

# Green yoma pathway

*A pathway within Yoma focused on Climate Change & the Green Economy*

## The problem(s) that the green yoma pathway is trying to fix

The green yoma pathway aims to address the following key issues:

### *(i) Climate change poses a significant threat to future generations:*

Sub-Saharan Africa has contributed the least to greenhouse gas (GHG) emissions but is greatly burdened by climate change impacts. Environmental change will continue to deepen existing vulnerabilities, leading to poverty, fragility, conflict and violence. Without rapid deployment of inclusive, climate-informed development, 43 million additional people could be pushed below the poverty line by 2030 in Sub-Saharan Africa. Globally, economies are losing around US\$335 billion annually due to climate disasters (World Bank). The human, economic and developmental costs associated with climate change impacts are significant, particularly in highly vulnerable and poor regions such as Sub-Saharan Africa.

### *(ii) Youth unemployment crisis continues despite the growing green economy:*

Globally, one out of five young people (ages 15 to 24) live in areas with high under- or unemployment. In most African countries, youth unemployment occurs at a rate that is 'more than twice that of adults' (AfDB). Many of these individuals are unable to secure jobs due to a lack of education, experience and financial means. Furthermore, the economic domains in most African countries lack decent employment opportunities that harness youth potential. Skills needed in Sub-Saharan Africa are shifting and the region's educational system is underprepared, resulting in a skills mismatch between those being acquired and those required by companies. According to ILO, the green economy is projected to create up to 60 million new jobs globally by 2030 which require specific skill sets that the majority of youth do not currently possess.

### *(iii) Green yoma pathway will positively contribute to the SDGs:*

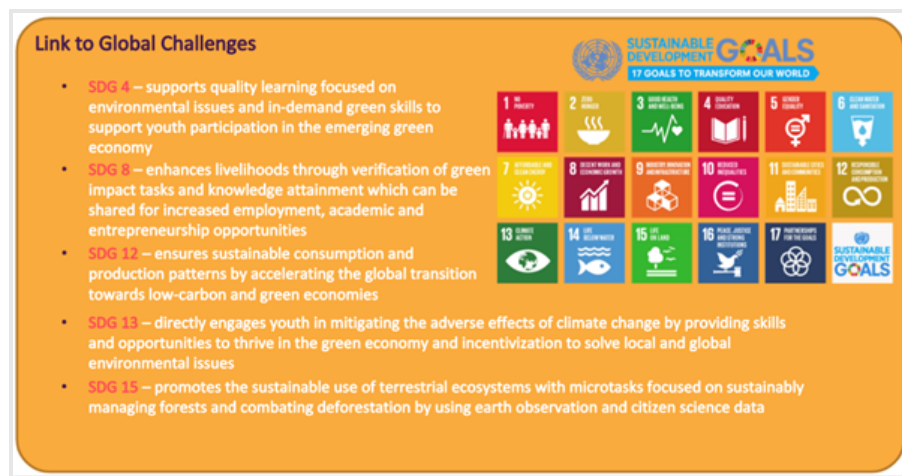


Figure 1: Green yoma pathway & its links to global challenges

## The Path to Implementation

The green yoma pathway will address the challenges of climate change and youth unemployment by **(i) building a green skilling-to-earning pathway in yoma to address the needs of a growing green economy** and **(ii) establishing automated impact verification to monetise youth generated impact** by using real-time data. This pathway aims to provide solutions for the most pressing issues facing youth and is currently working on **(iii) four small-scale minimum viable products** with mixed funding in Kenya, Tanzania, South Africa, Malawi & Peru to provide insights for the **(iv) proposed activities – pilots for scaled-up youth impact** in 2022.

### *(i) Building a green skilling-to-earning pathway in yoma to address the needs of a growing green economy*

The demands of the labour market are changing drastically to respond to the necessary adaption and mitigation of climate change. Youth need to be equipped with a set of skills and competencies to respond to global and local demands. Yoma aims to provide individualised learning to earning pathways that equip significant numbers of young people with in-demand skills, to access these economic opportunities/the labour market in Africa and beyond. One of our current hypotheses is that a select number of vocational tracks (both traditional and new) offer some of the best opportunities for various forms of safe employment to a wide range of youth, especially the most marginalised in the green economy and agricultural sector. To validate this, UNICEF, within the yoma ecosystem, along with several industry partners is piloting various ‘learning to earning’ pathways through the three yoma dimensions “impact”, “grow” and “thrive”:

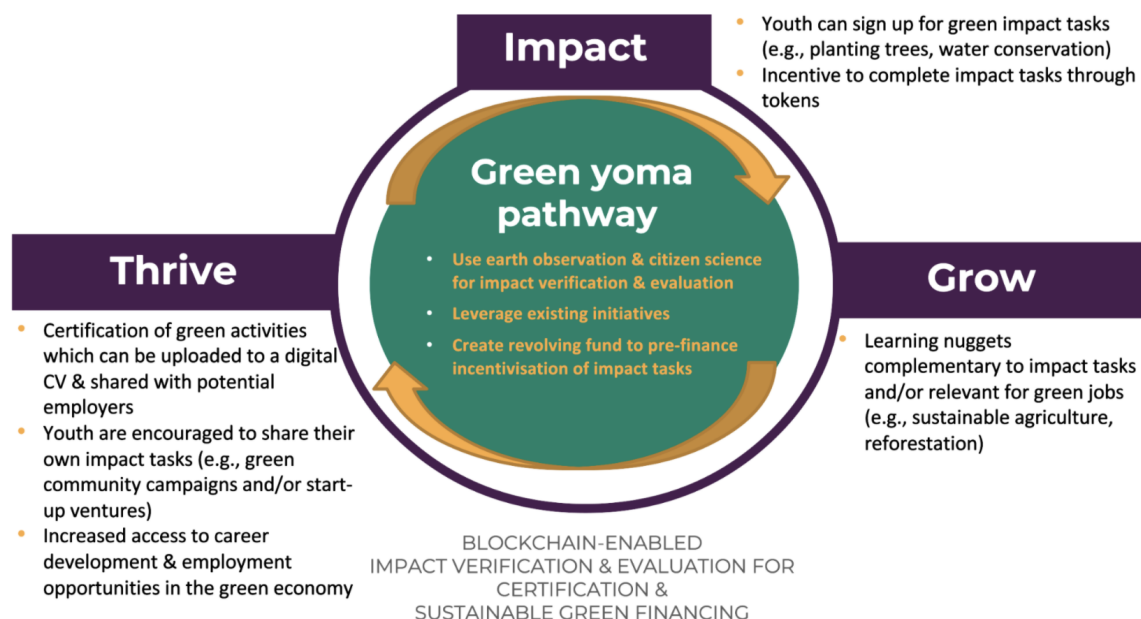


Figure 2: Green yoma pathway - impact - grow - thrive

**Achieving impact with the green yoma pathway** – Youth are incentivised to undertake local action using a token, thereby contributing to community resilience and climate action (e.g. to support/maintain reforestation efforts or protect wetlands for carbon storage, engage in river clean-ups, collect water samples, etc.). Tokens earned can be exchanged in the physical and virtual marketplace on yoma. Youth will contribute to large-scale data collection (i.e. by collecting Citizen Science data) which is necessary for monitoring environmental indicators for assessing and mitigating the effects of climate change.

**Growing with the green yoma pathway** – Yoma empowers young people with green skills and awareness, offering orientation for learning to earning in the green economy. Building on the growing interest of young people in global environmental issues, new educational pathways (supported by the yoma platform and the learning platform atingi) will enable youth to complement their green impact tasks and learn more about environment-relevant topics (e.g. the importance of clean water, reforestation, the nutritional value of crops etc.) through learning nuggets and comprehensive digital courses provided by partners. Yoma will also enable youth to grow alongside the expanding green economy, providing them with access to relevant, flexible alternative learning and training opportunities to develop skills needed for green jobs including entrepreneurial skills to seize the opportunities relating to low-carbon technologies, environmental awareness and willingness to learn about sustainable development, and more.

**Thriving with the green yoma pathway** – Yoma encourages partners to showcase their green economy opportunities and supports youth through matching algorithms for individualised pathways to green livelihoods. The green yoma pathway aims to create these pathways by actively engaging youth in impact tasks and learning & earning opportunities on digital platforms with a range of partners, such as private enterprises and educational institutions. The green yoma pathway will also provide entrepreneurship training and opportunities and connect youth to business incubators (such as “Incubate Malawi” operated by “Growth Africa” or the “Global Innovation Catalyst” with Stanford University) to develop their 21st century innovation skillsets. A non-formal accreditation system (e.g. credentials, micro-crediting, verifications, and certifications), will support the recognition of informal skills training in the green labour market. Following the certification of green impact tasks and completion of learning nuggets, youth can upload a certificate on their updated, verified digital CV that can be shared with potential employers and academic institutions. As youth increasingly take climate action and engage in the green economy, they will also be encouraged to share opportunities and impact tasks with their peers (green research projects, community campaigns and/or start-up ventures). With support of the Austrian government (approval pending), UNICEF and partners will do comprehensive research on yoma’s “learning to earning” programming aiming to identify pathways that equip significant numbers of youth with in-demand skills, to access economic opportunities/the labour market in Africa and beyond in the area of green economy.

***(ii) Automated impact verification to monetise youth generated impact***

Independent verification of the results achieved by young people is the foundation for impact funding in climate relevant areas. Current mechanisms - for instance, the CO<sub>2</sub> offset via Paris Article VI - rely on physical inspection of impact that is costly and thus difficult to scale for grass-roots action by youth.

The potential to enhance the effectiveness of tracking progress against the SDGs through non-traditional data collection is huge. Earth Observation data - including drone & satellite remote sensing and in situ sensors integrated with [Citizen Science data](#) (crowdsourcing the ‘ground truthing’ component of Earth Observation to yoma youth) can significantly measure progress against SDGs (e.g. urban greening,

wastewater pollution and treatment, climate-smart agriculture in small-holder farming, disaster risk mapping, coastlines evolution, water quality or impacts of disasters, etc.) and support concrete action in the area of agriculture, forestry, disaster resilience, urban development and climate resilience.

The green yoma pathway, however, will allow for a cost-efficient independent assessment of results at scale. Building on existing efforts with the ‘Climate Ledger Initiative’, the ‘European Space Agency’ and the Paris Agreement Art. 6 ‘Gold Standard Foundation’, yoma seeks to develop a proof of concept on how to track impact, integrate youth action, and build the supporting infrastructure in a set of countries that could be scaled.

**(iii) Ongoing activities – four small-scale minimum viable products**

Currently the green yoma pathway is implementing four small-scale minimum viable products ([outlined below](#)) to experiment how to track impact, integrate youth action, and build the supporting infrastructure. The findings of these experiments will then inform the pilots to be launched in 2022.



Figure 3: Green yoma pathway - overview of pilots

#### (iv) Proposed activities – pilots for scaled-up youth impact

The green yoma pathway aims to mitigate the impacts of climate change and support disenfranchised youth by working with key partner organisations supporting community engagement, climate-related expertise/applications, and create technical expertise for green impact verification & financing. To ensure the sustainability and effectiveness of the green yoma pathway, operational research on the impacts of the pilots along with the establishment of a green revolving fund will be conducted post-programme implementation.

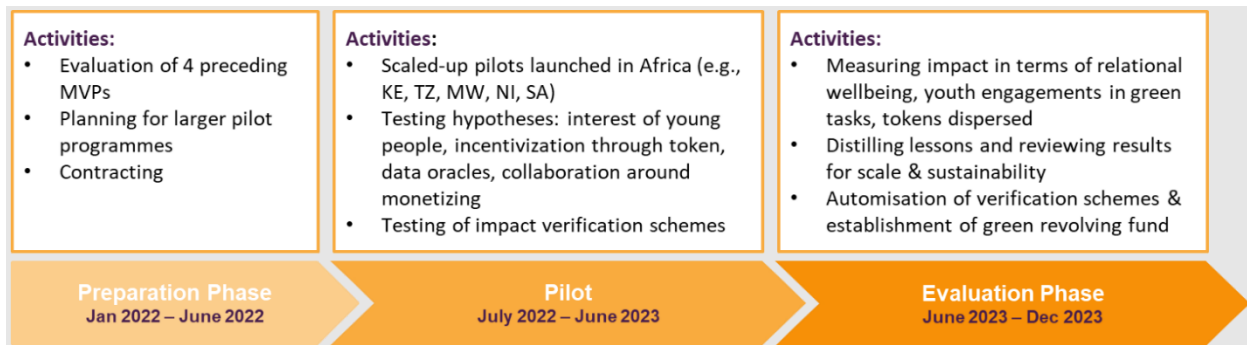


Figure 4: Timeline of the development of the green yoma pathway

The long-term outcome of the initiatives will be to strengthen disenfranchised youths' existing resources (i.e., knowledge, skills and expertise) to motivate them to work for change in the green economy, such as contributing to the environmental imperatives, water quality SDG monitoring or support sustainable agriculture. The youth will be able to gain employable skills as a result of data acquisition, monitoring and impact work. In parallel they would also expand their social networks in the green economy, gain confidence and self-belief in their ability to take action that can contribute to the SDGs.

## Sustainability and Exit Planning

### Sustainable Financing & Impact

Humanity is desperately looking for answers addressing climate change and also the [European Union has just recently emphasized that international carbon markets can play a key role in reducing global greenhouse gas emissions cost-effectively](#). As a market generating innovation, yoma will be able to link this global demand with impact generated by young people, proving impact with innovative monitoring & evaluation tools such as Citizen Science and Earth Observation to show CO<sub>2</sub> sequestration of its projects with low transaction costs.

The green yoma pathway aims to achieve sustainability by working towards setting up a green **revolving impact fund** which will pre-finance green impact micro-tasks and subsequently refinance its work (e.g., by selling resulting carbon certificates in line with the Paris Agreement, Art. 6 global CO<sub>2</sub> trading scheme). Sustainable financing will enable micro-tasks to be offered and completed by youth independent of external donor-dependent funding, which will allow for more youth to be reached as the growing need for companies to sell carbon certificates and become carbon neutral increases. Under this

proposal we intend to study the feasibility and institutional set-up for such a mechanism as shown in the table below:

## Sustainable financing for youth agency

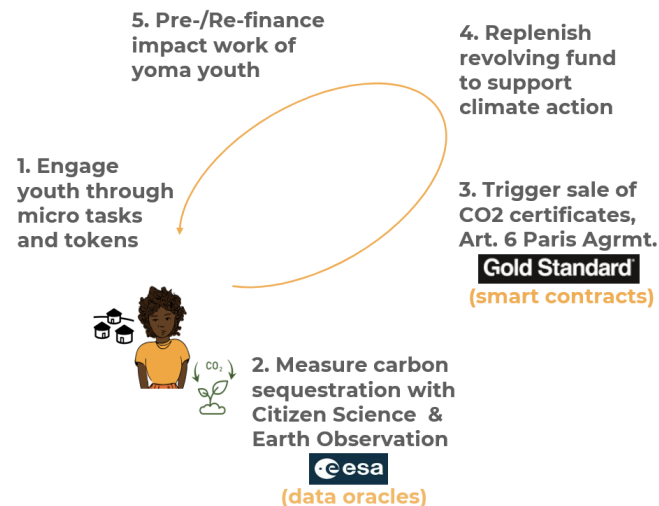


Figure 5: Green yoma pathway - sustainable financing strategy

The assessment of environmental impact by young people will be automated and a cycle will be created in which young people and microtasks will be matched with those interested in offsetting carbon. Impact verification will enable youth to move from environmental impact to improved livelihood opportunities in the green economy. Additionally, the seamless integration of the yoma platform into other existing platforms (e.g., Shujaaz MESH; UNICEF/GenU volunteers) will provide access to large numbers of youth to engage in micro-tasks and green pathways crucial for environmental and livelihood sustainability. Lastly, even though NGOs have the demand for proving impact verification (e.g., carbon sequestration from reforestation efforts) in order to receive funding, they don't have the capacity to engage with organisations like Gold Standard Foundation to receive verification. Thus, the green yoma pathway will help match the needs of NGOs from around the world to certify impact and ensure that their projects are able to be sustainably funded.

As youth gain opportunities to engage in green jobs and decent work with the green yoma pathway, social, environmental and economic sustainability will be strengthened which will contribute to green growth and sustainable development.

### Exit Strategy

- The initial pilots with increased support will already identify a variety of learnings that will be incorporated by local partners. These learnings will benefit those partners even beyond their work with yoma providing a proof of concept.
- The green yoma pathway is exploring ways to become largely self-financed through developing and operationalising a revolving impact fund. The necessary technology, business model and assessment system are currently being built. We will incentivise young people to engage in

climate action. Together with research institutions such as IIASA ([International Institute for Applied Systems Analysis](#)), or CGIAR ([Consultative Group on International Agricultural Research](#)) and CO2 accrediting organisations (Gold Standard Foundation), we are currently exploring how the impact generated can be verified in an automated manner using Citizen Science and Earth Observation. The use of automated data oracles allows a tangible impact assessment at scale and low costs. Ultimately, we hope that the certified impact could then be monetised in the impact market and used to replenish a revolving fund that could finance further tokens. A small percentage of the value would be retained to cover the running cost of yoma.

- Youth who engaged throughout the pilots will be able to use the experience, knowledge and even the certification in their personal development and career beyond their interaction with yoma. They will also have at minimum their opportunity costs for their engagement off-set by yoma.

## Scaling up & Replicability

Yoma is a versatile tool which can be used across the globe according to the local needs. It is designed for scale thereby allowing a large number of young people to engage. Furthermore, yoma thrives through its network and collaboration of both youth and ecosystem partners. As an ecosystem solution, yoma can easily integrate new partners provided they adhere to its values. The green yoma pathway is already collaborating with a variety of global actors seeking its added value to support their own programmes. [CGIAR](#) - which aims to transform the world's food, land, and water systems in a climate crisis – currently integrates Green yoma as a tool supporting their vision. [Earth Echo International](#) wants to partner to incentivise youth to collect water quality monitoring projects, [Climate Ledger Initiative](#) including [Swiss Development Cooperation](#) and [Gold Standard Foundation](#) potentially will partner with Green yoma to incentivise farmers to refrain from deforestation, and the German Development Bank [KfW](#) understands Green yoma as a tool to increase community participation. Yoma is able to create synergies between key priorities that many development partners share, namely environmental protection, youth skilling/livelihoods and digital transformation.

The green yoma pathway is built on open source and access principles. All code will be published, allow other initiatives to build on it and improve it even if the pathway fails. The developmental evaluation and operational research will ensure that the lessons learned from the yoma experience can be picked up by others. New funders, both private and public, are increasingly interested in yoma and its expansion, complementing the current core funding partners (Botnar Foundation, the German government, UNICEF, GenU, the Austrian government).

## Impact framework

### Outcome Indicators

Description	Baseline Value	Target Value Year 1	Target Value Year 2
Green yoma proof of concept pilots established with youth	0	1	3

Functioning pilot of impact verification for CO2 offset	0	0	1
Youth incentivisation for climate action piloted in target countries	0	1	3
Financial system to validate and monetise green impact by youth	0	0	1
Revolving Impact fund conceptualised with inputs from finance industry and ready for implementation	0	0	1

## Output Indicators

Description	Baseline Value	Target Value Year 1	Target Value Year 2
Youth engagements on environmental awareness	17,000	80,000	250,000
No. of green and social impact tasks completed by young people	100	17,000	50,000
Financial model developed	0	1	1
Climate-relevant learning courses developed	0	1	3

## Stakeholder Engagement

### Supporting Ecosystem for Pathway

**UNICEF:** UNICEF country offices in Africa are supporting different environmental impact projects including in Tanzania, Malawi, Kenya and South Africa.

**GIZ:** GIZ's Atingi hosts free online courses and is engaged in making the learning to earning pathways for youth more structured and individually tailored.

**Goodwall:** Goodwall has over 1 million African youth on its platform & will help the green yoma pathway engage youth throughout Africa to take climate action.

**GenU:** GenU will support the green yoma pathway by identifying potential partners to provide Green opportunities on Yoma (e.g., learning content, impact/volunteer activities, and jobs)

**Shujaaz:** The green yoma pathway will engage young people in Kenya through a partnership with Shujaaz, using their MESH platform and wide reach of 7.5 million youth.

**RLabs:** The green yoma pathway is partnering with RLabs to engage youth and disperse ZLTO tokens in the upcoming pilot programmes in Tanzania and South Africa.



### **Green Expertise/Applications/Tech (indicative)**

**Climate Ledger Initiative:** [Climate Ledger Initiative](#) (CLI) aims to address climate change using blockchain and distributed ledger technology combined with internet of things (IoT), AI, and the use of remote sensing. Collaboration between CLI and UNICEF/partner-organizations in Malawi and Peru will enable CLI to advance its efforts to accelerate climate action in line with the Paris Agreement and SDGs through the application of disruptive technology such as remote sensing and innovative initiatives in Malawi such as yoma and ADDA.

**IIASA:** The green yoma pathway is partnering with IIASA and using their different applications, including picture pile and CropObserve to create microtasks in with youth can help fill data gaps by contributing citizen generated data.

**CGIAR:** The green yoma pathway will work alongside CGIAR (Alliance Biodiversity-CIAT) to improve food security and nutrition by engaging youth in CGIAR's existing initiatives in Tanzania and other African countries.

**Wells for Zoe (WfZ):** WfZ aims to use disruptive technology to gain a better understanding of their reforestation projects in Malawi and assess the impact of interventions through the use of remote sensing (drones, satellites) & AI recognition. WfZ will collaborate with UNICEF and partners to train its staff as drone pilots and find easy ways to measure carbon storage using drone/satellite imagery and crowd-sourced data.

**ADDA:** [The African Drone & Data Academy](#) (ADDA) powered by UNICEF is teaching Africa's youth 21<sup>st</sup> century skills through drone flight and data analysis in Malawi through courses that combine theoretical and practical methodologies in the making, testing, and flying of drones. ADDA is building local capacity by enabling Africans to become drone pilots along with producing and/or using drones to map areas and make an impact tackling today's challenge in Africa. ADDA will be incorporated into the green yoma pathway initiative in Malawi and work with WfZ to train pilots and enable successful drone-mapping.

**European Space Agency:** UNICEF and yoma plan to partner with ESA and benefit from the ESA Earth Observation (EO) clinic's comprehensive skills and experience with geospatial product generation and satellite data analysis to harvest geo-referenced data out of satellite imagery to monitor carbon storage on a large scale in the mid- to long-term. For reforestation efforts, EO clinic support can be used to monitor and analyze data about tree growth and carbon storage in Malawi & Peru.

### **Green Impact Verification & Funding**

**Ixo:** Impact financing for the green yoma pathway will be accomplished alongside Ixo, which will allow our platform to use a blockchain system to track impact created through green impact tasks (I.e. reforestation efforts) and link it with sustainable financing.

**Gold Standard Foundation:** [The Gold Standard Foundation](#) aims to ensure that carbon credits are real and verifiable and that projects make measurable contributions to sustainable development. To enhance its verification of carbon sequestration methods, the foundation could use disruptive technology such as remote sensing and in-situ sensor data to make it easier for organizations to tap into carbon trading schemes & verify impact.