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Interactive Step-by-Step Guide to Mainstreaming Climate Adaptation & DRR in African Cities

Menu of Adaptation Actions

Amongst the most globally recognised systems for clustering climate change adaptation options is the IPCC AR5 categorisation system, which can be accessed here. It identifies three main categories: 1. structural and physical options 2. social options and 3. institutional options which are further divided into sub-categories. This document briefly outlines adaptation actions included in the IPCC AR5 system which are broadly deemed most feasible and effective for local governments in African coastal cities.

Adaptation planning and action by local governments requires reliable and robust data insights on local risks and vulnerabilities to accurately identify tailored adaptation options for reducing risk and enhancing climate resilience today and in the future.

Clusters of climate adaptation options:

1. Structuring and Physical Options
    a. Engineering and Built Environment
        i. Sea walls and coastal protection structures (e.g. to protect against coastal flooding and erosion)
        ii. Improved drainage/ storm and waste water management adaptation (e.g. to reduce urban flooding during heavy rainfall)
        iii. Transport and road infrastructure adaptation (e.g. to withstand heat stress and flooding)

iv. Climate-resilient WASH facilities (e.g. to reduce water-born diseases linked with floods)
v. Building codes (e.g. to reduce building collapse risk during cyclones)

b. Technological Options
   i. Early warning systems (EWS) (e.g. to enable proactive community-level responses to imminent climate hazards)
   ii. Second-generation biofuels (e.g. to reduce dependence on climate-sensitive fuel supply chains)
   iii. New crop and animal varieties (e.g. drought-tolerant crops and heat-resistant livestock)
   iv. Efficient irrigation systems (e.g. to cope with water scarcity during prolonged droughts)

c. Ecosystem-Based Adaptation (EbA)
   i. Ecological restoration, including wetland and floodplain conservation and restoration (e.g. to absorb floodwaters and reduce flood risk)
   ii. Increasing biological diversity (e.g. to build ecosystem resilience against shifting climatic conditions)
   iii. Afforestation and reforestation (e.g. to reduce soil erosion and landslide risks on degraded slopes)
   iv. Conservation and replanting mangrove forests (e.g. to reduce the intensity of coastal storm surges)
   v. Ecological corridors (e.g. to protect biodiversity and strengthen water retention)
   vi. Community-based natural resource management (e.g. to reduce overexploitation and enhance resilience to droughts)

d. Service Options
   i. Social safety nets and social protection (e.g. to support vulnerable households after climate shocks)
   ii. Food banks and distribution of food surplus (e.g. to buffer against food insecurity during drought-induced crop failures)
   iii. Municipal services including water and sanitation (e.g. to ensure safe water during flood contamination events)

iv. Essential public health services, including reproductive health services and enhanced emergency medical services (e.g. to respond to disease outbreaks following floods and heatwaves)

2. Social Options
    a. Educational
        i. Awareness raising and integration into education (e.g. to improve hazard preparedness)
        ii. Gender equity in education (e.g. to enhance adaptive capacity of women facing climate-related livelihood risks)
        iii. Extension services (e.g. to help farmers adopt drought- and flood-resilient practices)
        iv. Sharing and integrating local and traditional knowledge into adaptation planning and disaster risk reduction (e.g. to apply indigenous drought coping mechanisms)
        v. Participatory action research and social learning (e.g. to co-develop solutions for recurrent climate hazards such as flooding)
        vi. Knowledge sharing and learning platforms (e.g. to exchange practices for climate-resilient agriculture)
        vii. Communication through media (e.g. to broadcast warnings ahead of extreme weather events)
    b. Informational
        i. Hazard and vulnerability mapping (e.g. to identify flood-prone or heat-vulnerable neighborhoods)
        ii. Early warning and response systems, including health early warning systems (e.g. to reduce heat-related mortality during heatwaves)
        iii. Systematic monitoring and remote sensing (e.g. to track drought onset and progression)
        iv. Climate services including forecasts (e.g. to anticipate seasonal rainfall variability which could result in flooding)
        v. Downscaling climate scenarios (e.g. to guide local planning against sea-level rise)
        vi. Longitudinal data sets (e.g. to assess long-term health impacts of heat stress)

vii. Integrating indigenous climate observations (e.g. to strengthen climate hazard predictions)
viii. Community-based adaptation plans, including community-driven upgrading of informal settlements (e.g. to reduce flood exposure in low-lying urban areas)
ix. Participatory scenario development (e.g. to prepare flood evacuation plans or long-term response to sea-level rise)

c. Behavioral
   i. Household preparation and evacuation planning (e.g. to reduce cyclone and flood injuries and casualties)
   ii. Retreat and migration (e.g. to move away from areas threatened by sea-level rise or recurrent flooding)
   iii. Sustainable water management (e.g. rainwater harvesting, water conservation, and less water-intensive agriculture to cope with droughts)
   iv. Livelihood diversification (e.g. to reduce dependence on climate-sensitive agriculture during droughts)
   v. Changing livestock, agriculture and aquaculture practices (e.g. shifting to drought- and heat-tolerant practices)
   vi. Reliance on social networks (e.g. to strengthen support during post-disaster recovery)

3. Institutional Options
   a. Economic
      i. Financial incentives including taxes and subsidies (e.g. to promote investments in flood-resilient infrastructure)
      ii. Insurance, including index-based weather insurance schemes (e.g. to buffer farmers against drought-related crop losses)
      iii. Catastrophe bonds (e.g. to provide rapid funding after cyclones)
      iv. Revolving funds (e.g. to support small businesses after climate-related disruptions)
      v. Payment for ecosystem services (e.g. to incentivise watershed conservation reducing drought risk)
      vi. Savings groups (e.g. to increase community and household resilience to shocks like floods or heatwaves)

vii. Disaster contingency funds (e.g. to ensure rapid response to extreme weather disasters)
viii. Microfinance (e.g. to help vulnerable groups recover from flood or drought losses)
ix. Cash transfers (e.g. to support households facing food insecurity during droughts)

b. Laws and regulations
   i. Land zoning laws and building standards (e.g. to prevent housing in floodplains and landslide-prone slopes)
   ii. Water regulations and agreements (e.g. to manage shared water resources during droughts)
   iii. Laws to support disaster risk reduction (e.g. to enforce cyclone evacuation plans and shelter development)
   iv. Defining property rights and land tenure security (e.g. to incentivise long-term climate-resilient infrastructural investments)
   v. Terrestrial and marine protected areas (e.g. to safeguard ecosystems which buffer against climate shocks)
   vi. Fishing quotas (e.g. to prevent overfishing and ensure resilience to warming oceans)

c. Government policies and programs
   i. Local and city adaptation plans which mainstream climate change (e.g. to integrate flood resilience into urban planning)
   ii. Urban upgrading programmes (e.g. to strengthen infrastructure in informal settlements vulnerable to floods)
   iii. Municipal water management programs (e.g. to cope with water shortages during droughts)
   iv. Disaster planning and preparedness (e.g. to improve readiness for climate hazards such as cyclones and floods)
   v. Sector plans (e.g. to manage water scarcity in agriculture)
   vi. Integrated coastal zone management (e.g. to address sea-level rise and saltwater intrusion)
   vii. Adaptive management (e.g. to adjust strategies as climate extremes intensify)

viii. Ecosystem-based and sustainable forest management (e.g. to reduce wildfire and landslide risks)

ix. Fisheries management (e.g. to adapt to declining fish stocks due to warming seas)

x. Community-based adaptation (e.g. to strengthen collective resilience to local flooding)

For further information on key adaptation concepts and adaptation, as well as adaptation assessments, measuring adaptation, and addressing maladaptation, the following resources can be consulted:

- 2014: Adaptation needs and options (from Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change) *(accessible through this link)*
- Climate Change 2022: Impacts, Adaptation and Vulnerability (from Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change) *(accessible through this link)*