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Comprehensive Research Capacity Building Program

**Program Owner: GREEN STARZ IMPAKT
HUB LTD - GreenStars**



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1. Who we are.



“As a Social Enterprise dedicated to fostering sustainable development through professional training and consultancy services.

Our mission includes providing high-quality research professional training while simultaneously enhancing climate resilience.

We achieve this by reinvesting the income generated from our consultancy services into financing professional training initiative and climate enhancement projects.”

By entrusting us with research consultancy projects, partnering with us, or sponsoring these initiatives, you contribute to the growth of the economy and actively participate in creating a better planet through climate resilience actions and capacity building.



GreenStars

Our Mission:
Empower through impactful knowledge, shape decisions for sustainable solutions to build resilient communities.

Our Vision:
To be a catalyst of socio-environmental positive change.



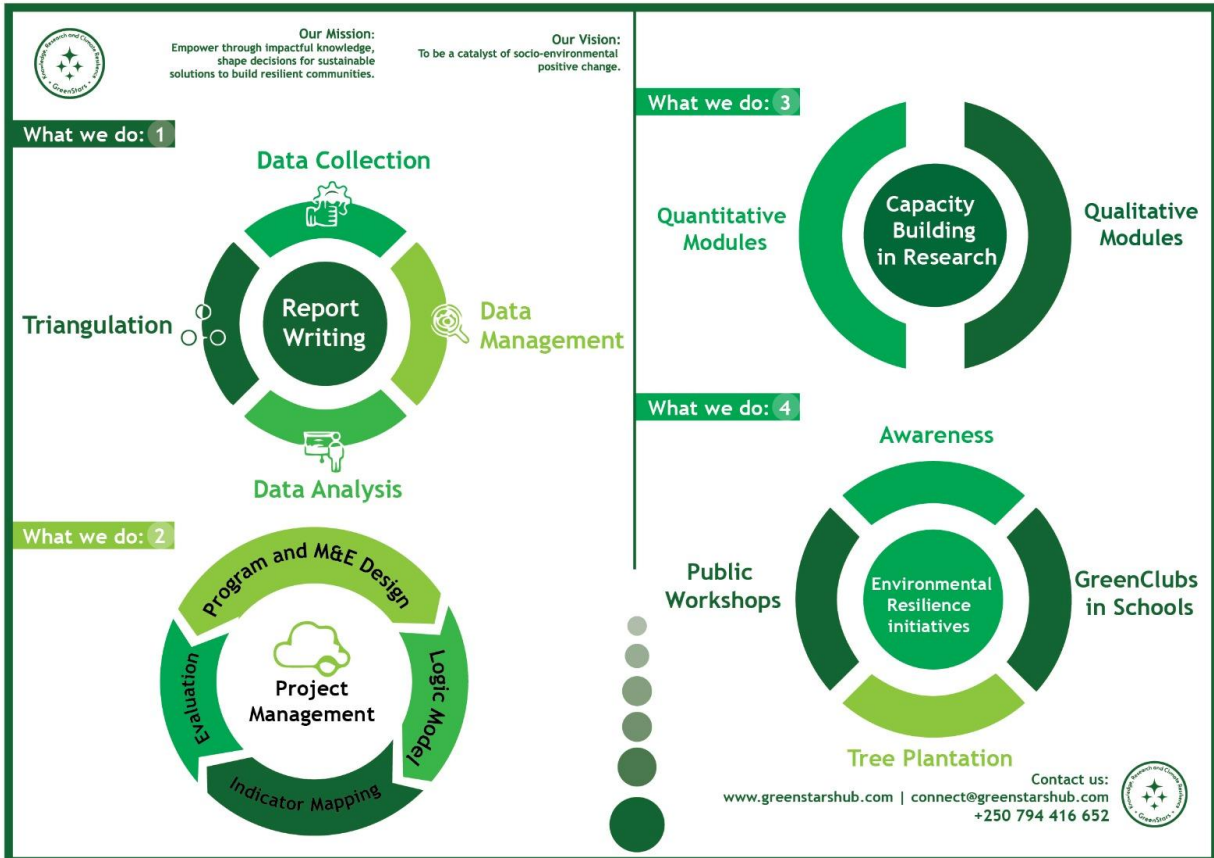
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2. What we do





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3. Introduction

In today's data-driven world, accurate and reliable data is crucial for making informed decisions and planning at all levels, from individual projects to national policies. Recognizing this, our comprehensive research capacity-building program is designed to equip participants with the necessary skills and knowledge to collect, manage, and analyze data effectively for using both quantitative and qualitative methods.

It is in this regard that GreenStars has developed the capacity building program which covers a wide range of topics, from the fundamentals of research and data collection techniques to advanced data analysis using R, Python, STATA, Excel as well as MAXQDA for qualitative analysis and other analytical softwares. Participants will learn how to draft both technical and financial proposals, develop research tools, interview guides, manage, and clean data, as well as report writing.

The program also includes modules on fieldwork and team leadership, as well as monitoring and evaluation. Importantly, participants will have the opportunity to apply their learning in a practical setting, with the chance to work on live projects from GreenStars. Whether you're new to research or looking to enhance your skills, this program offers valuable insights and hands-on experience to boost your research capabilities.

The GreenStars capacity building initiative is designed to encompass both the quantitative and qualitative spectrums of research methodologies.



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4. Duration of the Program

GreenStars Capacity Building (GCB) represents an ongoing learning journey that is set to continue for the foreseeable future. Our goal is to develop fully equipped researchers, and to achieve this, we plan to organize two (2) cohorts annually. Each cohort will span 5-6 months. The program is scheduled to commence with weekend sessions on Saturdays and Sundays from 9:00 AM to 2:00 PM.

Note: On the last Saturday of the month / Umuganda Day, the training starts from 2:00 PM to 6:00 PM

5. Program Participation

The GreenStars Capacity Building initiative welcomes anyone eager to master research methods. It's not just for students; we encourage people globally to join our training, provided they are comfortable with computer use. The number of participants for each cohort will be determined by GreenStars, considering the number of available trainers and training rooms.

6. Participation Fee

The comprehensive fee for the six-month training is **300,000 RWF**. Participants have the option to make monthly payments of **50,000 RWF**. Additionally, there is a **pre-training** registration charge of **20,000 RWF**, which includes **10,000 RWF** for the registration itself and **10,000 RWF** that will be credited towards the training fee, reducing the total amount to **290,000 RWF**.

Note: Whether you opt for all modules or only a few, the participation fee remains constant.

7. Benefits for Participants

Comprehensive Research Training: Participants gain access to a wide range of research methodologies, enhancing their skills and employability.

Practical Application: To enhance their expertise, participants will have the opportunity to engage in GreenStars projects, providing them with invaluable real-world experience.

Certification: Upon successful completion of the six-month program, participants will receive a GreenStars certificate, acknowledging their expertise and dedication to learning.



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Access to Pre-Paid Software: The STATA software will be made available to participants at no additional cost, as GreenStars has already obtained the required licenses for the tool as well as access to SurveyCTO platform, while R and Python are open-source programming languages.

Connection: Upon program completion, GreenStars commits to connecting graduates with various organizations seeking researchers, thereby facilitating their entry into the workforce

Scholarship Opportunities: Depending on partnerships and sponsorships from different stakeholders, GreenStars would offer scholarships to participants, making the program accessible to a diverse group of learners.

8. Training Venue

GreenStars will operate in two **GreenCampuses**, with one located in **Kigali** and the other in **Musanze District**, with plans to expand to other districts of the country soon.

Venues:

- **Kigali** - Classic Hotel
- **Musanze** - Ruhengeri Referral Hospital Teaching Room

9. Who is this for?

GreenStars Research Capacity Building welcomes all research enthusiasts. We would like to host as many applicants as possible but due to limited space, the applicants will go through a selection process. We have developed a set of questions each applicant must answer during the application process.

10. Notification about the Program

Participant recruitment will be conducted via the Job in Rwanda website, which will direct applicants to the GreenStars website for the final application submission link. The recruitment announcement will also provide details about the start date and location of the training.

11. Contact us:

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12. Definition

12.1 Quantitative Research:

This research strand focuses on quantifying data and generalizing results from a sample to the population of interest. Measurements are often made using instruments so that the gathered data can be analyzed using statistical procedures. An example of a quantitative method is surveys, which collect data from a predefined group of respondents to gain information and insights on various topics.

Surveys are a quantitative research tool that consists of **structured questions** designed to collect specific information from respondents. Surveys can be administered in various forms, such as questionnaires, online polls, or interviews, and are valuable for obtaining large amounts of data that can be quantitatively analyzed to discern patterns and generalize.

12.2 Qualitative Research

This approach is primarily exploratory and aims to understand underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative research is typically conducted using methods like Focus Group Discussions (FGDs), Key Informant Interviews (KIIs), and In-Depth Interviews (IDIs), which involve direct interaction with participants to gather rich, detailed information using audio recorders which will be transcribed late



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13. QUANTITATIVE CAPACITY BUILDING MODULES

Quantitative capacity building is one of key components of GreenStars' initiatives, aiming to enhance the abilities of individuals and organizations through data-driven methods. This comprehensive program consists of 12 modules, each meticulously designed to cover a spectrum of quantitative analysis topics.

These range from fundamental statistical concepts to sophisticated modeling techniques. In contrast to qualitative, which delves into non-numerical data and subjective analysis, GreenStars' quantitative approach prioritizes numerical data and statistical tools. This objective methodology is crucial in environments where quantifiable outcomes are pivotal for informed decision-making and effective policy development. GreenStars is committed to providing a robust foundation in quantitative methods, equipping participants with the skills necessary to navigate and leverage data in today's increasingly data-centric world.

Here's outline for a research capacity-building program with modules and key topics to cover:

Module 1 introduces you to the world of research, where you'll learn about the various methods used to uncover new information. You'll also understand the importance of conducting research ethically and responsibly. Finally, we'll guide you on how to clearly define the goals and questions your research aims to address. This module sets the stage for all your future research endeavors, ensuring you start on solid ground.

13.1 Module 1: Introduction to Research

- Overview of research methods
- Understanding research ethics
- Defining research objectives and questions

Module 2: Data Collection Techniques is a deep dive into the various strategies and tools used for gathering information. You'll learn how to ensure the accuracy and reliability of the data you collect, which is crucial for the success of any research project.

13.2 Module 2: Data Collection Techniques

- Qualitative vs. quantitative data collection
- Ensuring data accuracy and discipline in data collection
- Sampling strategies and understanding the target population



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Module 3: Research Tools Development is centered on the practical skills to design surveys and questionnaires that capture the necessary information efficiently and accurately and will cover the essentials of questionnaire coding and programming.

13.3 Module 3: Research Tools Development

- Introduction to Excel and Word
- Introduction to SurveyCTO/ODK, KOBO and other softwares for data collection
- Designing surveys and questionnaires
- Questionnaire coding and programming

Module 4: Fieldwork and Team Leadership is all about the hands-on experience of conducting research outside the lab or office. In this module, you'll learn the essentials of gathering data in the field, managing a team of researchers, and ensuring that everyone works together smoothly and efficiently.

13.4 Module 4: Fieldwork and Team Leadership

- Leading and managing field teams (enumerators)
- Learning effective collaboration and communication skills for interactions with colleagues, clients, and official entities.
- Field or primary data collection Preparation
- Maintaining discipline and reporting structures in the field

In **module 5**, you'll learn how to craft detailed technical and financial proposals that stand out. The module will also equip you with the skills to thoroughly analyze TORs, ensuring you understand every requirement.

13.5 Module 5: Understanding of tender or Terms of Reference (ToR)

- Analyzing and understanding TOR
- Drafting technical and financial proposals

Module 6: Introduction to R is your steppingstone into the world of programming with R. You'll learn how to manipulate datasets and turn raw data into insightful visualizations. By the end of this module, you'll be well-equipped to handle data analysis tasks with confidence using R's powerful suite of tools.



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13.6 Module 6: Comprehensive Data Analysis and Statistical Modeling with R

- **Introduction to R:** Basics of R syntax, data types, variables, and basic operations.
- **Control Structures:** Learn about if statements, loops, and conditional statements for controlling program flow.
- **Functions:** How to define and use functions to encapsulate reusable code.
- **Data Structures:** Vectors, matrices, arrays, lists, and data frames for organizing and manipulating data.
- **Project-Based Learning:** Encourage hands-on projects where beginners can apply what they've learned to real-world datasets or problems.
- **Data Import and Cleaning:** Techniques for importing data from various sources and cleaning/preprocessing it for analysis.
- **Exploratory Data Analysis (EDA):** Methods for exploring and summarizing data, including descriptive statistics and data visualization using libraries like ggplot2.
- **Statistical Modeling:** Introduction to statistical modeling techniques such as linear regression, logistic regression.
- **Data Manipulation with dplyr:** Using the dplyr package for data manipulation tasks like filtering, selecting, summarizing, and arranging data.
- **Machine Learning with caret:** Introduction to machine learning concepts and techniques using the caret package for building and evaluating predictive models.

Module 7: Introduction to STATA is designed to familiarize you with the fundamentals of STATA, a powerful statistical software widely used in research. It will enable you to perform data manipulation and create compelling data visualizations. By the end of this module, you'll have a strong grasp of STATA's capabilities, allowing you to conduct robust data cleanings and analysis.

13.7 Module 7: Comprehensive Data Analysis and Statistical Modeling with STATA

Introduction to STATA

- Overview of STATA interface
- Loading data into STATA
- Understanding data types and formats

Data Manipulation



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- Sorting and filtering data
- Generating and recoding variables
- Merging and appending datasets
- Dealing with missing data

Descriptive Statistics

- Summarizing data: mean, median, mode, standard deviation, etc.
- Frequency distributions and histograms
- Cross-tabulations and chi-square tests
- Introduction to graphical representation: bar plots, box plots, etc.

Statistical Analysis

- Introduction to regression analysis: simple linear regression
- Multiple regression analysis
- Logistic regression for binary outcomes
- Introduction to hypothesis testing and p-values.

Programming in STATA

- Introduction to do-files and ado-files.
- Automating tasks with loops and macros

Final Project

- Bringing everything together to complete a small analysis project.
- Applying learned techniques to a real dataset
- Presenting results and findings

Module 8: Introduction to Python: This module is crafted to introduce you to the essentials of Python, a versatile programming language that's integral in various fields of research. You'll learn how to manipulate data and produce engaging visualizations. Upon completion, you'll possess a solid understanding of Python's features, equipping you with the skills to perform thorough data analysis and cleaning.

13.8 Module 8: Comprehensive Data Analysis and Statistical Modeling with Python

This module adopts a project-based learning approach. Beginners will tackle hands-on projects using real-world datasets and problems to apply what they've learned.

- **Introduction to Python:** Basics of Python syntax, data types, variables, and simple operations.
- **Control Flow:** Learn about if statements, loops, and conditional statements to control the flow of your program.



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-
- **Functions:** How to define and use functions to encapsulate reusable code
 - **Data Structures:** Lists, tuples, dictionaries, and sets for organizing and manipulating data.
 - **NumPy:** Introduction to numerical computing with NumPy arrays and basic array operations.
 - **Pandas:** Introduction to Pandas for data manipulation and analysis, including data ingestion, cleaning, and manipulation.
 - **Data Visualization:** Using libraries like Plotly, Matplotlib or Seaborn to create plots and visualize data.
 - **Streamlit library for dashboard**
 - **Introduction to Machine Learning:** Basic concepts of machine learning and how to apply simple algorithms using libraries like scikit-learn.

Module 9: Data Management and Cleaning is a critical component of the research process. You'll learn the best practices for organizing and maintaining your data, ensuring it's ready for analysis. We'll cover effective techniques for cleaning and preparing your datasets, removing any inaccuracies or inconsistencies, categorization, and outliers, etc... which is essential for turning raw data into meaningful insights.

13.9 Module 9: Data Management and data Cleaning

- Best practices for data management
- Techniques for data cleaning and preparation
- Data coding and categorization

Module 10: Data Analysis using R, Python, excel and STATA and other softwares is where you'll apply the programming skills you've learned to analyze real-world data. This module will guide you through the process of performing both descriptive and inferential statistics. You'll also learn how to conduct regression analysis to understand relationships between variables, and how to perform hypothesis testing to make data-driven decisions.

13.10 Module 10: Data Analysis using R, Excel, Python and STATA

- Descriptive and inferential statistics
- Regression analysis
- Hypothesis testing



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Module 11: Monitoring and Evaluation (M&E) is the capstone of our research capacity-building program, focusing on the critical role of M&E in ensuring the success and impact of projects. In this module, participants will learn to design and implement M&E systems that effectively track progress and measure outcomes. You'll gain skills in developing indicators and sub-indicators. This module empowers you to not only assess the success of the projects but also contribute to the broader field of research with valuable insights and evidence-based evaluations.

13.11 Module 11: Monitoring and Evaluation (M&E)

- Construction of Logframe matrix and theory of change
- Specifying evaluation questions and outcome variables
- Determine counterfactual: control group.
- Randomized Controlled Trial
- Internal and external validity of findings
- Sampling and power calculations
- Ethical considerations regarding M&E

Module 12: Report Writing and Publication is where your research comes to fruition. In this module, you'll learn how to compile your findings into comprehensive reports using both primary and secondary data findings. You will start with writing inception reports that outline your research plan. You will also learn about the triangulation of quantitative and qualitative findings, a technique that validates your results by cross-verifying from multiple sources.

13.12 Module 12: Report Writing and Publication

- Conducting literature reviews and secondary data analysis
- Writing inception reports
- Triangulation of quantitative and qualitative findings
- Structuring and writing reports.



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14. QUALITATIVE CAPACITY BUILDING MODULES

14.1 Module 1: Introduction to Qualitative Research

- An exploration of qualitative research principles and methodologies.

14.2 Module 2: Ethics and Consent in Qualitative Research

- A focus on ethical considerations and the importance of obtaining consent.

14.3 Module 3: Research Design and Planning

- Strategies for designing robust qualitative studies and planning research effectively.

14.4 Module 4: Qualitative Data Collection Methods

- Techniques for gathering rich, detailed qualitative data.

14.5 Module 5: Data Management and Analysis

- Best practices for organizing and analyzing qualitative data using MAXQDA.

14.6 Module 6: Reporting and Presenting Qualitative Findings

- Guidance on effectively communicating qualitative research results.

15. APPLICATION

15.1 For TRAINEES/PARTICIPANTS: To apply, kindly click [HERE](#).

15.2 For TRAINERS/TEACHERS: To apply, kindly click [HERE](#).