

NATIONAL CONSTRUCTION RESEARCH AGENDA **REPORT**

NATIONAL CONSTRUCTION AUTHORITY



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NaCRA Drafting Committee which drafted the Agenda document. This was a team of experts that crafted the document using the gap analysis reports and a wide range of other source of materials using their expertise and experience. The drafting committee also served as an editorial team. It was composed of the team leader Eng. Maurice Akech (GM, Research, business development & capacity building - NCA), Prof. Robert Rukwaro (UoN), Dr. Ing. Mbatha Christopher (UoN), Dr. James Onchieku (KEFRI), Mr. Julius Mwangi (NaCOSTI), Ms. Rosalind Githinji (MOEST), Mr. Dominic Oduge (KNBS), Mr. David Nyare (KBRC), Arch. Josephine Muchogu (JKUAT), Arch. Allan Obatsa (JKUAT), Dr. Arch. Mukesh Patel (AAK), Mr. Tirus Kang'ere (SOS TTI), Mr. Philip. Nyabanda (KFMB), Ms. Caren Mutai & Ms. Pamela Adhiambo (both of KENINVEST) Timothy Lukorito (Housing Finance Foundation), Eng. Francis Mbiti (MoLHUD-Public works), Irene Lukoba (State Law Office), Jack Asetto (VSO JITOLEE) and Aliso Odinyo (Construction Consultant).

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The National Construction Research Agenda for 2014-2017 was developed as one of the milestones of the NCA in capacity building in the construction industry.



Arch. Daniel Manduku
Executive Director / Registrar of Contractors

ACRONYMS

UoN	University of Nairobi
KEFRI	Kenya Forest research Institute
MOEST	Ministry of Education Science and Technology
KNBS	Kenya National Bureau of Statistics
KBRC	Kenya Building Research Centre
JKUAT	Jomo Kenyatta University of Agriculture and Technology
AAK	Association of Architects of Kenya
SOS TTI	SOS technical Training Institute
KFMB	Kenya Federation of Master Builders
KENINVEST	Kenya investment Authority
MoLHUD	Ministry of Lands, Housing and Urban Development
NaCRA	National Construction Research Agenda



CHAPTER ONE

1 Background

National Construction Research Agenda (NaCRA) was a stakeholder driven process initiated by National Construction Authority to identify and prioritize gaps and challenges that require research to be undertaken. The setting of research priorities was guided by principles of stakeholder participation; inclusivity and need for answers to the identified priority areas.

1.1 General process

The process that resulted in the publication of this Research Agenda included the undertaking of the following key activities;

1. Formation of a planning committee, identification, compilation and establishment of stakeholder database.
2. National construction research agenda stakeholder forum was convened at Kenya School of Monetary studies – Nairobi, in June 2014. Research needs were identified in this forum.
3. A committee of experts was formed to identify and prioritize the gaps, challenges and research needs.

1.2 Format of the Research Agenda

This 2014-2017 Research Agenda is organized around the five key factors (5Ms) in construction including, management, manpower, materials, methods and money.

The country's physical built environment can serve as an ideal laboratory for those working in the many disciplines and fields that overlap with the Built Environment disciplines, and productive academic research, informed by practitioner needs and skills sets.

1.3 How to Use this Research Agenda

Systemic action research contemplates a non-linear process, with multiple perspectives and research methodologies over time. For this reason, the questions in this 2014-2017 Research Agenda function as umbrella research concepts, sufficiently flexible to permit multiple projects and multiple methodologies, under which the academic and practitioner can craft more defined project scopes and deliverables that reflect the project team's needs and skills sets.

1.4 Scope

This Research Agenda addresses research priorities of the construction industry. By far the majority of topics concern the construction issues that are dogging the industry growth.

This document focuses on identifying short- and long-term research needs that will enable more sustainable construction materials and processes to be undertaken and communicated more effectively to the public.

INTERESTED IN A RESEARCH AREA?

If you are interested in working on one or more topic,
Please e-mail (research@nca.go.ke) or call (0700 021222)

www.nca.go.ke.

CHAPTER TWO

2 RESEARCH AREAS

This section presents the key research priorities which were identified as key research areas for Kenya.

Within each of these technical disciplines, priorities topics are articulated in-order to express the rationale. The table below shows summarized priority areas.

Provided objectives are designed to address each specific research area, these priorities have been reasonably presented in a broader sense with a view of allowing a researcher to have discretionary opportunity and flexibility to design specific research studies that address a particular identified topical area of priority research.

Item	Topic	Background	Action	Budget	Remarks
1	Impact of current building code on emerging materials and technologies	The current Building code was last revised in 1976. New innovative technologies and materials have since been introduced into the industry. Some old technologies have also become obsolete.	Review the building code to address the obsolescence and emergence of technologies and materials Revise building code to incorporate new materials and technologies	Source of funds expected from Development partners	There was an attempt to revise the building code – Investigation required to find progress status
2	Developing a policy on the utilization of emerging construction technologies and materials in Kenya	There is proliferation of new technologies and materials into the industry with little regard to locally available materials & technologies. There is no clear policy on regulation of the use of these materials and technologies in the local industry. The industry also lacks ready data on particular locations and adequacy of these indigenous materials.	Mapping of indigenous materials in each county. Develop guidelines on standardization and utilization of locally available construction materials vis-à-vis imported ones. Develop long-term strategies on promotions of the use of indigenous construction materials & technologies	Source of funds expected from Development partners	Enhanced use of local materials & technologies will create employment and improve quality of life hence fulfill vision 2030
3	Capacity building on emerging trends in construction	As construction industry is continuously evolving, the influx of expatriates is costly and unsustainable on mega projects and the local economy. These emerging trends must be backed up with relevant skill, financial systems and practitioner's capacity development programs. Inadequate local has led to the low uptake of these technologies.	Investigate how training institutions are coping with the emerging trends in construction industry. Identify/ suggest tools for which technology transfer programs could be successfully implemented.	Source of funds expected from Development partners	Improved local capacity will increase uptake of new technologies, thereby improving speed, quality and reducing costs.

Item	Topic	Background	Action	Budget	Remarks
4	Evaluate local contractors' capacity to undertake public projects in Kenya?	The failure or success of any project is influenced by prequalification of a contractor among other factors. There have been cases of projects stalling with project owners citing lack of contractor's capacity. Many concerns have been raised including; documents forgery, and unethical practice among others.	Identify current methodologies of analyzing the technical & financial capacity of entities in construction. Identify opportunities for which project owners can leverage on to assist with reforming the small business attitude in the industry.	Source of funds expected from National Construction Authority	Identification of factors contributing to inadequate/lack of capacity of local contractors will assist the authority to develop intervention measures for capacity building
5	Investigate the impact and uptake of ICT in construction processes	Major construction projects demand heavy exchange of data and information between project stakeholders. ICT has been shown to be a vital tool in assisting the construction industry to cope with the increasing complexity of its products/services as well as the demand to increase productivity. Kenya being a key emerging economy studies are needed to assess the	Identify the challenges that hinder adoption of innovative ICT programs on construction projects. Identify or suggest strategies that can best aid the industry to embrace ICT in projects Identify the values, legal principles and practical limitations that apply on control of information during project implementation.	Source of funds expected from Development partners	Justification of use of ICT in construction will result in improved processes and efficiency.
6	Investigate the effectiveness of Conflict/dispute resolution mechanisms used in the construction industry in Kenya.	The conflict/dispute management framework in Kenya has been criticized as being indefinite, time consuming and does not encourage expediency. There is need to expand the scope of civil procedure act and entrench adjudication as a means of dispute resolution. In construction projects where time is key, conflict resolution must be expedited.	Identify contractual issues that come into play in construction projects more especially international tenders. Identify best practices for which the conflict management framework for Kenya can emulate for speedy resolution.	Source of funds expected from National Construction Authority	Findings will enhance amicable solutions and speedy conclusion of disputes.
7	Investigate how the regulatory framework in Kenya impacts on sustainability in the construction industry	Physical activities in the construction are continually causing changes in landscape hence affecting the environment and depleting resources for future generations. It is important to put into perspective the regulatory frame work as regards the philosophy of resource use and management.	Investigate existence of regulatory framework on evaluating and justification of sustainable construction. Identify or suggest best model for evaluating sustainable projects in the construction industry.	Source of funds expected from Development partners	Sustainable construction will guarantee clean environment, prudent use of resources and address social needs of stakeholders
8	Study the impact of multiple construction industry laws, regulations and policies on service delivery	The regulation on approval and management of development of construction projects is quite diverse at national level and across counties in Kenya. Other than existing regulations and as counties seek to generate additional revenue and implement projects in their jurisdictions, more stringent laws, regulations and policies are being developed. The impact on quality, cost and time in project implementation is worth investigating.	Mapping of construction related laws, regulations and policies nationally and across 47 counties in Kenya Identify all legal, regulatory and policy requirements for construction projects in the context of Kenya Legal Framework Identify possible mechanism to collate these laws, regulations and policies in the interest of harmonization and improving service delivery.	Source of funds expected from Development partners	Harmonized laws will improve coordination in the construction industry and improve on service delivery

Item	Topic	Background	Action	Budget	Remarks
9	How can construction project management be adopted into the regulations?	The practice of construction project management (CPM) is fairly recent in Kenya. The inability of the industry to satisfy its clients has been a major concern. The industry is trying to overcome this problem through adopting new approaches to increase efficiency and client satisfaction, CPM being one of them. It is therefore important to define a legal framework.	Identify the extent to which the NCA mandate is applicable in the monitoring and control of construction projects. Develop a legal framework embodying CPM in construction projects and adopting CPM knowledge in NCA mandate.	Source of funds expected from National Construction Authority	Improved efficiency and satisfaction to the project owner
10	Investigate factors influencing corruption in construction industry	Besides quality control, efficiency is fundamental to construction projects. The lack of efficiency leads to project delays and escalated costs. Incidentally there seems to be relationship between incidences of corruption and inefficiency. Investigation into the causes of corruption could well be the key to solving inefficiency.	Illustrate the apparent relationship between occurrence of corruption cases and escalated project costs, poor quality and lack of professionalism. Suggest/recommend best practices to fight corruption.	Source of funds expected from Development partners	Absence of corruption will lead to improved quality and safety in the construction industry
11	Study the management of occupational hazards in the construction industry in Kenya	The complex nature of the construction industry poses a great challenge in occupational safety and health management. The enforcement agencies in the industry need to strategize on the best possible ways to have safe and efficient projects.	Survey the construction industry for the current compliance levels of OSH. Identify or suggest strategies needed to improve occupational health and safety standards on construction projects.	Source of funds expected from Development partners	Findings will improve level of compliance on health and safety in the construction industry
12	Investigation of effective management practices of construction projects in public and private sector	Success or failure to deliver a construction project largely depends on management practices employed. The application and measuring the performance levels of construction project management is not well documented in Kenya. The effectiveness of construction project should be measured against the success factors.	Investigate and document the current project management the public and private sector Identify and suggest best practice for attaining excellent project management.	Source of funds expected from Development partners	Best project management practices will improve success rate of construction projects thereby minimizing wastage of investment funds
13	How to enforce preventive infrastructure and building maintenance	Most public owned projects are dilapidated due to inadequate maintenance or lack of a maintenance plans. This eventually contributes to expensive bills. There is a need to establish effectively of maintenance policies on infrastructure and other construction projects.	Investigate the extent to which infrastructure assessment techniques and technologies have been implemented in the local construction industry Investigate the strategies currently being employed to build capacity in this area.	Source of funds expected from Development partners	Preventive maintenance will address most construction failures before they occur

Item	Topic	Background	Action	Budget	Remarks
14	Investigate the capacity of technical training institutions and their relevance in the growth and development of the construction industry	In Kenya the rapid restructuring of education institutions is affecting the existence of vocational training centers and reducing the options available for primary and secondary graduates. The technical vocational institutions played a key role in providing base for career growth.	Conduct baseline skill survey in the industry Identify and suggest best practice in skill enhancement programs. Investigate the capacity of technical vocational training institutions	Source of funds expected from Development partners	Findings will be used to enhance capacity building in the industry
15	Investigate of financial risk management in construction projects	The complexity of modern life and the interrelation of risks in construction environment have brought a new dimension on risk management.	Investigate the current status of construction risk management and document any management tools available. Identify and suggest innovative risk management strategies that can be leveraged on the existing legal framework	Source of funds expected from Development partners	
16	Investigate effectiveness waste management practices in construction sites in Kenya	Construction waste management and minimization has great opportunity to contribute to environmental sustainability and improved construction performance.	Investigate effectiveness of existing legal framework as an appropriate guide for construction waste management Identify and suggest long-term strategies on construction management	Source of funds expected from Development partners	
17	The impact of politics on construction projects in Kenya	Politics and the construction industry in Kenya are intricately woven. There is perceived political influence on decision making in many a construction projects. The new governance structure of devolution has added in equal measure the opportunities and complexities. There is a need to devise strategies for improving construction project management taking into account political influence.	Investigate political forces and/or project characteristics that determine execution of project to completion Identify and suggest strategies to best manage political influence in construction projects.	Source of funds expected from Development partners	

CHAPTER THREE

3 FINANCING OF THE NATIONAL CONSTRUCTION RESEARCH AGENDA

Financing of research in the identified priority areas is critical for the realization of the goal and objectives of this Agenda. Stakeholders are, therefore, implored to support the financing of research geared towards addressing priorities outlined in this Agenda. The following mechanisms of financing this Agenda shall be considered:

3.1 Funding from the Authority and development partners

The authority shall commit resources to support the undertaking of research in the identified priorities. Borrowing from best practice experiences from other countries, the Authority shall establish a National Construction Research Fund (NCRF). The NCRF shall comprise a pool of resources from development partners and other sponsors. This will be a basket funding for research activities in the identified priorities. The Fund shall be managed by the National Construction Authority with clear guidelines. A key advantage of the NCRF is to ensure sustainability of funding for research in the construction industry.

3.2 Research Grant Scheme

Researchers and all other stakeholders wishing to undertake research in the identified priority areas shall be encouraged to take advantage of the existing national and international research grant schemes in construction research.

3.3 Public and Private Partnerships

Public and private partnerships shall be an important vehicle for nurturing resource mobilization for research in the priority areas. Researchers shall be encouraged to collaborate in undertaking research



CHAPTER FOUR

4 MONITORING AND EVALUATION OF THE AGENDA

Monitoring and evaluation techniques shall be used to track and review the implementation of the research Agenda.

4.1 Tools for Tracking Adherence to the Agenda

4.1.1 Checklist for Submission of Review of Research Protocols

A NaCRA Checklist for submission of protocols for review shall contain an element of whether the study is addressing any of the priority areas.

4.1.2 Monitoring and Evaluation (M&E) Reports

The Authority shall work with relevant stakeholders to undertake periodical M&E visits to areas where the approved studies are being conducted.

4.1.3 Progress and Final Reports

Progress and final reports shall be submitted to the research committee.

4.1.4 Database and Directory of Research Studies

Final reports of studies shall be compiled in a database and directories of approved research studies.

4.2 Review of the Agenda

This Agenda has a lifespan of three years. Informed by emerging issues in construction industry, there shall be a midterm evaluation followed by a final review of the Agenda after three years.



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