



**REPUBLIC OF KENYA**

**SESSIONAL PAPER NO. 1**

**ON**

**NATIONAL BUILDING MAINTENANCE POLICY FOR  
KENYA**

**MINISTRY OF HOUSING**

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## FOREWORD

Buildings are very important to mankind in that they represent a high level of investment in terms of capital, materials, labor, land and time. An organization without a clear Maintenance Policy has no or few goals to achieve in carrying out its maintenance works. The works are normally unplanned, carried out in ad hoc basis with few or no records being kept. In most cases, there is a high or low budgetary allocation due to lack of planning.

Although there is no clear maintenance policy in Kenya, there are legal requirements scattered in several legislations and Acts of Parliament that ensure there is at least minimum level of maintenance. Owners and users are required to maintain their properties in good and substantial state of repair.

Formulation of this Policy is anchored to provisions made in the constitution of Kenya 2010 on the need for a clean environment and adequate housing as a right to citizens and maintenance, conservation and setting of standards as means through which to achieve progressive realization of these rights. Kenya Vision 2030 provides for improvement of the visual appeal and functionality of the built environment. Maintenance and management of the built environment will be enhanced through comprehensive strategic asset management plans. This will be supported through development and promotion of a National Building Maintenance culture and Computerized Building Management Information Systems. The Policy acknowledges the poor state of houses due to lack of regular maintenance. The effect of lack of proper management and maintenance has resulted into reduction in the quality of housing stock and adversely affected the built environment including infrastructural facilities and other services. The Ministry of Housing Strategic Plan identifies formulation and implementation of housing Policies as a key result area.

Realization of this Policy was a result of concerted effort by the Ministry of Housing and all stakeholders in the built environment as well the citizens. It's my pleasure to thank all the individuals and organizations who in one way or the other contributed

in the rigorous process of formulating this National Building Maintenance Policy. Effective implementation of this Policy will immensely contribute to socio economic development of the built environment in Kenya.



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## EXECUTIVE SUMMARY

The state of physical and built environment reflect complex social economic factors and level of prosperity of a community and nation. Buildings and infrastructures are important assets whose maintenance and upkeep cannot be wished away.

Maintenance is defined as work undertaken in order to keep or restore every part of the building and associated infrastructure to a currently acceptable standard and to sustain its value. Maintenance works include inspection, testing, planning, organising, servicing classification to servicesability, repair, refurbishment, re-building, rehabilitation, reclamation, renewal adoption and setting standards.

In Kenya, management and maintenance of buildings and related infrastructure which are the measure of national wealth and capital formation is regarded as a cinderella activity and a neglected field of technology and practice. Consequent to this, maintenance works are carried out in an ad hoc manner with few or no records being kept; low budgetally allocation and prioritization.

This pathetic situation has resulted into:

- Backlog of maintenance works that are expensive and difficult to sort out.
- Rundown investment that are uneconomical and unsustainable to owners.

Sick buildings that are:

- Unhealthy and unsafe.
- Dilapidated and unhealthy buildings.
- Decaying built environment that depresses the quality of life and contributes to poor health, low productivity and anti social behaviour.
- Frequent hazards related to buildings.

The root cause of this worrisome situation has been traced to lack of building maintenance policy and culture, existence of multiple out dated and conflicting legislations and regulations. These legislation are domiciled in different institutions that are given responsibility to ensure compliance. Some of the institutions are not aware of their responsibility and also lack capacity to enforce compliance. There is also inadequate maintenance resources such as national building stock, human, financial and tools to carry out, monitor and evaluate maintenance works.

Comprehensive integrated management framework that sets quantifiable and measurable standards has also been found to be lacking.

In order to address the above shortcomings, the government together with key stakeholders set up a broad-based multi-stakeholder team which in a participatory manner formulated a National Building Maintenance Policy.

The Building Maintenance Policy is a roadmap to be followed in addressing effective restoration, preservation, refurbishment, setting standards, training and deployment of man power, financing, enacting appropriate legislations, capacity building to both owners and users and establishment of institutional framework.

In so doing, the process has been inspired by the constitution of Kenya 2010, particularly articles 22, 42 and 43(b), Kenyan vision 2030, National Housing Policy 2004, Land and Environment Court Act, the Urban and Cities Act, draft National Housing Bill, draft Building Regulations, draft Building Surveyors Bill and Local Government Management Practice Manual number seven.

The objectives of the Building Maintenance Policy are to:-

- a. Create awareness and build capacity of all Kenyans citizens on the importance of proper maintenance of buildings and related infrastructures.
- b. Guide on the establishment of efficient, effective and economic use of scarce maintenance resources.
- c. Establish legal, regulatory and institutional framework.



- c. Establish legal, regulatory and institutional framework.
- d. Guide on establishment of education and training framework for maintenance personnel at all levels.
- e. Guide on establishment of integrated management of built environment.
- f. Guide on the establishment of measurable and quantifiable maintenance standards.
- g. Comply with constitutional, policy and legal requirement.
- h. Ensure health and safety.
- i. Establish information management framework.

For each of the chapter, the policy document provides a problem statement, key issues and policy options that address the identified issues. The Policy document is presented in eight chapters. Chapter one provides background information including justification of formulating the Policy. Chapter two outlines Goals and Objectives, Principles and values underpinning the Policy, management strategies which include risk, financial, procurement, health and safety, life cycle costing, monitoring and evaluation and information management.

Chapter three is the core of the policy and it contains plans, standards, guidelines, priorities, inventory, maintenance of cultural and historical sites, public monuments and museums, education and training.

Survey and performance audit of maintenance works is covered in chapter four and includes, tools for carrying out survey and performance Audit, quality management systems, procurement, integrated disaster and risk management.

On the other hand, chapter five is devoted to issues of Resource mobilization for maintenance works that include funds, personnel other resources and infrastructure. Chapter six outlines the policy, Legal, Regulatory and Institutional Framework necessary for the implementation of the policy.

Chapter seven contains monitoring and evaluation principles and their application to the maintenance process for feed back and research. Chapter eight is conclusion and the way forward.

# CHAPTER ONE

## BUILDING MAINTENANCE PROBLEMS AND CHALLENGES

### 1.1 Introduction

Buildings are very important to mankind in that they represent a high level of investment in terms of capital, materials, labour, land and time. Human beings spend a substantial part of their time in buildings. The following are some of the challenges faced in the built environment:

1. Dilapidated and unhealthy buildings in a decaying environment depress the quality of life; contribute to poor health, low productivity, anti-social behavior and low return on investment. The following issues have been identified as the main contributors to dilapidated and unhealthy buildings:-

- Lack of Building Maintenance Policy,
- Existence of Multiple legislation and regulations dealing with Building Maintenance,
- Different institutions charged with the responsibility of implementing the multiple legislation and regulations.

This state of affairs has led to apathy and conflict with no specific institution ensuring compliance of maintenance works.

2. Lack of documented national building stock, Human and financial capacity to carry out the maintenance, Tools to monitor and evaluate the effectiveness of maintenance works to ensure health and safety of the users.
3. Lack of a comprehensive maintenance management framework, Maintenance standards, Knowledge on the benefits of carrying out maintenance works, adequate budgetary provisions for carrying out maintenance works and Knowledge on categorization of building maintenance works.
4. Lack of maintenance of the built environment has led to frequent hazards related to buildings.
5. Maintenance works is given low priority in organizations.

6. Lack of maintenance culture, inadequate education and training opportunities for human resource on maintenance, legislation to govern and regulate maintenance practices.

## **1.2 Policy Justification**

7. The primary aim of maintaining a building is to ensure that the building continues to serve the purpose for which it was intended, yield optimum return and ensure safety, health and comfort in its usage.
8. The National Building Maintenance Policy will give guidance to public and private organizations that deal with the built environment. The policy is proactive and is shared between County and National Government and helps to organize the maintenance works and ensures standards of the building assets. The policy caters for maintenance priorities for different building types and uses.
9. In formulating this policy, there has been broad consultation with various stakeholders including public institutions and private sector. The policy has been informed widely by experiences from both public and private sector practices including international best practices.
10. This policy is an anticipatory document towards planning, budgeting, inspection and management of maintenance work. It is critical that the policy document be regularly reviewed in tandem with emerging trends in the built environment.
11. Although there is no clear maintenance policy in Kenya, there are legal requirements scattered in multiple legislation that ensure there is at least minimum level of maintenance. The physical condition of buildings in private and public sectors has greatly deteriorated over the years due to lack of maintenance.

## CHAPTER TWO

### GOALS, OBJECTIVES, PRINCIPLES AND STRATEGIES OF BUILDING MAINTENANCE POLICY

#### 2.1 Goals

12. The policy aims at exploiting the advantages of adequate building maintenance such as enhancement of value, economic use of resources, creation of employment and generating new investments. In addition, the policy encourages the adoption of efficient and consistent approach in collection and recording of property inventory, condition surveys and status information.
13. The anticipated National Building Maintenance policy is a road map to addressing effective restoration, preservation, rehabilitation, refurbishment, setting standards, training manpower, financing legal and institutional frameworks for the country's built environment.
14. Formulation of the Building Maintenance Policy and the enactment of the requisite legislation is inspired by the provisions of Kenya Constitution 2010, Vision 2030, National Housing Policy 2004, Millennium Development Goals and Ministry of Housing Strategic Plan 2008–2013.
15. The Constitution of Kenya, 2010, under Article 42 provides that every person has the right to a clean and healthy environment. Further; Article 43 (1b) provides that every person has a right to accessible and adequate housing, and to reasonable standards of sanitation, while Article 69 provides that the State shall ensure sustainable management and conservation of the environment. The constitution obliges the state to legislate and create measures that will ensure that the built environment is managed, maintained and conserved in a sustainable manner.
16. Kenya Vision 2030 provides for improvement of the visual appeal and functionality of the built environment. Maintenance and management of the built environment will be enhanced through comprehensive strategic asset management plans, promotion of a National Building Maintenance culture and Building Management Information Systems.

17. National Housing Policy 2004 noted that lack of proper management and maintenance reduces quality of housing stock and adversely affects the built environment including infrastructural facilities and other services. The Policy proposes formulation of National guidelines and standards on real estate management and maintenance.

## **2.2 Objectives**

18. The main objective of the National Building Maintenance Policy is to ensure a consistent approach to the maintenance of the built environment. An effective maintenance policy would ensure adequate health, safety and environmental standards, return on investment, convenience and comfort for the users.

19. The specific objectives of the Buildings Maintenance Policy are:

- a) To establish guidelines for the maintenance of building fabric, services, sites and grounds, cultural and historical sites, monuments and museums.
- b) To establish building maintenance priorities.
- c) To promote health and safety measures within buildings and associated infrastructure.
- d) To empower relevant agencies with the necessary mandate and information for monitoring maintenance condition and the performance of buildings.
- e) To promote development, adoption and regular reviews of policies for maintenance.
- f) To promote adoption of preventive and planned maintenance of buildings.
- g) To carry out and adopt regular reviews of risk management of buildings.
- h) To develop and promote a National Buildings maintenance culture.
- i) To encourage feedback control loop between the building design, construction, manufacturing and building maintenance works teams.
- j) To review and harmonize all relevant building maintenance legislation and regulations in various statutes.
- k) To establish an appropriate regulatory and operational framework for building maintenance.
- l) To establish adequate management information systems for monitoring and evaluating maintenance of building assets.

m) To strengthen financial, human and technological capacity in Building Maintenance Management.

### **2.3 Principles and Values**

The principles underpinning this policy are listed below;

- a) Environmental sustainability
- b) Design maintainability
- c) Disaster prevention
- d) Safety, health and convenience
- e) Maximum Return on investment
- f) Technological advancement
- g) Cost effectiveness and efficiency
- h) Statutory compliance
- i) Good governance
- j) Building Life Cycle Costing

### **2.4 Maintenance Management Strategies**

To accomplish this Policy, a wide range of strategies have been adopted.

#### **2.4.1 Risk Management Strategy**

20. Risk associated with maintenance will be managed in the following order of priority;

- a) Maintenance in respect of health and safety issues.
- b) Statutory maintenance requirements; security, fire, gas, electrical and mechanical systems, access, structural, building fabric, natural and man – made disasters.
- c) Environmental requirements; sites, grounds and waste disposal.

#### **2.4.2 Financial Management Strategy**

21. Financial sustainability of building maintenance is achieved by carrying out a detailed inventory of all the buildings which will form a basis for;

- a) Determining the budget for planned and preventive maintenance activities to achieve the established standards and address the risks in section 3.1,

- b) Identifying works that are to be considered for capitalization and
- c) Establishing a sinking fund for priority maintenance which shall be 5% of the value of the asset.

### **2.4.3 Procurement Strategy**

22. Maintenance services are to be procured in accordance with The Public Procurement and Disposal Act and the Regulations thereto.

Procurement of maintenance works, tools and materials in all buildings should be done in a procedure that provides value, fairness and transparency so as to conform to the set building maintenance standards.

### **2.4.4 Health and Safety Management Strategy**

23. Buildings shall be maintained to meet the health, safety and environmental standards under relevant legislation such as Occupation Health and Safety Act (OSHA), Environmental Management and Coordination Act (EMCA) and in line with Kenya constitution, 2010.

### **2.4.5 Building Life Cycle Costing Strategy**

24. The strategy harmonizes the cost of putting up a new building, operating and maintenance. The life cycle costing will then provide a robust feedback to the design team.

### **2.4.6 Monitoring, Evaluation and Research strategy**

25. The strategy will facilitate effective Monitoring and Evaluation of planned activities and set standards of maintenance work. Continuous Research on building maintenance will be undertaken to enhance M&E and inform the stakeholders for future actions.



## **2.4.7 Information Management System strategy**

26. The strategy will facilitate collection, storage, retrieval, analysis and custodianship of maintenance data. This will guide in decision making on building maintenance.

## CHAPTER THREE

### BUILDING MAINTENANCE PLANS, STANDARDS AND GUIDELINES

#### 3.1 Maintenance Plans, Standards and Guidelines

27. Building maintenance has been carried out in an ad hoc manner without the benefit of plans, standards and guidelines. Maintenance plans, standards and guidelines will promote effective execution of Maintenance works with clear timelines, budgets, deployment of qualified personnel, so as to preserve investment and quality of the Built Environment.
28. Kenya Bureau of Standards (KEBS) and other international standard organizations provide standards and guidelines of maintenance works for specific components.

#### Issues

29. Lack of integrated maintenance plans, standards and guidelines for buildings, a national maintenance policy, laws and regulations that have led to ad-hoc maintenance by different institutions.
30. Existence of scattered maintenance information by different stakeholders.
31. Uncoordinated building maintenance decisions within institutions.
32. Lack of clearly defined roles for maintenance teams, awareness of national and International maintenance standards, a comprehensive maintenance manual and feedback system for maintenance and design teams.

#### Policy statements

33. The Government will:-
- a) Formulate maintenance plans, a national maintenance Policy, review, harmonize and enact the maintenance legislation as well as set standards and guidelines for execution of maintenance work.
  - b) Harmonize and centralize data on building maintenance works.
  - c) Organize and coordinate building maintenance decisions within inter and intra-institutions.

- d) Clarify division of labour and decentralize maintenance information at the National and County Governments.
- e) Develop a dissemination programme to sensitize the stakeholders on national and International maintenance standards and guidelines.
- f) Establish a comprehensive maintenance manual framework for existing and new buildings.
  - The design team shall prepare a maintenance manual for any new development at the time of handing over within the framework and should include as-built drawings.
  - Develop, maintain and review building maintenance manuals for all buildings.
  - The maintenance manual shall be reviewed every five years.
  - Occupational certificates shall be issued upon completion of a building and be renewed thereafter every five years upon inspection. (the team to review and consider putting in the source book, its detailed and the design team to handle)
- g) Establish feedback loops between Building maintenance professionals and building design teams.

### **3.2 Maintenance Priorities**

36. Maintenance priority criteria shall be based among others on the following;

- a) Where life is threatened by lack of maintenance, action must be immediate and within 24 hours.
- b) Where a defect is likely to negatively impact on other building elements.
- c) Where there is nuisance work, priority will depend on an agreed protocol.
- d) Where there are competing schemes with the same priority, those with the highest risk factor will be considered first.

### **Issues**

- 37. Lack of established procedures for prioritizing maintenance works which has led to ad hoc and uncoordinated implementation.
- 38. Lack of professional input in analysis and ranking of critical maintenance works that has led to irrational approach to its operations.

39. Delay in requisitioning of maintenance works has been attributed to;

- Existence of apathy, ignorance and lack of capacity
- Inadequate finance, existence of complex procurement procedures and protocol.

### **Policy statements**

40. To address this situation, maintenance ranking criteria based on the following priorities shall be established;

- a. Emergency maintenance which shall apply to defects that could cause serious health hazards, undermine building stability and safety of occupants.
- b. Reactive maintenance which shall apply to maintenance work normally undertaken after failure.
- c. Routine maintenance which shall apply to planned maintenance.
- d. Planned preventive maintenance which shall apply to the built environment with known standards, appropriate budgeting, capacities and management.
- e. Specialized Maintenance which shall apply to building services and other specialized components.

41. The government will;

- a) Establish procedures to enable professionals give their inputs on maintenance programmes.
- b) Establish and strengthen maintenance management programmes,
- c) Establish budgetary procedures that are responsive to maintenance priorities.
- d) Review and streamline procurement procedures to be in tandem with maintenance priorities.

### **3.3 Inventory of Buildings**

42. Keeping and maintaining inventory of buildings is prerequisite to planning, budgeting and knowing the value of the stock for maintenance purposes.

### **Issues**

43. Lack of updated inventory of building stock.

44. Lack of planned, systematic and periodic surveys.

### **Policy statements**

45. The following measures will be taken to strengthen the existing inventory of buildings;

- a) Establish an elaborate inventory of the building stock.
- b) Establish systems of undertaking planned and periodic surveys of buildings.

### **3.4 Maintenance of Cultural and Historical Sites, Public Monuments and Museums.**

46. Preservation of cultural and historical sites, monuments and museums in their original form for historical and cultural values requires specialized maintenance due to delicate nature of the structures as a result of age, exposure to the weather and use.

### **Issues**

47. Lack of policy for maintenance and regular surveys of historical sites, public monuments and museums.

48. Lack of research on maintenance techniques for restoration of historical sites, public monuments and museums.

### **Policy Statements**

49. To preserve cultural and historical sites, public monuments and museums in their original form for historical and cultural values, the Government will;

- a) Formulate procedures and program for regular inspection and specific policy for maintenance and preservation of historical sites, public monuments and museums.
- b) Establish clear purpose maintenance which restores and conserves the historical and architectural features to the original form.
- c) Establish framework for carrying out research on maintenance of historical sites, public monuments and museums.

### **3.5 Maintenance of Sites and Grounds**

50. Buildings and associated infrastructure must be regularly maintained to sustain aesthetics, health, safety and environment.

#### **Issues**

51. Lack of standards, guidelines and stewardship on use, control and maintenance of sites and grounds for the protection of users, environment and the properties therein.

52. In-adequate legislation to govern and regulate the use of sites and grounds responsibly.

53. Un-planned maintenance activities for sites and grounds.

#### **Policy Statements**

54. The key players and the Government will;

- a) Formulate standards and guidelines to be used for the control, use and maintenance of sites and grounds.
- b) Review, codify and enact adequate legislation to regulate the use and maintenance of sites and grounds.
- c) Educate the public on the benefits of maintaining sites and grounds and enhance the existing capacity.
- d) Formulate and implement planned and preventive maintenance systems for sites and grounds.

### **3.6 Information Management Systems for Maintenance**

55. Information management systems for maintenance will facilitate collection, analysis, storage, retrieval and custodianship of data for guidance in making decisions. Maintenance work should conform to ICT standards.

#### **Issues**

56. Inadequate application of ICT in maintenance operations leading to records being manually documented and stored.

57. Inadequate ICT training and equipment for maintenance personnel.

58. Inadequate budgetary allocation for information management systems for maintenance works.

59. Lack of a comprehensive system for reporting and registering maintenance issues.

### **Policy statements**

60. To enhance the use of modern technology in maintenance operations that are commensurate to modern building design:

- a. Use of ICT in maintenance operations and records will be applied for ease of analysis, storage and retrieval.
- b. A comprehensive system of reporting and registering maintenance issues will be established and implemented.
- c. Comprehensive ICT training programme for maintenance personnel will be developed and implemented by government and stakeholders.
- d. Adequate budgetary allocation for establishment of an effective management information system for maintenance will be provided by owners and users of the built environment.

### **3.7 Education, Awareness and Training for Maintenance**

61. Maintenance practice has been given low priority leading to ineffective education and training. There is also little awareness and culture of building maintenance. Effective education and training for maintenance management embraces knowledge in technology and experience necessary to identify maintenance needs, specify the right remedies, an understanding of modern business management techniques, knowledge of property and contract law and an appreciation of sociology.

### **Issues**

62. Inadequate curriculum for training on maintenance to the different levels including artisans, technicians and professionals in the built environment.

63. Inadequate continuous capacity building to embrace emerging technologies and equipment.

64. Maintenance culture by the general public and awareness of the benefits of carrying out effective maintenance work is inadequate.

65. Lack of recognition of the building maintenance professional due to absence of legislation.

### **Policy statements**

66. For Effective education and training in maintenance management that creates awareness of benefits of maintenance the Government will;

- a) Encourage training institutions to include maintenance in their curriculum.
- b) Put in place a communication framework to inculcate and nurture maintenance culture.
- c) Enhance capacity building of maintenance staff continually and within a pre-determined framework.
- d) Establish sensitization programmes on importance of maintenance of buildings for owners and occupants.
- e) Formulate and enact legislation to govern and regulate building maintenance practices.



## CHAPTER FOUR

### SURVEY AND PERFORMANCE AUDIT OF MAINTENANCE WORKS

#### 4.1 Survey and Performance Audit

67. The general condition and performance of a building depends on its quality of maintenance. As a building grows old, used (or misused) and is exposed to the environment its condition is affected significantly. Therefore, it is advisable to monitor it periodically by taking a professional opinion on the status of the building. Survey and performance audit is a preliminary technical survey of a building to assess its general condition. It is usually initiated as the first step for repair. Survey and performance audit is done to determine maintenance requirements and reliability of services.

68. In Kenya, buildings are however neglected and end up being an eyesore and maintenance work is only done when the building is almost collapsing. This crucial process in the building industry is left out due to lack of appreciation of its importance on the one hand and also lack of finances and inadequate budgeting on the other hand. This is mainly because maintenance has not been considered an integral part of in the life of a building.

#### Issues

69. Negligence of maintenance over a long period of time has led to great deterioration of buildings and immediate surroundings. Some buildings are an eyesore and a health hazard.

70. There is inadequate budget that would sufficiently address and finance execution of building maintenance. This is due to the general apathy and lack of a maintenance culture in the country.

71. Lack of adequate historical data on maintenance works carried out in a building or estate. This complicates the issue of maintenance planning, feedback and budgeting. The availability of such data would enable the concerned professional to give feedback on the performance of the building to the design team.

72. Due to lack of established maintenance standards in the country, there are no guidelines on monitoring and evaluation of maintenance of buildings and their surroundings. Similarly, no performance audits can be carried out without set standards and compliance benchmarks.

73. The existing legal requirements to undertake building condition surveys and audit are scattered in different regulations and are not clear. As a result, maintenance is undertaken on ad-hoc basis (crisis management) after the occurrence of failure of a building component, facility/fitting, etc. At the same time there is very little deliberate execution of planned maintenance.

74. No special attention is paid to change of user to building spaces that may lead to overloading of existing structure or building elements. This may lead to structural failures, strain on existing services among others.

### **Policy statements**

75. In order to facilitate maintenance of buildings government, Institutions of higher learning, owners or users of buildings will;

- a) Launch a national and county public education / sensitization programme and campaign to enlighten and inculcate a maintenance culture to all citizens for sustainable economic development.
- b) Set aside a maintenance budget to cater for maintenance of all categories of buildings and their surroundings.
- c) Establish data banks on historical data and information systems for maintenance works by both building owners and approving authority with a view to determine life spans of various building materials, and their rate and frequency of failure under different conditions and climatic zones.
- d) Undertake Monitoring and Evaluation at pre-determined periods by qualified persons with a view to determining compliance with set Maintenance standards. The outcome of the Monitoring and Evaluation will be useful on lessons learnt and provide feedback.

- e) Cause a full condition surveys inclusive of structural/building services investigations to be carried out every five (5) years and seek renewal of the Certificate of Occupancy by the Approving Authority.
- f) Undertake maintenance planning (i.e. planned preventive maintenance, planned corrective maintenance, cyclic maintenance and routine maintenance) For structures where loads that were not designed for /have been introduced then either discontinue such use or reinforce structure accordingly.
- g) Ensure training of more maintenance personnel at all levels to oversee building maintenance in both the Public and Private Sectors.

#### **4.2 Tools for survey and performance audit**

76. Survey and performance audit forms an integral part in the planning and execution of building maintenance. To adequately undertake survey and performance audit the choice and application of various tools is fundamental. These tools are briefly outlined below. These include among others the following: *Building maintenance manuals, "As – Built" drawings, Planning, Risk assessment, Monitoring and Evaluation, Building Maintenance data, Checklists/Certification.* The user is critical in generating feedback information on the performance of the building. There shall be efforts to collect and incorporate feedback from the users.

#### **Issues**

- 77. Survey and Audit tools are not well developed nor routinely used and there is lack of review of the available ones.
- 78. Weak institutional arrangements and lack of capacity to enforce regulations and findings on performance audit.

#### **Policy Statements**

- 79. To enhance Survey and performance audit which are an integral part in the planning and execution of building maintenance:

- a. The Survey and Audit tools shall be developed, updated, popularized and widely shared.
- b. The Survey and Audit tools shall be regularly reviewed in the light of emerging trends and best practices.
- c. Appropriate institutional structures shall be put in place to ensure wide application and monitoring of harmonized survey and performance audit tools to meet laid down standards.

### **4.3 Quality Management Systems (QMS)**

80. Maintenance of buildings in the country is managed with little regard to principles of quality management systems. These principles entail; quality planning, quality audit controls, quality assurances and quality improvement. Through these Systems, maintenance of buildings is accurately and efficiently carried out to offer maximum benefits.

#### **Issues**

81. Inappropriate management structures and lack of proactive planning for maintenance works leading to poor maintenance workmanship.
82. Lack of established maintenance standards and quality assurances which lead to ineffective Internal Audit for maintenance works.
83. Inappropriate and inadequate information systems leading to poor documentation of building maintenance data

#### **Policy Statements**

84. Maintenance of buildings in the country is managed with little regard to principles of quality management systems. Efficient and accurate maintenance of buildings shall be undertaken through the following:
  - a. Establishing robust management structures that conform to Quality Management Systems (QMS) standards to achieve quality planning, control, assurance and improvement.

- b. Encouraging proactive planning to ensure that buildings are continually habitable throughout their economic life.
- c. Creating internal audit organs to carry out survey and performance audit by all concerned stakeholders. This is to ensure conformity to maintenance standards and procedures.
- d. Ensuring that all buildings have accurate and adequate documentation of information for ease of storage, retrieval, processing and reference. These documents could include: - Write ups, drawings, diagrams and pictures of components, notice of inspections, approved certification tools.

#### **4.4 Procurement of Maintenance Works**

85. The procurement sector in the country is characterized by long, cumbersome and bureaucratic procedures and processes. The current procurement practices are public sector biased and do not favor procurement of maintenance works in the private sector. Although there is no known private sector procurement practices for the formal private sector the system appear to be effective as compared to the public sector. The challenge appears to be mainly with private individuals who do not have Reliable Information for procuring maintenance services including qualified personnel and material. Reforming procurement in both public and private organizations will help achieve timely maintenance works.

#### **Issues**

- 86. Lengthy Procurement processes and lack of procurement plans in institutions hinders prioritization and procurement of maintenance works.
- 87. Procurement of maintenance works in most cases is handled by people who lack skills and experience on maintenance. Weak guidelines coupled with lack of goodwill to compel institutions or individuals to procure maintenance works where buildings are left in state of disrepair.

88. Low priority and uncoordinated funding for maintenance works in private and public sector curtail procurement of maintenance works. In some occasions, maintenance resources are re-allocated to other activities.

### **Policy statements**

89. The current procurement practices are public sector biased and do not favor procurement of maintenance works in the private sector. Reforming procurement in both public and private organizations will help achieve timely maintenance works through the following.

- a. Carrying out procurement of maintenance works, tools and materials in all buildings in a procedure that provides value, fairness and transparency so as to reduce inconsistency in building maintenance.
- b. Setting aside adequate funds for the purposes of maintenance by all building owners.
- c. Preparing and implementing adequately resourced annual maintenance plans by All building owners/institutions/government departments
- d. Engaging relevant building professionals in Planning, procurement and implementation of maintenance works.
- e. Establishment of a shared Maintenance Authority to oversee centralized coordination, planning, funding and implementation of maintenance works at all levels of governance.
- f. Where building are not maintained, the authority shall either: declare the property unsafe for occupation and compel people to vacate the premises; or procure maintenance works as required and recover their costs from the owners, or from the income proceeds of the building(s).

### **4.5 Integrated Disaster and Risk Management**

90. Where a system for maintenance is not properly organized, funded, staffed and carried out then all other disaster and risk management efforts could prove insufficient. A properly designed and maintained building would be resistant to

natural hazards, if some additional precautions are taken to secure the facility and allow it to function during and immediately after such events.

91. There are key steps to be considered in undertaking Disaster Risk Management and Reduction from the design, construction and use of the building on completion. These include; Risk identification/assessment, Prevention and mitigation, Preparedness and Recovery.

### **Issues**

92. Poor quality materials that cannot withstand disasters including fire, floods, wind and earthquakes.
93. Lack of exclusive policy on fire safety and disaster risk management to guide the management of built asset.
94. Ineffective devolved institutional structure on disaster risk management that abates strong public-private partnerships.
95. Lack of early warning mechanisms and inadequate preventive measures to address occurrence of disasters.
96. Lack of capacity and awareness on disaster management.
97. Risk factors in buildings have not been adequately considered, quantified, monitored and evaluated in terms of prevention, mitigation and cost for insurance purposes

### **Policy Statements**

98. In order to ensure adequate Disaster Risk Management and Reduction from the design, construction and use of the building on completion, the government will:
  - a. Promote hazard resistant building designs and construction in zones prone to disasters by enforcing building specifications and regulations as well as enhancing research in alternative, less flammable and environmentally friendly building materials.

- b. Formulate and implement in consultation with stakeholders a comprehensive Disaster Management and Fire Safety Policy.
- c. Establish a Fire and Disaster Management Authority decentralized to all levels with adequate facilitation including relevant disaster management devices, human capital and public private partnerships.
- d. Create an early warning information system that among others identifies symptoms of defects in the buildings structure and services and therein promote adherence to the principles of good building maintenance and building regulations.
- e. Promote disaster prevention through timely and continuous maintenance of services like storm drains and fire alarm systems.
- f. Build capacity on disaster management and risk assessment by developing and or enhancing appropriate curriculum and training. Explore the possibility of training Building surveyors, engineers, Quantity surveyors, planners and architects, Interior designers among others on the above.
- g. The National Disaster Management Agency shall establish a disaster response framework in respect of applicable disasters.
- h. There is need for flexible maintenance plan that shall remain valid even in changing circumstances. The maintenance management should institute planned maintenance that incorporates risk management programmes.
- i. An appropriate and convenient method for quantifying risk in maintenance should be applied. All the risk factors must be assessed and managed before a building design is fully implemented.



# CHAPTER FIVE

## RESOURCE MOBILIZATION

### 5.1 Sources of Funds

99. The implementation of this policy will require adequate resources, (finances, human, material and technological) and political goodwill at all levels. This policy has identified inadequate resources as a major issue in carrying out effective maintenance works.

#### Issues

100. Inadequate budgetary provisions for maintenance from the treasury of public building stock.
101. Unclear criterion for allocation of funds based on the building maintenance needs for both public and private sector.
102. Disaggregated allocation of maintenance funds to various ministries which do not make an impact.
103. The process of allocation of maintenance funds is bureaucratic, creates delays, and has excessive red tape.
104. There is no standard approach to the funding of maintenance works in the private sector.
105. There is no organized system for mobilizing building maintenance funding.

#### Policy statements

106. The implementation of this policy will require adequate resources, (finances, human, material and technological) and political goodwill at all levels. The government, owners, users of buildings and key player will:
  - a. Allocate funds based on assessed maintenance needs.
  - b. Establish a criterion for allocation of funds based on categorization of maintenance works.
  - c. Centralize systems of maintenance funds so as to be used where required most.
  - d. Review and streamline budgetary allocation process.

- e. Develop standard budgetary procedures for building maintenance in both public and private sectors.
- f. establish building maintenance funding system through:
  - i. National Building Maintenance Authority with funding pooled from the following sources;
    - Government budgetary allocation,
    - development partners,
    - UN agencies,
    - private sector
    - Individual contributions
  - ii. Financial institutions will be encouraged to establish systems of funding building maintenance works.
  - iii. Funding systems will be devolved to both the national and county level.

## **5.2 The Maintenance Personnel and Other Resources**

### **Issues**

107. Inadequate trained maintenance personnel and tools/equipment to execute maintenance operations.
108. Lack of proper adaptation to changing building technology and political good will at all levels.

### **Policy statements**

109. The government and training institutions will;
  - a) Assess training needs to establish the available maintenance management skills and to identify the existing gaps.
  - b) Strengthen training curriculum for the building maintenance personnel at the university level in collaborations with the training institutions.
  - c) Introduce maintenance courses at the tertiary level.
  - d) Create adequate capacity commensurate with maintenance workload.

- e) Establish inventory of maintenance tools and equipment and address areas of gaps.
- f) Harness and adopt appropriate new and emerging technologies.
- g) Proactively lobby and engage the political class on the importance of building maintenance.

### **5.3 Building Maintenance Infrastructure**

110. Effective maintenance requires infrastructural support such as stores, workshops, vehicles, offices, manuals and trained personnel. Absence of this leads to inefficient and ineffective response to maintenance activities.

#### **Issue**

- 111. Lack of comprehensive inventory and poor infrastructure and maintenance support services country wide.
- 112. Lack of collaboration between the national, county, urban areas and cities and the private sector.

#### **Policy statements**

113. Effective maintenance requires infrastructural support such as stores, workshops, vehicles, offices, manuals and trained personnel. To ensure efficient and effective response to maintenance activities, the government will:
- a. Undertake a comprehensive national assessment of infrastructural support services.
  - b. Establish and equip maintenance depots at National, County, Urban areas and cities.
  - c. Establish collaboration framework between National and County governments on the implementation of National Building Maintenance Infrastructure.
  - d. Promote collaboration between the governments and the Private Sector through Public Private Partnerships.

## **CHAPTER SIX**

### **LEGAL, INSTITUTIONAL AND IMPLEMENTATION FRAMEWORK**

#### **6.1 Legal Framework**

114. There is multiplicity of policies, legislation and regulations all dealing with building maintenance and giving overlapping and duplicating regulatory roles to many institutions. This has resulted into lack of accountability and waste of resources.

#### **Issues**

115. Inadequate, uncoordinated and fragmented policies domiciled in many institutions.

116. Scattered Acts of Parliament domiciled in many institutions, directly or indirectly mentioning building maintenance issues.

117. Lack of awareness and capacity by some institutions of the enforcement responsibilities bestowed on them by statutes.

118. Inadequate and outdated regulations governing building maintenance

#### **Policy Statements**

119. There is multiplicity of policies, legislation and regulations all dealing with building maintenance giving overlapping and duplicating regulatory roles to many institutions. To enhance accountability and proper use of resources, the government will:

- a) Formulate a National Building Maintenance Policy by codifying the many existing policies.
- b) Review, harmonize, coordinate and consolidate existing fragmented institutional policies.
- c) Review, harmonize and repeal/ enact legislation on building maintenance to ensure conformity with constitution.
- d) Establish a body corporate with powers to formulate standards, implement and regularly review policies, legislations and regulations.

e) Review and harmonize existing regulations to ensure conformity with emerging technologies and global trends.

120. The tenant is responsible for maintaining the interior including replacement of defective fittings and furnishings for residential buildings other than for normal wear and tear. In non-residential buildings, the tenant is responsible for the partitioning, maintenance of those partitions and making good disturbed surfaces when he/she demolishes those partitions.

121. The landlord is responsible for maintaining exterior and the structural elements. However, the following are exceptions to this rule;

a) In case of one tenant, he/she is responsible for the maintenance of sites and grounds,

b) In case of multiple tenancies, the landlord carries out the maintenance works of sites, grounds and common areas and recovers the cost from the tenants through service charge or rent.

## **Issues**

122. Inadequate and obsolete Statutes and Regulations dealing with landlord and tenant relationship leading to lack of clarity on where the responsibility lie. The current Laws and Regulations also do not explicitly differentiate the roles, duties and responsibilities of landlords and tenants in single or multiple tenancies.

123. Different bodies are mandated to adjudicate landlords and tenants issues leading to conflicts and confusion.

124. Some Acts are more protective than facilitative such as; Distress for Rent Act (Cap 293), Rent Restriction Act (Cap 296) and the Landlord and Tenant Act (Hotels, Shops and Catering Establishments) (Cap 301).

125. The Acts are silent on the time scale for inspection of sanitation, building fabric, services and repair works.

## **Policy Statements**

126. The tenant is responsible for maintaining the interior including replacement of defective fittings and furnishings for residential buildings other than for normal wear and tear. The landlord on his part is responsible for maintaining exterior and the structural elements. To effectively coordinate responsibilities of tenants and landlords, the following will be put in place:

- a) Reviewing, codifying and repealing the existing Statutes and Regulations.
- b) Establishing a clear institutional framework to deal with landlord/tenant issues.
- c) Reviewing and integrating relevant Acts to make them facilitative
- d) Clearly defining the Turn Around Time for carrying out maintenance works.
- e) Defining maintenance roles of both parties with clear Dispute Resolution mechanisms.

## **6.2 Institutional Framework**

127. In both the public and private sector there is no structured administrative arrangement to address maintenance needs. As a result the quality of the building stock is below minimum acceptable standards in terms of performance, aesthetics, comfort, convenience, health and safety.

### **Issues**

128. Existing institutions are weak, un-coordinated and not aware of their responsibilities and obligations which have led to non-compliance.

129. Roles of private and public sectors have not been clearly defined

130. Roles of professionals are not well articulated, recognized and appreciated.

### **Policy Statements**

131. To address lack of structured administrative arrangement in public and private sectors, the government will:

- a. Establish a Building Maintenance component in the National Building Authority (NBA) whose functions will be;
- Advisory to National, County, Urban and City governments on Policy, Legislation and Regulations on Building Maintenance matters.
  - Oversight authority over all building maintenance matters.
  - Establish institutional framework for actualizing the Policy, Legislations and Regulations,
  - Operationalize the authority at National, County, Urban and Cities.
- b. Create awareness on the benefits of good maintenance practice to institutions charged with maintenance.
- c. Clarify and amplify the roles of both the public and private sectors to ensure high standards of maintenance.
- d. Enact appropriate legislation to govern and regulate maintenance practice and the professionals, technicians, artisans.

### **6.3 Implementation Framework**

132. Built environment infrastructure has been developed without follow up on the state of maintenance. This has impacted negatively on safety of buildings and users, environment, property value, social and financial returns. The current state is due to lack of Maintenance Policy, inadequate Institutional Framework, scattered Legislation and Regulations amongst others. Conducive legislation and institutional framework is necessary for the implementation of this Policy.

#### **Issues**

133. Lack of institution specifically charged with the mandate of implementing building maintenance leading to apathy and lack of action.
134. Inadequate resources human, financial and technological.

#### **Policy statements**

135. Built environment infrastructure has been developed without follow up on the state of maintenance. To ensure that conducive legislative and institutional framework is put in place, the government will:
- a) Facilitate capacity building for maintenance management professionals.

- b) Develop guidelines and mechanisms for creation of a sinking fund to finance maintenance operations.
- c) Develop guidelines to assimilate emerging technological developments.

#### **6.4 Design and maintenance management**

136. Maintenance and management of building commences upon the issuance of certificate of practical completion. This marks the start of the life cycle of real estate asset therein generating critical information and providing feedback to the design team. It is therefore imperative to recognize the central roles played by maintenance teams during the life cycle of the building.

#### **Issues**

137. Lack of appreciation and recognition of maintenance operations in the design and life cycle stages of a building.

138. Unstructured, uncoordinated and weak maintenance management practices.

#### **Policy Statements**

139. The government will put in place the following measures in recognition of the central role played by maintenance teams during the life cycle of the building:

- a) Mount and sustain an awareness campaign and rebranding of building maintenance practice.
- b) Sensitize the public on maintenance culture.
- c) Harmonize and fortify building maintenance management practices.
- d) Develop and review legislation to govern and regulate building maintenance practice.



## CHAPTER SEVEN

### MONITORING AND EVALUATION FRAMEWORK

#### 7.1 Monitoring and Evaluation

141. Monitoring and evaluation framework in a management function introduces and inculcates accountability, clarity of roles and responsibilities, facilitates comparison of alternatives and informs the organisation for effective and efficient implementation of programmes, plans and activities.
142. Establishment of a decentralised and integrated M&E for building maintenance would ensure that programmes, plans and activities are regularly reviewed, monitored and evaluated for timely and efficiently implementation according to the set standards. It will also ensure that appropriate advise and feedback is available to the design team contractors, other professionals, users and owners. In addition, it will ensure that scarce maintenance resources are prudently allocated and used to meet the stated objectives.
143. Decentralised and integrated M&E framework in the building maintenance operations are lacking putting accountability and clarity of roles into confusion.

#### Issues

144. Inadequate Monitoring and Evaluation process and capacity in Building Maintenance.
145. Lack of Monitoring and Evaluation of building works after issuance of completion certificate to inform design.
146. Inadequate and ineffective structures, tools and standards for monitoring and evaluation of maintenance works coupled with Limited participation and awareness by stakeholders.
147. Monitoring and evaluation reports are hardly accessible and available to key stakeholders for review and use.

## **Policy statements**

148. Government, training institutions and key stakeholders will:
- a. Develop an effective Monitoring and Evaluation framework and structures for maintenance works.
  - b. Establish and develop a monitoring and evaluation capacity to carry out activities and functions related to building maintenance.
  - c. Create awareness through training and sensitization meetings for building maintenance staff and stakeholders .
  - d. Establish a Monitoring and Evaluation resource centre.
  - e. Establish Monitoring and Evaluation feedback system on maintainability to the design teams.
  - f. Develop Monitoring and Evaluation standards for building maintenance.
  - g. Source, adapt and harmonize Monitoring and Evaluation tools.
  - h. Avail Monitoring and Evaluation reports for review and use.

## **7.2 Data banks for feedback systems and management of buildings**

149. Currently there is no reliable, comprehensive and systematic data on existing buildings and related infrastructure. Most of the available data is inaccurate, scattered and stored in manual form by various institutions. Retrieval of this data is difficult and costly.

### **Issues**

150. Lack of a National Policy on building Maintenance data.
151. Inadequate and un-updated information on existing built assets. The available information is scattered, inaccurate, unsafely stored and costly to update and retrieve.
152. Lack of uniformity in registration and classification as well as approved "as built" drawings on existing developments.
153. Lack of periodic surveys for specific building categories.

## Policy Statements

154. There is no reliable, comprehensive and systematic data on existing buildings and related infrastructure. To ensure accurate retrieval of data stored by various institutions, the government will:

- a. Develop, implement and review a National Policy on Building Maintenance data,
- b. Prepare and update information on existing building assets,
- c. Develop a uniform registration and coding system for all buildings,
- d. Ensure "as built" drawings together with appropriate design information are availed.
- e. Establish a centralized depository information system.
- f. Establish a five year periodic inspection system for all categories of buildings.

## CHAPTER EIGHT

### CONCLUSION

155. Buildings are very important to mankind due to their investment and social Values. Maintenance of these buildings is critical for their preservation and ensuring that they continue to serve the intended purpose, yielding optimum returns, meeting health and safety standards and providing comfort to the occupiers/users.
156. The current situation is that of the sorry state of dilapidated and unhealthy buildings in a decaying environment that depresses the quality of life contributing to poor health, low productivity, anti-social behaviour and low return on investment.
157. The main contributors to the dilapidation and decaying environment are; lack of Building Maintenance Policy, existence of outdated multiple legislations and regulations, lack of a single institution to enforce and police compliance, quantifiable and measurable standards, legislative framework, inadequate documented inventory of building stock, resources both financial, human and tools, carrying out maintenance works in ad hoc bases with inadequate records being kept.
158. The records kept are maintained manually making their analysis, storage and retrieval for feedback difficult, time consuming and costly. In realization of the above sorry state of the built environment and the degradation of physical, natural, biological, chemical and manmade environments, the government of Kenya proposed to correct the situation through the Kenya Constitution 2010 particularly articles 42, 43 and 22 vision 2030 and other policy documents such as National Housing Policy 2004.
159. The anticipated policy is a roadmap to guide appropriate maintenance of building programmes, plans and activities, facilitating enactment of

necessary laws and formulation of regulations for the implementation of building maintenance.

160. Building maintenance may be defined as work undertaken in order to keep or restore every part of a building and surroundings to a currently acceptable standard. This definition is encompassing in that it allows for inspection, restoration, improvement, alterations, rehabilitation, refurbishment and adaptation to suite the ever changing standards.
161. The policy shall be delivered from the following identified issues namely: problems and challenges, goals and objectives, management strategies, plans, standards and guidelines, priorities, inventory, site and grounds information management systems, education, awareness creation and training, survey and performance audit, tools for survey, quality management systems procurement, integrated disaster and risk management resource mobilization and institutional and implementation framework, monitoring and evaluation for feedback and advise to other professionals, owners, users and design team. The policy statements are intended to address each of the above issues identifying the government and other stakeholders' responsibilities.
162. The policy notes that implementation framework must be shared at all levels of government and be linked to a National Building Authority while maintaining some degree of autonomy. It concludes that the policy must be anchored in law for it to be effective and achieve the intended purpose.

## ACRONYMS AND ABBREVIATIONS

AIE	Authority to incur Expenditure
BMA	Building Maintenance Authority
ICT	Information Communication Technology
KEBS	Kenya Bureau of Standards
M&E	Monitoring and Evaluation
QMS	Quality management Systems
RAC	Revenue Allocation Commission

## DEFINITIONS

**Backlog maintenance:** This is maintenance that is necessary to prevent the deterioration of an asset or its function but which has not been carried out.

**Building Maintenance:** Is work undertaken in order to keep or restore every part of the building and associated infrastructure, to an accurately acceptable standard. It includes inspection, testing, servicing, classification to serviceability, repair, refurbishment, re-building, rehabilitation and reclamation.

**Building Maintenance manual:** This is a compilation of specific maintenance actions and guidelines for use in maintenance of a buildings building, services and its surrounding. Refer to maintenance manual

**Building surveyor:** Is a professional person qualified by training and experience and is a full member of the Institution of Surveyors of Kenya, be registered and have appropriate professional indemnity cover.

**Building:** Refers to complex buildings, structures, roads and associated equipment, such as hospital, school, shopping center or the like, which represents a single management unit for financial, operational, maintenance or other purposes.

**Building life cycle:** This is the total cost of ownership, including acquisition, operation and maintenance.

**Contingency maintenance:** This can be defined as maintenance actions taken to correct failure in a planned manner.

**Corrective maintenance/ Reactive maintenance:** This can be defined as maintenance that is required to bring an item back to working order when it has failed or worn out. It involves all unscheduled actions performed as a result of system or product failure. Basically, it is an attempt to restore a system or product failure to a specified condition

**Emergency maintenance:** Is carried out when situations requiring immediate attention because of failure in or around building that could cause significant damage to the building, building systems, and equipment. These situations could create unmanageable or unsafe conditions that would expose personnel to a significant possibility of harm.

**Evaluation:** Describes an objective analysis of current or completed policies, programmes or projects, to determine their relevance, effectiveness, efficiency, outcomes and sustainability, based on reliable and credible information.

**Facility life cycle:** The life cycle as the stages of a project leading to a completed facility (project conception, project delivery, design, construction documentation, procurement, construction and facility management), its use and management until its eventual modification, deconstruction, demolition or adaptive reuse.

**Facility Management:** A systematic approach to the procurement, maintenance, operation, rehabilitation and disposal of one or more assets which integrates the utilization of the facilities and their performance with the business requirement of the facilities, owners or users.

**Inventory of buildings:** refers to classifications of the buildings in terms of type, occupancy, location and number.

**Maintenance manual:** Is a compilation of guidelines for use in maintenance of building and associated infrastructure.

**Maintenance plan:** Is a document that is used when developing the tasks needed for proper maintenance of facilities.

**Maintenance Standard:** Is a document(s) that contains technical specifications or other precise criteria designed to be used consistently as a rule, guideline, or definition.

**Maintenance:** Is the combination of all technical and administrative actions including supervision, intended to retain an item or restore it to a state in which it can perform a required task.

**Monitoring:** This is a continuous process of collecting and analyzing data to compare how a policy, programme, or project is being implemented against the targets.

**Predictive Maintenance:** Predictive maintenance can be defined as follows: Measurements that detect the onset of system degradation (lower functional state), thereby allowing causal stressors to be eliminated or controlled prior to any significant deterioration in the component physical state. Results indicate current and future functional capability.

**Preventive maintenance:** This is maintenance which is carried out to prevent an item failing or wearing out by providing systematic inspection, detection and prevention of incipient failure. Preventive maintenance is usually programmed. This includes inspections, adjustments, regular service and planned shutdowns



**Quality Management Systems:** These are tools that are applied to ensure that facilities are maintained at the appropriate condition and in an efficient operation to support service delivery in accordance with the strategy and in line with legislative requirements and best practices within the built environment.

**Scheduled maintenance:** This utilizes a previously developed maintenance schedule for each machine tool.

**Service output costs:** The expenses incurred in accomplishing a desired result from a project or contract.

**Statutory maintenance:** Is carried when plant such as lifts, boilers, fire systems, fume hoods and air conditioning systems are serviced, tested and maintained in accordance with legislative or manufacturers' requirements.

**Substructure:** Is defined as the building components below the damp proof course such as foundations, sub-walling and infill.

**Superstructure:** Is defined as the building components above the foundation such as the structural framing and the architectural coverings for the floors, walls, ceilings, and roofs.

**Survey:** This is an examination of the condition of a facility usually done to ascertain the condition of the structure for the purpose of maintenance. The term survey in the context of maintenance policy can be used interchangeably with inspection.

