Value
SA Connect	South Africa Connect
SROI	Social Return on Investment
SVI	Social Value International
TIA	Technology and Innovation Agency
USAASA	Universal Service and Access Agency of South Africa
USAF	Universal Service and Access Fund
USD	US Dollar
UWC	University of the Western Cape
Wifi	Wireless Fidelity
WSU	Walter Sisulu University
ZAR	South African Rand

Table of Contents

Acknowledgements 3
List of Abbreviations 4

INTRODUCTION 7

THE STATE OF DIGITAL CONNECTIVITY IN SOUTH AFRICA 10
Policy and Regulatory Environment 10

ZENZELENI NETWORKS COMMUNITY-CENTERED CONNECTIVITY INITIATIVE 12
Program Background 12
Zenzeleni Networks NPC as a Social Enterprise 14

RESULTS AND IMPACT 20
Outcomes 20
Results of Community Stakeholders' Interviews 22
Initiating the Use of Development Indexing to Measure Social Impact 23
Toward Measuring Cost Effectiveness Using Social Return on Investment 29
Social Return on Investment of Zenzeleni CCCI 34
Key Findings and Insights from the Initial DI and SROI Value Map 38
Key Findings on the Resulting Social Value Map Exercise and SROI 38

SUMMARY AND CONCLUSION 40

About the Cooperating Organizations 42
Project Team 43

INTRODUCTION

This case study is one of four research outputs on the social impact of community-centered connectivity initiatives (CCCIs) that the Institute for Social Entrepreneurship in Asia (ISEA) generated in partnership with the Association for Progressive Communications (APC). These case studies use social entrepreneurship concepts and tools to explore the multifaceted impact of initiatives that have achieved relative success in bringing meaningful connectivity to marginalized populations and communities in Indonesia, India, South Africa, and Kenya.

These CCCIs may be considered as social enterprises in the digital industry. They enable marginalized people and communities not only to access but to control, manage, and use digital resources and connectivity in ways that improve their quality of life and enhance their capacity to be actors in their own development.

As social enterprises, they provide three types of services: transactional, social inclusion, and transformational services. Transactional services are connectivity services that can be accessed via a payment of money or other form of agreed transaction in exchange for the service. Social inclusion services are oriented towards addressing digital exclusion and meaningful connectivity, or other factors behind the "usage" gap. Examples include the provision of affordable or free internet; developing and sharing local digital knowledge resources relevant to meeting community needs; provision of hubs or community-based facilitators to broaden access; and provision of training on digital skills. Transformational services are oriented at enabling the poor and excluded to overcome their capability deprivation and become actors in their own development. These are services that build their capability to own, govern, and manage digital resources in a way that would positively impact their lives and the lives of their families, communities, and the marginalized sectors they are a part of. Transformational services enable the poor and excluded to be co-owners, supervisors, managers, and decision-makers or to become leaders and stakeholders of the social enterprises that provide digital-related services and ensure meaningful connectivity. Transactional and social inclusion services are usually directed at the potential users or customers of digital-related services. Transformational services are usually directed towards those who are capacitated to provide, manage, and operate the provision of digital-related services to communities.

These three types of services result in or facilitate various social impacts. Depending on which type of service played the most significant role in bringing about the social impact, they are then referred to as transactional services-facilitated impacts, social inclusion services-facilitated impacts, and transformational services-facilitated impacts. Profit-oriented internet service provider companies mainly bring about transactional services-facilitated impacts. The cases studied would substantiate that beyond these transactional services-facilitated impacts, many of the social impacts brought about by CCCIs are facilitated by their social inclusion and transformational services. The analytical tools used to study the social impact of these 4 CCCIs are Development Indexing (DI) and Social Return on Investment (SROI).

Development Indexing (DI) is a methodology that assists in the quantification of social impacts where simple proxy measures are deemed inadequate. As shown by the 4 cases studied, CCCIs have many social inclusion and transformational services-facilitated impacts including the improvement in the economic position and conditions of community stakeholders and increased levels and capacities for inclusive human development. Faced with time and resource constraints and as the first case studies to explore the use of DI to quantify these complex social impacts of CCCIs, the cases were able to define main elements or key result areas, sub-elements of such and potential performance indicators where significant social impacts were noted. The case research did not reach the stage of developing and using a scorecard, usually from one to one hundred (1-100), assigning scores based on relative weights to quantify the performance indicators under each key result area, the last stage when using DI as a methodology. In lieu of quantification based on assigned scores, the case studies identified what may be considered significant social impacts based on the available data approximating relative scale and depth of impact characterized as high, medium, and low. The social impact characterized by the performance indicator is considered significant when both scale and depth were approximated as high, at least one was deemed high, or both scale and depth were deemed as medium.

Social Return on Investment (SROI) is a methodology that articulates the financial and social costs and benefits of social enterprises, in the process showing whether the benefits derived from such investment outweigh the costs. With the total value of the net financial return of the CCCI together with the monetized value of social outcomes using established conventions as numerator and investments as denominator, the ratio needs to be greater than one to show cost-effectiveness. SROI follows certain conventions in quantifying and defining proxy measures for monetizing both tangible and intangible social impacts. The SROI methodology used in the 4 cases follows the procedures, requirements, and conventions developed by Social Value International (SVI) that are accessible through their website (https://www.socialvalueint.org/guide-to-sroi). The SVI-prescribed SROI Value Map that was generated as a result of the case study is made available as an appendix to each case study.

Tangible social impacts that can be easily monetized include economic benefits such as increased incomes or cost savings derived from the use of the Internet. Intangible social impacts such as increased capacities for inclusive human development and community empowerment are much harder to quantify and monetize. Following the principles and conventions of SROI as a methodology, the cases approximated the quantification of significant social impacts and used monetary proxies that were deemed meaningful and acceptable to the stakeholders benefiting from the CCCI's services, as represented by the key informants for the cases. Given resource and time constraints, the case studies were only able to explore the quantification and monetization of a limited set of performance indicators deemed significant and as such, the SROI values derived are undervalued.

DI and SROI are complementary measures of effectiveness: DI is a measure of effectiveness in terms of qualitative impact on relevant stakeholder groups while SROI is a measure of cost-effectiveness. With the aid of DI and SROI as methodologies, the case that follows provides indications of the most significant social impacts that the CCCI in Mankosi and Zithulele has made on rural stakeholders and communities it served, as well as the cost effectiveness of the intervention in bridging the digital divide in rural South Africa.

BRIDGING THE DIGITAL DIVIDE IN RURAL SOUTH AFRICA:

The Zenzeleni Community-Centered Connectivity Initiative

THE STATE OF DIGITAL CONNECTIVITY IN SOUTH AFRICA

In 2024, the government highlighted significant improvements in internet connectivity and penetration, citing data from the 2022 Census, which showed that the proportion of the population without access to internet services had decreased from 64.8% in 2011 to 21.1% in 2022.[1] Despite these advancements, high connectivity costs remain a significant barrier, particularly in rural areas. The average monthly cost of a fixed broadband connection is ZAR 888.95 (USD 48.10), while a single gigabyte of mobile data costs ZAR 33.45 (1.81 USD),[2] making South Africa one of the more expensive countries for mobile data. About 70 percent of South Africans access the internet via mobile devices. However, due to high data charges, only a relatively small portion of the population, primarily those who are wealthier, can achieve meaningful levels of connectivity where usage is not significantly constrained by cost.

Adding to connectivity challenges, South Africa previously faced an ongoing energy crisis, with scheduled power cuts, known as "load shedding", implemented at various times to prevent a total blackout. These disruptions hindered internet access, prompting telecommunications companies, businesses, and wealthier households to invest in backup and alternative energy sources to maintain connectivity. However, those unable to afford such measures faced restricted access to online education and employment opportunities, deepening the digital divide, particularly among low-income and rural populations.[3] As of March 2024, load shedding has generally ended, and the population now benefits from a more consistent power supply.

The government has undertaken sustained efforts to expand connectivity. In 2014, it launched the SA Connect initiative to provide internet access to public facilities such as schools, clinics, and police stations.[4] Phase 2, introduced in 2022, focused on leveraging state-owned entities to extend connectivity to more government sites and households, with a goal of achieving 80% broadband coverage by 2025.[5] Complementing these efforts, several emerging initiatives have aimed to reach underserved communities. Notably, the government's broadband access fund has enabled smaller service providers to deliver connectivity to thousands of homes and public hotspots in these areas.[6]

Policy and Regulatory Environment

The digital divide in rural South Africa is well-documented in key national policy documents, including The National Development Plan (2012), South Africa Connect: the National Broadband Policy and Strategy (2013), and the National ICT Advisory Review Panel Report (2015). These reports acknowledge that, despite an established policy and regulatory

[1]https://census.statssa.gov.za/assets/documents/2022/Census_2022_SG_Presentation_10102023.pdf
[2] https://www.statista.com/topics/10252/internet-usage-in-south-africa/#topicOverview
[3] https://cipesa.org/2023/12/ongoing-power-cuts-set-back-south-africas-gains-on-digital-access/
[4]https://www.gov.za/news/media-statements/sa-connect-%E2%80%93-implementing-broadband-policy-and-strategy-24-apr-2014
[5]https://www.gov.za/news/cabinet-statements/statement-cabinet-lekgotla-and-special-cabinet-meeting-27-and-28-january
[6]https://techcentral.co.za/south-africas-digital-divide-real-heroes/260423/

framework, network rollout remains disproportionately concentrated in urban areas. Without targeted government intervention, the deployment of modern broadband infrastructure in rural and underserved communities is unlikely.[7]
The National Integrated ICT Policy White Paper reiterates this concern, emphasizing the limited commercial incentive for providers to invest in less affluent and remote areas.

Under current regulations, two main categories of telecommunications service licenses are available:

- Electronic Communications Network Service (ECNS) licenses authorize holders to operate physical networks using any technology, such as radio, copper, or fiber optic infrastructure. ECNS licensees may also lease their networks to other operators.
- Electronic Communications Service (ECS) licenses allow the provision of internet services over either self-owned or third-party networks, typically held by internet service providers (ISPs) that do not own infrastructure.

Some community-centered connectivity initiatives in South Africa operate under license-exempt provisions, which allow limited legal operation but come with restrictions. To address this, some CCCIs have opted to acquire a class license, which costs ZAR 15 729.00 (USD 900) [8]. A class license can apply to either ECNS or ECS, depending on the nature of the services being provided. CCCIs typically apply for a class ECNS license if they build and operate their own network infrastructure, or a class ECS license if they provide internet services over someone else's infrastructure.

In May 2024, in response to the findings by the Competition Commission that mobile operator pricing was anti-poor[9], the government introduced the New Generation Radio Frequency Spectrum for Economic Development policy. This policy directs the regulator to establish a more enabling radio spectrum environment for community networks in South Africa,[10] aiming to promote competition and formally recognize ISPs in the national policy framework.

South Africa also has a Universal Service and Access Agency (USAASA), which administers the Universal Service and Access Fund (USAF). However, the agency has faced ongoing criticism for its lack of transparency and limited effectiveness in addressing access gaps.[11]

[7] https://policy.communitynetworks.group/country-profiles/south-africa (page 66)
[8] https://www.icasa.org.za/pages/fees
[9] https://www.compcom.co.za/wp-content/uploads/2019/12/DSMI-Non-Confidential-Report-002.pdf
[10] https://www.ellipsis.co.za/wp-content/uploads/2024/02/Next-Generation-Radio-Frequency-Spectrum-for-Economic-Development-2024.pdf
[11] https://techcentral.co.za/solly-malatsi-fires-usaasa-board-members/250890/

ZENZELENI NETWORKS COMMUNITY-CENTERED CONNECTIVITY INITIATIVE

Program Background

Zenzeleni, meaning “Do it yourself” in isiXhosa, pioneered a CCCI in the village of Mankosi, located within the Nyandeni municipal area of the Eastern Cape Province. In response to the urgent need for affordable and reliable communication services, the initiative began in 2012 as a partnership between the University of the Western Cape (UWC) and the Mankosi community. Together, they established Zenzeleni Community Networks Mankosi, a community-based Internet Service Provider (ISP) operated and managed by local residents. This collaboration provided a sustainable, locally driven solution to the digital divide.

Building on the success of this initiative, Zenzeleni Networks Not-for-Profit Company (NPC) was created as an umbrella organization to support similar CCCIs across rural Eastern Cape, South Africa. Zenzeleni NPC’s objectives include:

1. Initiate, mentor, train, support, and assist community-based internet service providers in rural and underprivileged areas of South Africa.

2. Lobby for and source the necessary funding, assets, and related resources for those community-based microenterprises to provide sustainable universal affordable access to electronic communications networks and electronic communications services in rural and underprivileged areas of South Africa.

3. Engage in advocacy, capacity building and related activities to advance all facets of the digital ecosystem with a special emphasis on rural poor.

4. Support all research and innovation activity in the advancement of the objects of the Company.

5. Support community development for poor and needy persons and anti-poverty initiatives, including:
    - Promotion of community-based projects relating to self-help, empowerment, capacity building, skills development, or anti-poverty.
    - Provision of training, support, or assistance to community-based projects, and
    - Provision of training, support, or assistance to emerging microenterprises to improve capacity to start and manage businesses, which may include the granting of loans on such conditions as may be prescribed by the Minister by way of regulation.

Zenzeleni’s innovative approach has earned international recognition for its social impact, particularly in improving connectivity for schools and youth in the region. In 2017, it received the National Award for "Best Innovation with Social Impact", a milestone that bolstered its growth and led to the establishment of the Zithulele Cooperative in 2018, a second community cooperative designed to replicate and scale the model.

To date, Zenzeleni NPC has deployed 80 Wi-Fi hotspots, connected more than 1,000 individuals, and delivered services to 21 institutions, including local businesses, schools, NGOs, and a district hospital. It has successfully managed partnerships, and in 2024, a grant from the 48% Foundation enabled them to expand into the neighboring communities of Mgcibe and Ntshilini, adding 15 additional community Wi-Fi hotspots by 2025.[12]

Zenzeleni's work in Mankosi

Mankosi is a remote rural village in South Africa's Eastern Cape, with a population of around 6,000 people, located approximately 100 kilometers from the nearest town, Mthatha. It is Zenzeleni's founding community, chosen for its rural setting and the UWC's existing relationships in the area.

A community cooperative was formed, made up of 10 respected local members. In collaboration with UWC, they planned and built the network infrastructure. Solar-powered mesh network stations were installed on homes across the village, covering an area of 30 square kilometers.

Mankosi also houses Zenzeleni's computer lab, equipped with 11 desktops and 20 Chromebooks, providing community members with affordable access to digital tools, at significantly lower costs than labs outside the village. The lab offers services such as typing, printing, photocopying, and laminating, and supports residents with online applications for smart IDs, government grants, and school admissions for both high school and tertiary education. The computer lab is a joint initiative between Zenzeleni and Computer Aid International, established after an assessment revealed that the community's limited access to devices needed to make full use of the internet.

The cooperative also uses the lab to provide basic computer training, teaching villagers hardware basics and practical skills such as word processing and email use. Learners are trained on both desktops and Chromebooks.

Before the lab was established, dozens of Wi-Fi hotspots were already in place. By 2024, Mankosi has around 39 active hotspots, with residents accessing the internet through prepaid vouchers sold by Zenzeleni vendors across the village. In early 2025, Zenzeleni used a small grant to train 25 community members (10 men and 15 women) in voucher reselling, as well as others in installation and maintenance of electronic equipment.

At the start of the initiative, most homes in Mankosi lack electricity, and residents rely on local shops to charge their mobile devices for a fee.[13]

Zenzeleni's work in Zithulele

Zithulele joined the Zenzeleni network in 2018[14] and formally registered as the Zenzeleni Zithulele Cooperative in 2019. Located near Mankosi in the Eastern Cape, it is Zenzeleni NPC's second community-managed cooperative. The village is strategically selected for its location along a national road and proximity to key facilities, including Zithulele Hospital, which

[12] https://www.48percent.org/projects/zenzeleni-community-connectivity-expansion-with-zenzeleni-networks/
[13] https://theconversation.com/how-a-rural-community-built-south-africas-first-isp-owned-and-run-by-a-cooperative-87448
[14] https://www.kictanet.or.ke/zenzeleni-a-community-owned-and-operated-isp/

serves around 130,000 people across a 1,032 km² catchment area, significantly increasing foot traffic through the area.[15]

The village now hosts around 40 Wi-Fi hotspots, allowing residents to connect using Zenzeleni vouchers. Zenzeleni also provides internet to Zithulele Hospital, its largest customer and highest data user. Initially connected through support from the Internet Society Grant, the hospital's stakeholders previously paid for their own connectivity.

Before the hospital was connected to the Zenzeleni network, patients faced 16 to 24-hour wait times for sending and receiving test results. Since joining the network, doctors at the hospital, now Zenzeleni customers, fund their own internet access for professional use. As a result, wait times have dropped to just 1 to 2 hours, significantly improving the efficiency of diagnoses and treatments for the local population.

Zenzeleni Networks NPC as a Social Enterprise

Theory of Change

Zenzeleni Networks NPC is a social enterprise with a clear and deliberate mission to promote social inclusion and transformation. By pioneering community-centered connectivity in rural South Africa, Zenzeleni empowers marginalized communities through affordable and sustainable internet access. Its theory of change emphasizes the critical role of connectivity in improving rural livelihoods and driving long-term socio-economic development. Through a community-owned cooperative model, coordinated by the NPC, Zenzeleni ensures that digital inclusion serves not merely as a technological solution but as a catalyst for broader social transformation.

From the outset, Zenzeleni NPC has prioritized the creation of an inclusive digital ecosystem, rooted in local ownership and capacity building . The initiative is implemented through three strategic sub-programmes:

1. **Internet Services** – Central to Zenzeleni's mission, this component ensures rural communities have access to high-quality network connectivity. The organization views connectivity as essential for improving livelihoods by enabling access to digital tools that support social and economic activities.

2. **Digital Ecosystem** – This sub-programme focuses on training, education, and skills development, equipping community members with the knowledge and capabilities to use the network meaningfully and effectively in their daily lives.

3. **Advocacy and Partnership Building** – To ensure sustainability and scalability, Zenzeleni engages in policy advocacy, academic research, and strategic partnerships that support and expand its impact.

In the short term, Zenzeleni seeks to enable rural communities to establish affordable and reliable internet access while building essential digital skills. In the medium term, these communities are expected to leverage connectivity to achieve various livelihood goals, with empowered community-based ISPs operating profitable, locally owned initiatives.

[15] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7433284/#:~:text=Zithulele%20Hospital%20is%20a%20147,a%201042%20km2%20area.

A relatively conducive policy environment further supports these efforts, with the long-term vision of communities deriving significant social and economic benefits from CCCIs. This includes improved quality of life and the growth of network-enabled businesses and social enterprises.

Through its comprehensive approach, Zenzeleni Networks NPC not only addresses the immediate connectivity needs of rural communities but also lays the groundwork for sustainable socio-economic development. By fostering local ownership, building community capacity and maintaining continuous advocacy and research, the initiative aims to influence broader policy changes in support of community-based ISPs, amplifying the impact of the Zenzeleni model at both national and global levels.

Logic of the CCCI Model

The CCCI model of Zenzeleni in South Africa operates on the principle of local empowerment and sustainability. It is designed to provide rural communities with affordable, high-quality internet connectivity through community-owned and managed cooperatives. This approach takes a holistic view of community development, positioning connectivity as a catalyst for broader social and economic progress. By enabling access to digital resources, Zenzeleni empowers community members to pursue education, grow their businesses, and access vital services that were previously out of reach.

Zenzeleni Networks collaborates with the University of the Western Cape to facilitate ongoing action research. This partnership continuously informs improvements to the network model and supports policy advocacy efforts. Such advocacy is essential in creating a regulatory environment that sustains and expands community-based internet service providers.

A key strength of the Zenzeleni model is its strong emphasis on skills and knowledge development. Training programs are integral, equipping community members with the competencies needed to manage and use the network effectively. This includes both technical training for network maintenance and broader digital literacy initiatives. The ultimate goal is to build a self-sustaining ecosystem in which communities leverage connectivity to improve their livelihoods and strengthen local economic resilience. The Zenzeleni model not only addresses the immediate need for connectivity but also lays the foundation for long-term socio-economic development by fostering a sense of ownership, accountability, and community-driven growth.

Initial Investment

Between 2017 and 2022, Zenzeleni maintains a diverse funding portfolio, with a total income of ZAR 11,442,759. This revenue comes from multiple sources: service provision (ZAR 1,037,768), VAT returns (ZAR 42,326), donations (ZAR 91,199), consultancies (ZAR 121,842), and grants (ZAR 10,149,625).

A significant portion of this funding, particularly from October 2017 onwards, comes from grants, with nearly 40 percent provided by the Technology Innovation Agency (TIA).[16] These

[16] TIA is a national public entity that serves as the key institutional intervention to bridge the innovation chasm between research and development from higher education institutions, science councils, public entities, and private sector, and commercialization.

grants are instrumental not only in supporting the delivery of network services but also in advancing the NPC's broader goals, including advocacy, capacity building, and strengthening the digital ecosystem, particularly for marginalized rural communities. The grants enable several impactful initiatives, such as the installation of solar hubs and computer labs in Mankosi, where students receive training in using the internet. They also support the launch of South Africa's first School of Community Networks in 2022 which empowers 21 students from seven communities across five provinces to:

a) build their own community infrastructure;

b) participate in an international peer learning network established by Association for Progressive Communications (APC); and

c) engage in ongoing national and regional telecommunications policy and regulatory debates, with the goal of producing a policy brief that supports the enabling of community networks.

An estimated ZAR 2 million in grant funding directly supports core internet service provision, which is further supplemented by income from service provision since July 2018. Together, these resources generate an operating budget of over ZAR 3 million, enabling Zenzeleni to provide affordable internet access in some of the most underserved and challenging areas of South Africa.[17] Zenzeleni has attained Public Benefit Organisation (PBO) status in January 2021, allowing it to issue tax deduction certificates for donations, an income stream it plans to grow in the future.

Despite operating in a challenging environment, Zenzeleni succeeds in delivering connectivity in areas deemed unprofitable by commercial telecommunication operators, underscoring its role in national connectivity efforts. Notably, while the Universal Service and Access Agency of South Africa (USAASA) allocates ZAR 70 million to connect public institutions in the Nyandeni and King Sabata Dalindyebo local municipalities, key informants from Zenzeleni have shared that these government-led projects fail to become operational, further highlighting the critical role Zenzeleni plays in bridging the digital divide.

Structure and Strategy Towards Sustainability

Zenzeleni CCCI operates through a dual structure comprising community cooperatives and a non-for-profit company (NPC), each playing distinct yet complementary roles in delivering affordable, high-quality, and meaningful connectivity. The two Zenzeleni Cooperatives function as the legal ISPs in their respective villages. Members of these cooperatives are selected by the community to manage and maintain the network for the collective benefit. They are responsible for the ownership, governance, and operation of the network within their communities. The cooperatives generate income by offering services to households, schools, businesses, and other local organizations, with revenues reinvested into the network and various community development initiatives.

The cooperatives also support initiatives that enable community members to make effective use of the network. The establishment, or "seeding", of new cooperatives is primarily driven by availability of donor funding to cover start-up costs. Zenzeleni NPC facilitates this process

[17] More detail about this can be found in the subsequent sections on Mankosi and Zithulele

by providing technical guidance, training, and assistance in designing and registering business operations and network services. The NPC also offers administrative support to existing cooperatives, ensuring efficient operations and strengthening community-led projects. In addition, the NPC serves as a catalyst for skills and knowledge development, mentoring cooperative members and providing expert support to empower communities to maximize the benefits of internet connectivity.

Zenzeleni NPC is also actively involved in policy advocacy to improve the regulatory environment for community networks (CNs) in South Africa, across Africa, and globally. It collaborates with stakeholders in the telecommunications sector to help cooperatives access affordable, high-quality broadband and appropriate technology solutions. Furthermore, the NPC pursues strategic partnerships and manages projects aimed at strengthening the cooperatives and expanding the reach of Zenzeleni CCCI. These efforts ensure that the model remains sustainable and scalable, enabling more communities to benefit over time.

Zenzeleni CCCI exemplifies a social entrepreneurial model rooted in sustainability and meaningful impact rather than profit. By partnering with community networks and organizations around the world, Zenzeleni fosters an environment of mutual learning and continuous innovation. These global connections enhance Zenzeleni's ability to adapt and evolve, ensuring that rural communities have access to reliable, affordable internet connectivity, ultimately improving their overall quality of life.

Institutional Stakeholders

Zenzeleni, as a group, operates approximately 80 hotspots across five villages including Mankosi and Zithulele, providing internet access to more than 20,000 people in these villages. Community members in both areas use these hotspots to stay connected with relatives, friends, and others in the nearby villages. The connectivity also enables them to keep up with current events, search for jobs, access educational materials, and find information related to government grants, health services, and business opportunities. Zenzeleni collaborates with a diverse range of partners across various sectors, including non-governmental organizations (NGOs), telecommunications providers, government agencies, and the academic sector, all contributing to the development and sustainability of its community networks.

Non-Government Institutions

Zenzeleni partners with both local and international NGOs, including the Internet Society (ISOC), the Association for Progressive Communications (APC), of which it is a member, and Right2Know.

International NGOs like the ISOC and APC work to expand internet access in underserved areas, especially in the Global South. They support Zenzeleni by providing grants and capacity building to help advance its mission of delivering affordable internet to rural communities in South Africa.

Right2Know, which advocates for the free flow of information,[18] supports Zenzeleni in developing educational brochures that explain community networks, Zenzeleni's

[18] https://privacyinternational.org/partners/right2know-campaign

connectivity model, and how residents can access the internet through its services.

Zenzeleni also collaborates with Computer Aid International on the Mankosi Solar Community Hub, a solar-powered computer lab, and with the 48% Foundation to expand Wi-Fi hotspots to two neighboring communities. In addition, it received a grant from the SAB Foundation focused on entrepreneurship and social innovation.

These partnerships strengthen Zenzeleni's reach and impact, enabling it to scale digital inclusion efforts in South Africa's most remote areas.

Telecommunication Partners

Zenzeleni also partners with telecommunications operator Easttel, specialists in rural connectivity who provides Zenzeleni with wholesale backhaul internet connectivity. In addition, Easttel offers high-level technical support to the NPC by hosting its servers and assisting with network design, monitoring, and maintenance.

Government Institutions

The Independent Communications Authority of South Africa (ICASA) regulates the country's communications, broadcasting, and postal sectors.[19] It issues ISP licenses and collects the associated regulatory fees.

Zenzeleni Mankosi Cooperative officially registered in 2014 and received a license exemption from ICASA, allowing it to operate its infrastructure without paying licensing fees.[20]

The Department of Science and Innovation through their subsidiary, Technology Innovation Agency (TIA), supported Zenzeleni's expansion by funding the creation of a second network, Zenzeleni Zithulele, in 2018, which has also secured a license exemption in 2019.[21]

In 2022, Zenzeleni NPC has begun operating in areas outside the cooperative model and has obtained its own class license from ICASA.

Zenzeleni's growing reputation has led to it hosting the Third African Community Networks Summit in 2018, with over 100 participants from 20 countries.[22] In 2019, the Department of Communications and Digital Technologies (DCDT) has expressed intent to collaborate with Zenzeleni in its national budget speech.

Zenzeleni contributes actively to regulatory consultations, helping secure the recognition of community networks in national policy. The Next Generation Radio Frequency Spectrum Policy (2024) is expected to provide a more enabling environment for these networks.

Through strategic partnerships, advocacy, and regulatory engagement, Zenzeleni positions itself as a key driver in shaping inclusive digital policies in South Africa.

[19] https://www.icasa.org.za/pages/about-us-1
[20] https://usaf.ac.za/connecting-communities-and-changing-lives/
[21] https://zenzeleni.net/our-journey/
[22] https://www.dst.gov.za/images/2018/18-646-Community-networks-policy-brief-3-December_V31.pdf

Academic Institutions

Zenzeleni works with two universities: the University of the Western Cape (UWC) and Walter Sisulu University (WSU).

The UWC, a public research institution based in Cape Town, played a foundational role in launching the Zenzeleni Community Networks. Researchers from UWC collaborated with local communities to co-develop a plan for bringing internet connectivity to rural villages.

Today, UWC continues to play a key support role by assisting Zenzeleni NPC in fundraising, legal and marketing support, trademark registration, business model development, and, when needed, conflict resolution and relationship management.[23] The university remains an active partner in advancing the sustainability and growth of the community network. In addition, the Zenzeleni NPC Chairperson is also an Advisor to the UWC Rector, Vice Chancellor, and a Professor of Information Systems at UWC.

Walter Sisulu University, located in the Eastern Cape, was established in 2005 with a strong focus on science, technology, and rural development.[24]

In 2017, WSU granted Zenzeleni access to their data center, allowing connectivity to Zenzeleni's two elevated sites in Mthatha. This enabled the installation of long-range, multi-hop Wi-Fi links that extended connectivity to Mankosi.[25]

As a result, students in Mankosi and Zithulele now have the ability to apply online to WSU and other universities, opening up greater access to higher education through the connectivity provided by Zenzeleni.

[23] https://usaf.ac.za/connecting-communities-and-changing-lives/
[24] https://www.wsu.ac.za/index.php/en/home/discovery-wsu/overview
[25] https://www.apc.org/en/blog/apc-members-2016-do-it-yourself-connectivity-rural-communities

RESULTS AND IMPACT

Outcomes

Establishment of a Community-based ISP for Rural Communities

Zenzeleni has established a community-based ISP that offers internet access at approximately 40–60% lower rates than mainstream ISPs. This initiative enables hundreds of households in rural areas to access reliable, high-speed internet. The affordable pricing model drives a significant increase in subscriptions, helping to close the digital divide and improve access to online resources for education, government services, and business opportunities. Zenzeleni is now also supporting two neighboring communities in establishing their own community-centered connectivity networks.

Establishment of a Community Computer Hub

Zenzeleni has established one community computer hub, equipped to deliver essential digital services such as typing, printing, internet access, educational resources, training, and potential work opportunities. The Mankosi Solar Community Hub serves approximately 150–200 community members per month, supporting critical tasks like applying for government grants and IDs. These hubs become vital community resources, demonstrating their impact in empowering individuals to navigate bureaucratic processes more efficiently.

Provided Employment Opportunities for Community Members

Zenzeleni's initiatives generated approximately 50 informal jobs within the community, and 10 current fixed term positions including roles for trainers, technicians, and support staff at the computer hubs. Additionally, improved internet access enables community members to secure online jobs, contributing to increased household incomes.

Increased Access to Education Among the Rural Youth

The CCCI significantly improved access to education for rural youth. It provides community members with the technology needed to apply to secondary institutions and expands opportunities for tertiary education, including universities, colleges, and vocational schools. With internet access, an average of 112 applications to secondary and tertiary institutions are submitted, and more than 1,500 students use online platforms for educational resources, applications, and research.

Capacitated Community Members to Leverage Digital Technical Skills

Zenzeleni has implemented various training programs, including the International Computer Driver's License (ICDL), benefiting around 200 community members. Additional workshops on digital tools and online platforms further strengthen the community's capacity to engage with technology and pursue diverse opportunities.

In addition, 21 students from communities across South Africa participated in a 2-year program facilitated by Zenzeleni, with support from APC. The program focuses on the

operational aspects of community networks and aims to upskill participants in setting up and managing network infrastructure—enhancing the technical capacity of individuals already involved in existing community networks.

Since 2021, these students have formed a national peer network, including members from Zenzeleni's Mankosi and Zithulele communities. This network fosters peer learning through troubleshooting, experience sharing, and in-person exchanges between communities. In 2024, the group officially registered as a Public Benefit Organisation, the South Africa Community Network Alliance. This collective advocates for fair pricing on services and goods and contributes to stakeholder engagements in the telecommunications sector.

Creation and Distribution of Information Materials in Local Language

To ensure information is accessible, Zenzeleni has produced and distributed brochures in both IsiXhosa and English. This effort bridges language barriers and ensures that vital information reaches all community members. In 2025, a number of members from the CCCIs have officially registered as a Non-Profit Company called Community Networks South Africa (CNSA)[26] with the intention to find ways to negotiate for services and goods at fair prices and provide inputs to stakeholder engagements around telecommunications.

Increase of Entrepreneurs

Zenzeleni's support has lead to the growth of entrepreneurship within the community. Many community members become microentrepreneurs by participating as resellers in the voucher program. Initially focused on cooperative members from Mankosi and Zithulele, the program has expanded through the support of community hubs. By selling vouchers, individuals are empowered to start and grow their own businesses, fostering local economic development.

Ease of Reporting of Medical Treatments and Results

The implementation of Zenzeleni's network has streamlined medical reporting processes, resulting in a 50% reduction in turnaround times for disseminating medical information. Zithulele Hospital reports more efficient workflows that enable quicker diagnoses and treatment plans. This improved communication significantly enhances healthcare delivery and patient outcomes in the communities of Mankosi and Zithulele. The Hospital is connected through an ISOC grant, which Zenzeleni applied for and used to install a fixed wireless link for the hospital staff, along with 15 community hotspots for patients visiting the hospital.

Improved Psycho-emotional Well-being

Access to the internet has a profound impact on the psycho-emotional well-being of adult community members (with separate observations for children). Increased connectivity provides platforms for social interaction, entertainment, and access to mental health resources. Online support groups and virtual activities play a significant role in fostering a mentally healthy community in Mankosi and Zithulele.

[26] The CNSA is not a spin-off from the School of Community Networks. The CNSA is a newly formed organization as part of the National Strategy, facilitated through APC.

Unmet Expected Outcomes and Negative Consequences

Despite Zenzeleni's success in expanding affordable internet access to rural communities, several challenges and unintended consequences persist. Network quality and hotspot availability remain as major concerns, with many users experiencing slow and unreliable connections. The limited number of hotspots leads to congestion, especially during peak hours, restricting access for many.

Technical support capacity is also inadequate. Only one technician is permanently based in Mankosi, while another technician travels between sites, creating gaps in timely maintenance and troubleshooting. The shortage of skilled personnel has resulted in burnout among the few trained staff, affecting both the efficiency and sustainability of the network.

These management and technical limitations hinder Zenzeleni's ability to deliver consistent and equitable service. Addressing these issues is essential for the organization to fulfill its mission of providing reliable connectivity to underserved communities.

Additionally, concerns have emerged regarding children's online safety. Without content filters in place, young users are exposed to inappropriate material, raising concerns among community members about their safety and well-being.

Results of Community Stakeholders' Interviews

Two key informants from Mankosi Village, both Mankosi community members and assistant trainers at the Mankosi Solar Community Hub, shared their experiences before and after the implementation of the CCCI in their community. Actively involved in the hub's operations, they provide digital literacy training to children and assist villagers with various online services.

Both highlight the transformative impact of the CCCI on their personal and professional growth. Apumle Makhawula noted that working at the Mankosi Hub has equipped him with valuable skills, including communication and computer literacy. Zingisa Sigcau shared that her involvement in the CCCI has significantly boosted her confidence, enabling her to train others and encourage more residents to use the hub and explore the internet.

Their CCCI training inspired them to become trainers themselves, committed to expanding digital literacy across the village. They recalled how the community computer hub eliminated the need to travel to other towns for digital services, making technology more accessible. This improved access not only accelerated their own development but also empowered the broader community to embrace digital tools and opportunities.

Initiating the Use of Development Indexing to Measure Social Impact[27]

The outcomes outlined above highlight key elements, parameters, and criteria relevant to the social impacts of Zenzeleni's work, critical for crafting a Development Index (DI) to systematically assess the CCCI as a social enterprise. A DI serves as a structured tool to quantify social impact where simple proxy measures are insufficient. To evaluate the Zenzeleni CCCI in terms of social inclusion and transformational services, an initial DI framework has been developed based on observed outcomes. This framework lays the groundwork for a comprehensive DI in the future, which will help to:

- measure progress;
- enable comparison and benchmarking;
- identify primary and secondary stakeholders experiencing positive impacts or negative externalities; and
- optimize resource allocation and guide policy adjustments.

Due to limitations in time and resources, the current study prioritized defining key result areas (KRAs), sub-elements, and performance indicators (PIs), and did not reach the stage of utilizing a fully developed and weighted scorecard. For Zenzeleni, the significance of each indicator was determined through informed judgment by the Zenzeleni team during online workshops facilitated by the ISEA team. Several iterations of the DI and the Social Value Map were conducted based on these sessions held in the last quarter of 2024 and the first quarter of 2025. These enhancement workshops led to the refinement of KRAs and PIs.

The finalized framework includes four (4) Key Result Areas and eleven (11) significant Performance Indicators. The four KRAs and their corresponding PIs are presented in *Table 1*.

1. ***Empowerment of Community to Own, Govern, and Manage Internet and Digital Resources***

   Performance Indicators:

   PI-1: Development of community-based institutions (CBIs), groups, leaders, and technicians with capability to govern and manage internet and digital resources, build new CCCIs, and expand to new communities.

   PI-2: Improved capacity of the community to develop, disseminate, and use local information, education, and communication materials.

   PI-3: Increase/expansion in the establishment of CCCIs serving other rural communities.

2. ***Increased Levels and Capacities for Inclusive and Holistic Human Development***

   Performance Indicators:

   PI-1: Increased utilization of government and other services accessed through the internet.

   PI-2: Increase in the number of youth applying to, enrolling in, and graduating from higher educational institutions.

   PI-3: Increased effectiveness and efficiency in accessing educational resources by students.

   PI-4: Improved effectiveness and efficiency in availing of quality healthcare services.

[27] The elements of the development index and social value map for the Zenzeleni Case Report were developed from data generated in late 2024 through key informant interviews with the following stakeholders: Prof. Shaun Pather, University of the Western Cape, Ms. Yumna Panday, General Manager, Ms. Zingisa Sigcau, Mankosi Community Member, Trainer and Lab Assistant, and Mr. Apumle Makhawula, Mankosi Community Member, Trainer, and Lab Assistant. These were further enriched through workshops undertaken in January to April 2025 with Ms. Yumna Panday and her Zenzeleni team.

3. ***Improvement in the Economic Position and Conditions of Community Stakeholders***

   Performance Indicators:

   PI-1: Increase in the number of community members securing new jobs in and becoming new entrepreneurs of the digital economy.

   PI-2: Increased income resulting from improved productivity and sales through online platforms.

4. ***Increased Inclusion of Women as Stakeholders in Digital Transformation***

   Performance Indicators:

   PI-1: Enhanced participation and capacities of women in the governance and management of digital resources.

   PI-2: Increase in the number of women serving as leaders and technicians in CCCIs.

Table 1. Initial Elements of an Evolving Development Index to Measure the Social Impact of Zenzeleni CCCI				
Key Result Area (KRA): Elements & sub elements	**Stakeholders**	**Description of Performance Indicators / Performance Indicators**	**Approximate Rating for Zenzeleni**	
			Significance (Combined reach & depth of impact)	**Quantification & monetization**
KRA #1: ***Empowerment of community to own, govern, and manage internet and digital resources***				
Performance Indicator -1 Development of community-based institutions (CBIs), groups, leaders and technicians with capability to govern and manage internet and digital resources, to build new CCCIs and to expand to new communities	CBIs: Two hubs in Mankosi servicing CBIs (schools, hospital, small businesses)	Resource generation and mobilization funds for 3 years with savings	Significant	Quantified and monetized
		Income gain of the hub for 3 years	Significant	Quantified and monetized
	Two tower hosts	Income gain of tower hosts	Significant	Quantified and monetized
	Household hot spots hosts	Income gain of household hosts	Significant	Quantified and monetized
	Tribal authorities	Governance and management capacity gained; savings due to lower costs afforded by Zenzeleni	Significant	Quantified and monetized
	Local technicians	Income gain of technicians without and with connectivity	Significant	Quantified and monetized
PI-2 Improved capacity of community to develop, disseminate, and use local information, education, and communication materials	Local creators and disseminators of information, education and communication materials	Information Education and Communication (IEC) materials developed and disseminated via online platforms Savings from physical printing & mounting of IEC materials	Significant	Not quantified
PI-3 Increase/expansion in the establishment of CCCIs serving other rural communities	Enterprises in the villages	Cost savings of enterprises (without versus with connectivity scenarios)	Significant	Quantified and monetized
	New client households	Cost savings of households who are newly connected to the system	Significant	Quantified and monetized
KRA #2: ***Increased levels and capacities for inclusive and holistic human development***				
PI-1 Increased utilization of government and other services accessed through the internet	Community members availing laminating, printing, typing, photocopying services	Savings in transportation and other costs associated with going to the major town for internet shops with higher service fees.	Significant	Quantified and monetized
	Community members applying for IDs and social grants	Savings in transportation and other costs associated with going to the major town for internet shops with higher service fees.	Significant	Quantified and monetized
PI-2 Increase of youth applying, enrolling, and graduating in various higher educational institutions	Community members using internet resources in applying, enrolling, and graduating in various educational institutions	Cost savings as there was no need to leave the village to go to the respective college or university as individuals could now apply online.	Significant	Quantified and monetized
	Number of students that have graduated and gained higher salaries	About 10% of students who have accessed the network and graduated can expect higher monthly salaries.	Significant	Quantified and monetized

Table 1. Initial Elements of an Evolving Development Index to Measure the Social Impact of Zenzeleni CCCI *[cont.]*

Key Result Area (KRA): Elements & sub elements	Stakeholders	Description of Performance Indicators / Performance Indicators	Approximate Rating for Zenzeleni	
			Significance (Combined reach & depth of impact)	Quantification & monetization
KRA #2: ***Increased levels and capacities for inclusive and holistic human development***				
PI-3 Increased effectiveness and efficiency in accessing educational resources by students	Students doing research for school requirements	Students now source reference materials online instead of physically sourcing them from libraries and internet cafes outside of the villages	Significant	Quantified and monetized
	Community members availing the training programme - Digital Literacy: Computer Aid International Project	Cost savings without and with scenarios; Increase of computer and digital proficiency level due to higher availment brought about by lower cost of the programme	Significant	Quantified and monetized
PI-4 Improved effectiveness and efficiency in availing of quality healthcare services	Community members effectively and efficiently availing digital healthcare services	Record of availment of healthcare services without and with the system	Significant	Not quantified
KRA #3: ***Improvement in the economic position and conditions of community stakeholders.***				
PI-1 Increase in the number of community members securing new jobs in and becoming new entrepreneurs of the digital economy	Community members applying for work through the internet service	Cost savings. Cheaper access to the job market leads to greater exposure more and better-quality employment options and opportunities	Significant	Quantified and monetized
PI-2 Increased income resulting from improved productivity and sales through online platforms	Community members that derive income and sales through online platforms	Cost savings and wider market reach due to online presence	Significant	Not quantified
KRA #4: ***Increased inclusion of women as stakeholders in digital transformation***				
PI-1 Enhanced participation and capacities of women in the governance and management of digital resources	Women in governance and management of digital resources	Enhanced participation and capacities in governance and management of digital resources	Significant	Not quantified
PI-2 New women as leaders and technicians in CCCIs	New women participating as leaders and technicians	Income gained of new women entrants as leaders and technicians due to the community network	Significant	Quantified and monetized

KRA 1: Empowerment of community to own, govern, and manage digital resources

Key Result Area (KRA) 1 emphasizes empowering rural communities to own, govern, and manage internet and digital resources through structured and inclusive initiatives. A key achievement under this area is the establishment of two community hubs in Mankosi, which serve local institutions such as schools, a hospital, and small businesses. These hubs are designed to operate sustainably over a three-year period, mobilizing and generating funds while delivering measurable income gains for stakeholders.

Key contributors to this effort include tower hosts, household hotspot hosts, tribal authorities, and local technicians, each playing essential roles in building governance and management capacity. By fostering community ownership, this KRA and its associated performance indicators seek to create long-term financial benefits and promote a culture of self-reliance among rural populations.

In parallel, KRA 1 focuses on strengthening the capacity of communities to create, disseminate, and use localized information, education, and communication materials. With the active involvement of local content creators, educational resources are developed and shared through online platforms, reducing reliance on physical printing and distribution. Another vital component is the expansion of CCCIs to neighboring rural areas. New villages, enterprises, and households benefit from improved connectivity, experiencing significant cost savings and better access to digital tools and services.
This holistic approach demonstrates the transformative potential of community networks to bridge the digital divide and drive inclusive economic and social development.

KRA 2: Enhancing inclusive and holistic human development

KRA 2 centers on enhancing inclusive and holistic human development through improved access to digital resources and services. One critical focus is increasing the utilization of internet services for accessing government resources, education platforms, and other essential services. This effort has resulted in tangible cost savings, including reduced transportation expenses, as individuals can now complete tasks online, such as applying for IDs or grants. The initiative also emphasizes increasing youth enrollment and graduation rates in higher education by leveraging the accessibility of online applications, educational materials, and virtual learning opportunities. Notably, over 2,000 students have benefited from online platforms for research, applications, and other educational purposes, further demonstrating the transformative impact of connectivity in bridging gaps in education.

Additionally, it highlights the importance of improving healthcare services and digital literacy within the community. The availability of internet resources has enhanced the efficiency and effectiveness of medical reporting and healthcare delivery, reducing turnaround times by 50% and enabling quicker diagnosis and treatment. Furthermore, targeted digital literacy training, including the International Computer Driver's License (ICDL) program, has equipped over 200 community members with critical technical skills, empowering them to navigate and utilize digital platforms effectively. These efforts collectively showcase the potential of connectivity to elevate the quality of education, healthcare, and human development in underserved communities.

KRA 2 focuses on enhancing inclusive and holistic human development by expanding digital access to critical services and resources. The initiative recognizes the pivotal role of connectivity in transforming lives, particularly in education, healthcare, and public service delivery, and focuses on equipping communities with the tools and skills to harness these benefits effectively.

Through improved internet connectivity, rural communities now access government services more efficiently, reducing both the cost and time required to complete routine tasks such as applying for identification documents, social grants, and other essential services. These digital transactions replace long and costly travel, creating immediate, tangible savings for individuals and families.

In the education sector, the initiative boosts opportunities for youth to engage with higher education by removing physical and logistical barriers. Access to online platforms allows students to apply to universities, download study materials, and participate in virtual learning environments. As a result, more than 2,000 students have benefited, gaining better access to academic resources and increasing their chances of enrollment and completion. Connectivity also brings improvements to local healthcare delivery. Clinics and community health workers use online systems to streamline reporting and referrals, cutting turnaround times by half and enabling faster diagnoses and treatments. Digital access has also improved health information awareness among community members.

To ensure people can fully benefit from digital tools, the initiative invests in digital literacy training. Over 200 individuals have completed structured training programs, including the globally recognized International Computer Driver's License (ICDL), equipping them with the foundational skills needed to engage in digital spaces confidently and productively. These integrated efforts across education, healthcare, and public service delivery illustrate how digital access, when paired with capacity-building, can drive significant improvements in the quality of life.

KRA 3: Economic Empowerment of Community Stakeholders

This key result area focuses on improving the economic conditions of rural communities by leveraging digital technologies. Through the CCCI, individuals gain access to new economic opportunities, such as securing online jobs and starting businesses in the digital economy. Increased productivity and sales through online platforms enable stakeholders to reach wider markets, resulting in cost savings and additional income. The initiative fosters financial resilience, empowering community members to actively participate in and benefit from the broader digital economy.

KRA 4: Inclusion of Women in Digital Transformation

This key result area emphasizes increasing the active participation of women in governance, leadership, and technical roles within the digital ecosystem. Targeted capacity-building efforts empower women in the community to manage and govern digital resources effectively. New roles as leaders and technicians in CCCIs open pathways for professional growth and economic advancement. These efforts enhance gender inclusivity and reinforce women's vital contributions to sustainable digital transformation.

Toward Measuring Cost Effectiveness Using Social Return on Investment

The basic DI-KRAs and performance indicators outlined in Table 1 informed the core elements of the social value map. Social Return on Investment (SROI) serves as a tool for social enterprises to evaluate their social impact and cost-effectiveness. It quantifies and monetizes the most significant social impacts in relation to total investments made. With the support of key informants from the Zenzeleni Team, who provided data and insights into the scale, depth, and monetized value of social impacts, the SROI value map was constructed to make an approximation of Zenzeleni's contributions to improving the quality of life of relevant stakeholders and to community development. Additionally, the ISEA Team provided technical assistance and guidance to ensure the social value map aligned with the standards of Social Value International.

Given the time and resource constraints for a full survey, only 7 out of the 11 significant performance indicators were quantified and monetized. Four significant social impact performance indicators were not quantified, as shown in *Table 1*, due to the lack of baseline data and information. As a result, the findings of this SROI analysis should be regarded as indicative, and may be understated, requiring further refinement in future studies. The primary stakeholders who benefited the most from the CCCI were identified based on the social impacts experienced by the community stakeholders and financial records provided by Zenzeleni. These values were utilized to develop the Zenzeleni SROI Value Map accessible through https://tinyurl.com/Zenzeleni-SROIValueMap, to aid in evaluating the social return on investment of the CCCI.

Key Stakeholders with the Most Significant Benefits

Based on *Table 2* below, the stakeholders who have benefited the most from Zenzeleni CCCI include:

1. *Students, youth and related members of the community* – This group accounted for most of the beneficiaries, with 200 in 2021, 350 in 2022, and 470 in 2023 conducting research for school requirements. Community members applying to educational institutions ranged from 75 in 2021, 150 in 2022, to 175 in 2023, indicating that the education sector has benefited significantly from the connectivity. Additionally, individuals who improved their skills through digital literacy programs showed increasing numbers: 17 in 2021, rising to 44 in 2022, and peaking at 105 in 2023. Among all the stakeholders, students using vouchers sold by Zenzeleni to access the internet for school research saved an average of more than US$5,000 annually.

2. *Community Members Accessing Government Services* – In 2021, 360 stakeholders accessed government services, which decreased to 195 in 2022 and 130 in 2023. These stakeholders saved on expenses by using the internet to apply for IDs and social grants. Similarly, community members who utilized services such as laminating, printing, and photocopying via the digital network increased from 80 in 2021 to 152 in 2022, peaking at 217 in 2023.

3. *Technicians and Household Hotspot Hosts* - Local technicians earned income, starting with $3,441 in 2021, $2,503 in 2022, and $2,815 in 2023. The number of household hotspot hosts grew from 25 households in 2021 and remained the same in 2022, reaching 40 households by the end of 2023. The income earned by the 40 households totaled $733 by the end of 2023.

4. *Job Seekers and Entrepreneurs* - Community members benefited by securing jobs and entrepreneurial opportunities through internet services, highlighting the economic empowerment enabled by CCCIs. Job seekers from the village using the internet to access work opportunities saved money compared to traditional methods of job seeking. The number of job seekers increased from 100 in 2021 to 140 in 2022, reaching 193 in 2023. Monetized savings are: $5,010 in 2021, $7,700 in 2022, and $11,084 in 2023. Internet access not only provided more work opportunities outside the village but also offered perks or incentives associated with employment.

5. *Women Stakeholders* - Eight women (2 in 2021, 3 in each of 2022 and 2023) took on leadership and technician roles, representing a significant step toward gender inclusion and empowering women in the community's digital transformation efforts.

Table 2 also presents the KRAs and PIs with the highest monetary benefits or outcomes.

The first-ranked KRA is #2: Increased levels and capacities for inclusive and holistic human development. KRA #2 contributes a range of monetized outcomes: $21,356 (55%) in 2021, $30,968 (57%) in 2022, and $43,189 (59%) in 2023. Subsumed under this KRA #2 are the PIs involving students: Increased effectiveness and efficiency in accessing educational resources by students (Top PI: share range of 25% to 41%) and Increase in the number of community members securing new jobs and becoming entrepreneurs in the digital economy (3rd ranked PI: share range of 22% in 2021, 15% in 2022, and 14% in 2023).

The second-ranked PI falls under KRA #1, PI 1: Development of community-based institutions, groups, leaders, and technicians with the capability to govern and manage internet and digital resources. This PI has a share ranging from 22% in 2021 to 15% in 2022, and finally to 14% in 2023.

Table 2. Social Impact Estimates of Beneficiaries and Valuation

Key Result Areas (KRA)	Stakeholders	Outcome Description	Number of Beneficiaries						Estimated Total Benefit (in US$)					
			2021-22	%	2022-23	%	2023-24	%	2021-22	%	2022-23	%	2023-24	%
KRA #1: Empowerment of community to own, govern, and manage internet and digital resources			**44**	**5%**	**46**	**4%**	**66**	**5%**	**9,850**	**25%**	**11,529**	**21%**	**14,535**	**20%**
PI-1 Development of community-based institutions, groups, leaders and technicians with capability to govern and manage internet and digital resources, to build new CCCIs and to expand to new communities	**CBIs:** Two hubs in Mankosi servicing schools, hospital, small businesses	Net gain in grant funds mobilized	1		1		1		416		416		416	
		Net income in servicing CBIs	1		1		1		214		703		1,711	
	Groups: Household hosts, hotspots or towers	2 tower hosts income	2		2		2		2,139		2,139		2,139	
		Household Hot spot host income	25		25		40		458		458		733	
	Leaders: Tribal authorities	6 Tribal Authorities	6		6		6		2,069		2,069		2,069	
	Technicians: Local	Income of technicians 2021 - 22 = 1 x R22,000 2022 - 23 = 1 x R20,000 2023 - 24 = 1 x R18,000	5		4		5		3,441		2,503		2,815	
PI-2 Improved capacity of community to develop, disseminate, and use local information, education, and communication materials	Significant but not quantifiable	-	-		-		-							
PI-3 Increase/expansion in the establishment of CCCIs serving other rural communities	Enterprises in the vilages	Net income & savings gained of enterprises in 2 villages Mankosi & Zithulele 2022-23 - one new village 2023-24 - one new village (expansion)	-		3		5		-		1,386		2,425	
	New client households	Expansion of client-households led to savings due to connectivity	4		4		6		1,113		1,855		2,226	

Table 2. Social Impact Estimates of Beneficiaries and Valuation *[cont.]*

Key Result Areas (KRA)	Stakeholders	Outcome Description	Number of Beneficiaries						Estimated Total Benefit (in US$)					
			2021-22	%	2022-23	%	2023-24	%	2021-22	%	2022-23	%	2023-24	%
KRA #2: Increased levels and capacities for inclusive and holistic human development			**740**	**84%**	**906**	**83%**	**1,115**	**81%**	**21,356**	**55%**	**30,968**	**57%**	**43,189**	**59%**
PI-1 Increased utilization of government and other services accessed through the internet	Community members availing laminating, printing, typing, photocopying services	Cost savings without vs with connectivity	80		152		217		928		795		1,135	
	Community members applying for IDs and social grants	Cost savings without vs with connectivity	360		195		130		6,822		4,163		2,782	
PI-2 Increase of youth applying, enrolling, and graduating in various higher educational institutions	Community members using internet resources in applying, enrolling, and graduating in various educational institutions	Cost savings without vs with connectivity	75		150		175		2,131		4,262		5,612	
	Number of students-community members that have graduated and having higher average salaries	About 10% of students who have accessed the network and graduated can expect higher monthly salaries.	8		15		18		1,745		3,285		3,952	
PI-3 Increased effectiveness and efficiency in accessing educational resources by students	Students doing research for school requirements	Cost savings without vs with connectivity	200		350		470		8,064		14,112		18,950	
	Community members availing the training programme - Digital Literacy: Computer Aid International Project	Cost savings without and with scenarios	17		44		105		1,666		4,351		10,757	
PI-4 Improved effectiveness and efficiency in availing of quality healthcare services	Significant but not quantifiable	-	-		-		-							

Table 2. Social Impact Estimates of Beneficiaries and Valuation *[cont.]*

Key Result Areas (KRA)	Stakeholders	Outcome Description	Number of Beneficiaries						Estimated Total Benefit (in US$)					
			2021-22	%	2022-23	%	2023-24	%	2021-22	%	2022-23	%	2023-24	%
KRA #3: Improvement in the economic position and conditions of community stakeholders.			**100**	**11%**	**140**	**13%**	**193**	**14%**	**5,010**	**13%**	**7,700**	**14%**	**11,084**	**15%**
PI-1 Increase in the number of community members securing new jobs in and becoming new entrepreneurs of the digital economy	Community members applying for work through the internet service	Cost savings without and with scenarios	100		140		193		5,010		7,700		11,084	
PI-2 Increased income resulting from improved productivity and sales through online platforms	Significant but not quantifiable	-	-		-		-							
KRA #4: Increased inclusion of women as stakeholders in digital transformation			**2**	**0.20%**	**3**	**0.30%**	**3**	**0.20%**	**2,673**	**7%**	**4,009**	**7%**	**4,009**	**6%**
PI-1 Enhanced participation and capacities of women in the governance and management of digital resources	Significant but not quantifiable; no baseline information established	**-**	**-**		**-**		**-**							
PI-2 New women as leaders and technicians in CCCIs	New women participating as leaders and technicians	Income of women entrants as leaders and technicians	2		3		3		2,673		4,009		4,009	
Total count of stakeholders:			886	**100%**	1,095	**100%**	1,377	**100%**	**$38,888**	**100%**	**$54,205**	**100%**	**$72,816**	**100%**
SROI Ratio :									**1.17**		**2.89**		**3.62**	

Social Return on Investment of Zenzeleni CCCI

The SROI ratio in *Table 3* shows an upward trend each year, indicating that Zenzeleni CCCI in Mankosi and Zithulele has continued to generate significant impact through the connectivity network programs implemented in both communities.

Table 3. SROI Summary for Zenzeleni CCCI in Mankosi and Zithulele

Outcome: KRAs/Performance Indicators	2021-22	2022-23	2023-24
KRA #1: Empowerment of community to own, govern, and manage internet and digital resources			
PI-1 Development of community-based institutions, groups, leaders and technicians with capability to govern and manage internet and digital resources, to build new CCCIs and to expand to new communities	8,737.46	8,287.77	9,883.70
PI-2 Improved capacity of community to develop, disseminate, and use local information, education, and communication materials	-	-	-
PI-3 Increase/expansion in the establishment of CCCIs serving other rural communities	1,112.80	3,240.78	4,651.11
KRA #2: Increased levels and capacities for inclusive and holistic human development			
PI-1 Increased utilization of government and other services accessed through the internet	7,750.00	4,958.40	3,917.18
PI-2 Increase of youth applying, enrolling, and graduating in various higher educational institutions	3,875.79	7,546.28	9,564.25
PI-3 Increased effectiveness and efficiency in accessing educational resources by students	9,729.87	18,463.11	29,707.27
PI-4 Improved effectiveness and efficiency in availing of quality healthcare services	-	-	-
KRA #3: Improvement in the economic position and conditions of community stakeholders			
PI-1 Increase in the number of community members securing new jobs in and becoming new entrepreneurs of the digital economy	5,010.00	7,700.00	11,083.99
PI-2 Increased income resulting from improved quality of employment and sales through online platforms - Significant but not quantifiable	-	-	-
KRA #4: Increased inclusion of women as stakeholders in digital transformation			
PI-1 Enhanced participation and capacities of women in the governance and management of digital resources (significant but not quantifiable; no baseline information established)	-	-	-
PI-2 New women participating as leaders and technicians in CCCIs	2,672.51	4,008.77	4,008.77
Monetized Outcomes (Net income gain, cost savings)	**38,888.44**	**54,205.10**	**72,816.27**
Present value of each year	37,573.37	52,372.08	70,353.88
Total Present Value (PV)	37,573.37	52,372.08	70,353.88
Investment Cost:			
Zenzeleni Operating Expenses	**2,102.70**	**1,514.15**	**4,024.00**
APC Outlay	**29,934.42**	**16,598.67**	**15,417.90**
TOTAL COST	**$32,037.12**	**$18,112.82**	**$19,441.90**
Net Present Value (PV minus the investment)	**$5,536.25**	**$34,259.26**	**$50,911.98**
Social Return (Value per amount invested)	**1.17**	**2.89**	**3.62**
Total count of stakeholders	**886**	**1,095**	**1,377**
Monetary Value / stakeholder	**$6.24**	**$31.28**	**$37.00**

Net present value and the SROI ratio both increase year by year. For every unit of value invested, the social return is 1:1.17 in 2021–22, rising to 1:2.89 in 2022–23, and peaking at 1:3.62 in 2023–24. As the SROI ratio has increased, so did the number of beneficiaries: 886 in 2021–22, 1,095 in 2022–23, and 1,377 in 2023–24.

The monetized benefit per stakeholder also shows a strong upward trend. From $6.24 in 2021–22, it rose to $31.28 in 2022–23 and peaked at $37.00 in 2023–24—nearly five times (4.93) the 2021–22 value.

Typology of Services

Tables 4 and *5* present the various types of services offered by Zenzeleni CCCI, classified into transactional, social inclusion, and transformational categories. *Table 4* summarizes the services based on project operations or activities, while *Table 5* outlines the performance indicators (impacts) that have been monetized, categorizing them according to the primary type of impact they contributed to.

Table 4. Various Types of Services Provided by Zenzeleni CCCI

Transactional Services	Social Inclusion Services	Transformational Services
• Provision of internet connectivity • Establishment of community computer hubs offering the use of desktops and laptops, and services such as typing, printing, photocopying, and laminating services	• Identification of unreached/ unconnected communities and finding technical and community-based solutions to connect these to the network • Conduct of training and provision of assistance in designing and registering business operations and network services • Provision of basic computer training and applications as well as workshops on digital tools and platforms • Production and distribution of information materials in the local language	• Conduct of skills development and offering expert support to empower communities in fully harnessing the benefits of internet connectivity as well as network set up and maintenance • Conduct of training on digital skills development so that community members can also teach other members

Table 5. Significant social impacts and their classification

Key Result Area (KRA) sub elements	Stakeholders	Description of Performance Indicator / Performance Indicator	Indication if monetized or not in the SROI Analysis	Indication of Type of Impact		
				Transactional services-related impact	Social Inclusion-related impact	Transformational services-related impact
KRA #1: Empowerment of community to own, govern, and manage internet and digital resources						
PI-1 Development of community-based institutions, groups, leaders and technicians with capability to govern and manage internet and digital resources, to build new CCCIs and to expand to new communities	CBIs, hosts (tower & household hosts), groups, tribal authorities, technicians	Income and capacities gained (technical, managerial, governance)	Monetized using income, savings, and capabilities gained	✓	✓	✓
PI-2 Improved capacity of community to develop, disseminate, and use local information, education, and communication materials	Community members in information, education & communication		Not quantified and monetized	✓	✓	
PI-3 Increase/expansion in the establishment of CCCIs serving other rural communities	Enterprises established; new households connected	Savings in cost in enterprise operations and household connection	Monetized using income, savings, and capabilities gained	✓	✓	
KRA #2: Increased levels and capacities for inclusive and holistic human development						
PI-1 Increased utilization of government and other services accessed through the internet	Community members availing digital services & accessing social grants	Ease of access & cost savings	Monetized using income, savings, and capabilities gained	✓		
PI-2 Increase of youth applying, enrolling, and graduating in various higher educational institutions	Students & youth availment	Ease of access & cost savings; Greater skills and higher qualifications	Monetized using income, savings, and capabilities gained	✓		
PI-3 Increased effectiveness and efficiency in accessing educational resources by students	Students' research capabilities & availment of digital training	Cost savings without and with scenarios	Monetized using income, savings, and capabilities gained	✓		
PI-4 Improved effectiveness and efficiency in availing of quality healthcare services	Community members availing healthcare		Not quantified and monetized			

Table 5. Significant social impacts and their classification						
Key Result Area (KRA) sub elements	**Stakeholders**	**Description of Performance Indicator / Performance Indicator**	**Indication if monetized or not in the SROI Analysis**	**Indication of Type of Impact**		
				Transactional services-related impact	**Social Inclusion-related impact**	**Transformational services-related impact**
KRA #3: Improvement in the economic position and conditions of community stakeholders						
PI-1 Increase in the number of community members securing new jobs in and becoming new entrepreneurs of the digital economy	Community members applying for work through the internet service	Cost savings without and with scenarios	Monetized using income, savings	✓		
PI-2 Increased income resulting from improved productivity and sales through online platforms	Community members using online platforms for productivity & sales		Not quantified and monetized			
KRA #4: Increased inclusion of women as stakeholders in digital transformation						
PI-1 Enhanced participation and capacities of women in the governance and management of digital resources	Women in the governance and management		Not quantified and monetized			
PI-2 New women participating as leaders and technicians in CCCIs	New women participating as leaders and technicians	Income, employment, & skills gained; self-confidence	Monetized using income gained	✓	✓	

It is observed that the first type, transactional services, dominates most of the operational activities with monetized performance indicators. The second type is social inclusion-related impact, which focuses on services aimed at addressing digital exclusion, bridging the "usage" gap, or ensuring meaningful connectivity.

The final type is transformational services-related impact, which empowers the poor and excluded to overcome capability deprivation and become active participants in their development. These services build the community members' capacity to own, govern, and manage digital resources in ways that positively affect their lives, as well as the lives of their families, communities, and marginalized sectors. Transformational services enable the poor and excluded to become co-owners, supervisors, managers, decision-makers, or leaders and stakeholders of the social enterprises providing digital services and ensuring meaningful connectivity.

Key Findings and Insights from the Initial DI and SROI Value Map

By breaking down outcomes and impacts into key result areas (KRAs) and performance indicators, the Development Index (DI) provides a structured approach to quantify and analyze the project's contributions to social inclusion and transformational services. The focus on KRAs, empowerment, human development, economic improvement, and gender inclusion, demonstrates Zenzeleni's commitment to addressing multifaceted community needs. The DI framework offers insights into progress measurement, benchmarking, stakeholder identification, and resource optimization, critical components for informed policymaking and sustainable growth.

However, the analysis also highlights methodological limitations, such as the absence of a weighted scorecard due to time and resource constraints, suggesting opportunities for refinement in future evaluations. With the foundational DI elements and stakeholder-informed data, this case on Zenzeleni sets the stage for deeper evaluations and broader scalability, showcasing how CCCIs can serve as transformative models for rural development and social equity.

While most of the monetized impacts of Zenzeleni's interventions are derived from tangible financial exchanges, this does not diminish their role in fostering social inclusion and transformational services. The inclusive and transformational impacts, such as strengthened community governance over digital resources, expanded access to education, and increased economic empowerment, are more complex to quantify and require additional time and resources for comprehensive evaluation. Nonetheless, these impacts remain fundamental to the long-term development and resilience of the community.

Key Findings on the Resulting Social Value Map Exercise and SROI

The following highlights the most significant areas of impact derived from the SROI analysis, evaluating the cost-effectiveness of Zenzeleni CCCI:

1. **Overall, Zenzeleni's interventions are considered cost-effective, and the outcomes have significantly impacted an expanding number of stakeholders from 2021 to 2023.**

   SROI results show an increasing impact ratio from 2021 to 2023, consistent with the overall rise in monetized outcomes and the growing number of stakeholders. Zenzeleni has a strong understanding of its direct stakeholders, asserting that its impact has led to income increases of up to 90 percent of the baseline due to the expansion and enhancement of the CCCI in Mankosi and Zithulele. Since the quantified and monetized performance indicators primarily reflect tangible transactions and direct interactions between Zenzeleni and household hosts engaged in the network, the SROI analysis predominantly captures impacts related to internet and connectivity access for specific community-based institutions and groups. However, if the currently unquantified but significant performance indicators are systematically baselined, observed, and integrated into future SROI assessments, the resulting ratio could offer a more comprehensive view, highlighting greater contributions to social inclusion and transformational services.

2. **Quantification of impact on the most proximate stakeholders.**

   Zenzeleni CCCI has significantly impacted students and community members by enabling access to affordable internet, fostering educational advancement, and enhancing economic opportunities. Over 1,020 students saved more than US$5,000 annually through internet-enabled school research, while 166 individuals gained critical digital skills, and 41 graduates achieved higher salaries. Additionally, approximately 433 job seekers and entrepreneurs benefited from connectivity, collectively saving US$29,380 and securing new work opportunities.

3. **Community-wide empowerment and inclusivity within the ambit of the CCCI.**

   Technicians, household hotspot hosts, and women stakeholders all experienced growth and empowerment through Zenzeleni's initiatives. Local technicians earned US$3,666 (ZAR60,000) over three years, while 40 hotspot-host households gained connectivity-related savings by 2023-24. Importantly, 8 women stepped into leadership and technical roles, highlighting increased gender inclusion and participation in the community's digital transformation efforts.

4. **Development of proxy indicators for long-gestating and/or intangible performance indicators.**

   The four performance indicators that have not been quantified may reveal potential impacts on social inclusion and transformational services. A succeeding study to further explore how these intangible impacts could be quantified and monetized would enhance the SROI analysis:

   - Improved capacity of the community to develop, disseminate, and use local information, education, and communication materials
   - Increased income resulting from improved productivity and sales through online platforms
   - Enhanced participation and capacity of women in the governance and management of digital resources
   - Improved effectiveness and efficiency in accessing quality healthcare services

SUMMARY AND CONCLUSION

Transformed Lives of Direct Stakeholders

The Zenzeleni CCCI has directly transformed the lives of households, students, microentrepreneurs, and other key community stakeholders. With 30 household members directly employed by Zenzeleni, benefiting over 150 individuals and approximately 200 households (1,000 people) experiencing income gains and savings, the initiative strengthens financial resilience within the community. Each of the households, averaging five members, engaged by the Zenzeleni CCCI experienced (a) income increases of up to 90 percent, (b) enhanced digital assets, and (c) reduced costs related to internet access. Tangible indicators of development, such as upgraded smartphones, improved digital setups, and acquired troubleshooting skills, further demonstrate the community's growing self-sufficiency.

Students, in particular, emerged as significant beneficiaries. More than 1,020 students leveraged internet access within Zenzeleni CCCI for research and applications, resulting in improved access to educational institutions and knowledge platforms. Additionally, 166 individuals gained technical proficiency through digital literacy training programs, preparing them for future employment opportunities. The availability of affordable internet also reduced the financial burden of school-related activities and facilitated integration into modern educational systems.

Indirect or Wider Community Impact

The ripple effects of Zenzeleni CCCI extends beyond direct beneficiaries, fostering social and economic development across the wider community. Approximately 2,600 households, equating to a population of around 13,000, realized substantial savings, income gains, and digital improvements. Community-wide access to affordable internet services has bridged the digital divide, enabling local schools and small businesses to benefit from improved connectivity.

Visible indicators of broader impact, such as reduced internet-related expenses, increased smartphone access and upgrades, and widespread practical knowledge-sharing, highlight the inclusive nature of Zenzeleni's approach. The increasing involvement of women in governance and technical roles further underscores the initiative's contribution to gender equity and empowerment. By addressing connectivity gaps in underserved areas, Zenzeleni establishes itself as a pioneering model for scalable, community-driven solutions that inspire similar efforts globally. With the aid of methodologies such as Development Indexing and Social Return on Investment (SROI) analyses, Zenzeleni is poised to amplify its influence and ensure sustainable, transformative growth in rural communities.

A Transformative Model for Bridging the Digital Divide

The Zenzeleni CCCI demonstrates the transformative potential of community-driven solutions in addressing rural connectivity challenges. By providing affordable internet through community-owned cooperatives, Zenzeleni bridges the digital divide while fostering improvements in education, healthcare, and economic opportunities. At the same time, it empowers local members with the skills, ownership, and institutional capacity needed for long-term sustainability.

The cooperative model builds not only digital infrastructure but also the governance capacity of the community. Cooperative members strengthen their governance structures, organizational capabilities, and ways of working. As a result, communities take ownership of their digital futures by training local residents to manage network operations and maintenance, thereby enhancing self-reliance and technical independence.

Zenzeleni NPC also maintains an active Board that abides by its bylaws and provides strategic guidance. However, the day-to-day management and direction of the CCCIs remain community-led, reinforcing the principle of grassroots ownership.

Despite challenges such as network reliability and limited access to advanced technical support, Zenzeleni's scalable model underscores the importance of context-specific approaches that respond to the realities of rural communities. Its continued growth serves as a global example of inclusive and participatory connectivity. To fully capture and communicate its profound impact, employing a weighted Development Index and an enhanced SROI analysis would be a useful next step.

Zenzeleni's approach proves that digital transformation can be both inclusive and empowering when communities lead, own, and sustain the process themselves.

About the Cooperating Organizations

The Association for Progressive Communications (APC) is an international network of Civil Society Organizations (CSOs), operating since 1990. Its work focuses on supporting Information and Communication Technology (ICTs) for social justice. In 2017, APC has embarked in exploring and supporting Community Networks, now called as Community-Centered Connectivity Initiatives (CCCIs), in bridging the digital divide worldwide. APC is present in 20 countries from the Global South.

Visit APC's website here: **www.apc.org**

Rhizomatica is driven by its mission to make alternative telecommunication infrastructures for vulnerable, poor, and isolated communities in Africa and Latin Africa. Using approaches combining regulatory activism and reform, critical engagement with, and development of, technology, design of novel sustainability models, and direct community involvement and participation, Rhizomatica aims to support communities towards building and maintaining self-governed and owned communication and energy infrastructure.

Visit Rhizomatica's website here: **www.rhizomatica.org**

The Institute for Social Entrepreneurship in Asia (ISEA) is a learning and action network set-up by social enterprises, social enterprise resource institutions and scholars in 2008 to undertake research, education, advocacy and building of platforms for social entrepreneurship towards sustainable development. It pursues various platforms for multistakeholder collaboration to advance social entrepreneurship towards accelerating the achievement of the Sustainable Development Goals: Technological Innovations for Sustainable Development; Women's Empowerment, Livelihoods and Food in Agricultural Value Chains; Decent Work for All in Sustainable Value Chains; Rural Revitalization, Youth and Social Entrepreneurship; Health for All and Poverty Reduction through Social Entrepreneurship. It has a membership spanning 15 countries and territories in Asia and is based in the Philippines with a regional office hosted by the Ateneo Center for Social Entrepreneurship.

Visit ISEA's website here: **www.isea-group.net**

ISEA Project Team

Dr. Marie Lisa Dacanay
Project Director and Principal Researcher for Development Indexing

Dr. Albert Teo
Principal Researcher for Social Return on Investment

Jay Bertram Lacsamana
Mark Lee Babaran
April Grace Garcia
Case Writers

Catherine Tiongson-Intalan
Project Coordinator

Cindy Love Falcutila
Project Associate

Carmela Jessica Corado
Copy Editor

Bernadette Patañag
Lay-out Design

Norma Gonzaga
Project Accountant

Dolly Marcial
Administrative and Financial Assistant

ISEA
Institute for Social Entrepreneurship in Asia

APC
ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS

RHIZOMATICA

BRIDGING THE DIGITAL DIVIDE IN RURAL SOUTH AFRICA:
The Zenzeleni Community-Centered Connectivity Initiative

May 2025