

PREVENTION OF ENVIRONMENTAL FLOODING THROUGH WASTE MANAGEMENT

ASSP NIGERIA CHAPTER KNOWLEDGE SHARING
SERIES

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OVERVIEW



OVERVIEW

River flooding – occurs along rivers.

Flood is an overflow of water onto dry land from water bodies such as lakes, rivers, or oceans. This leads to the escape of water from it's usual boundaries.

Coastal flooding – occurs as a result of winds generated from tropical storms and hurricanes that drive ocean water inland.

Flash flooding – occurs as a result of sudden heavy rainfall.

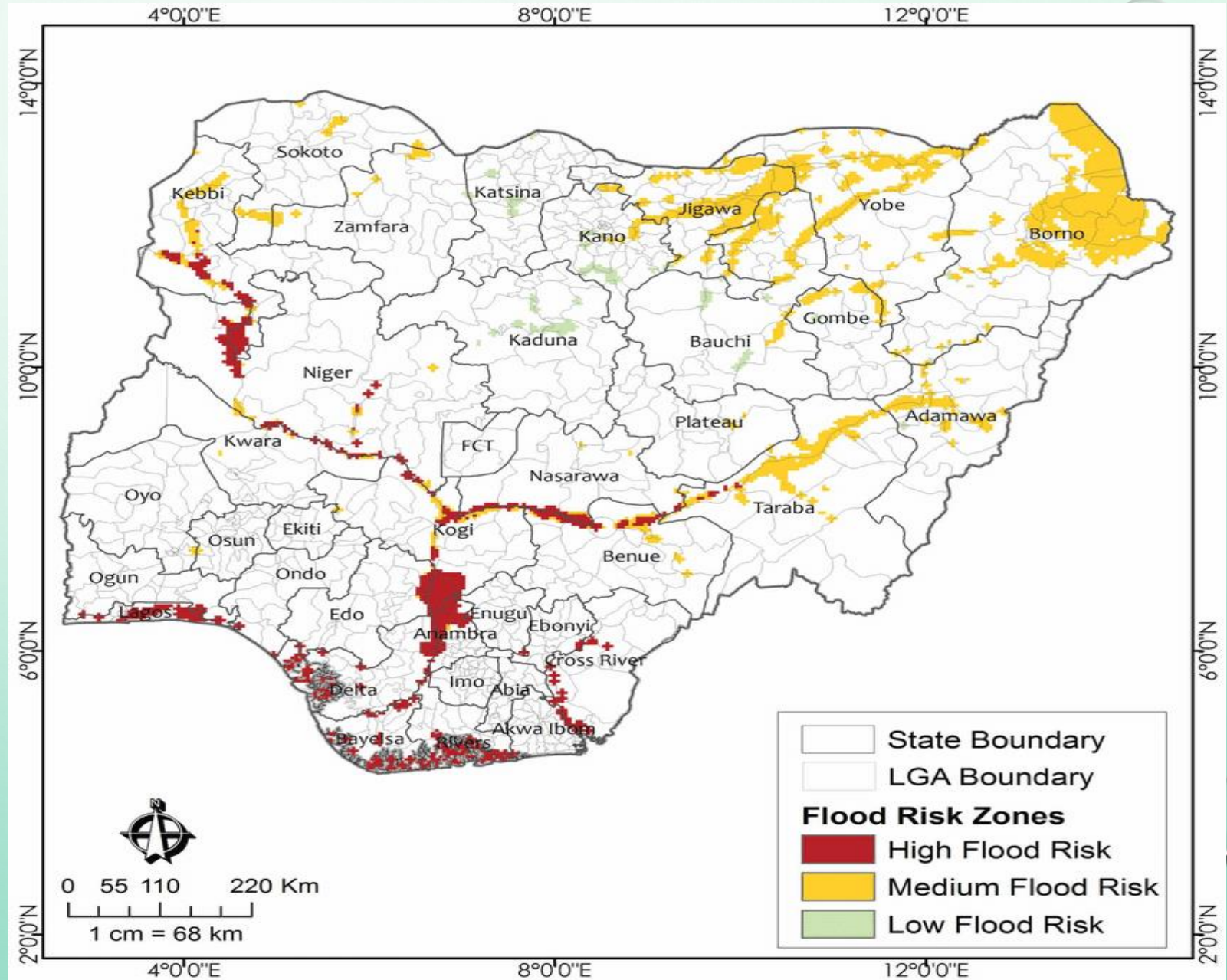
Urban flooding – occurs when the drainage system in a city or town fails to absorb the water from heavy rain.

OUTLINE

- Statistics of Flooding in Nigeria
- What causes flooding?
- The role of waste in flooding
- Waste types and categories
- Municipal waste management
- Technology and waste management
- Benefits of proper waste management
- Community engagement
- Government policies and regulations
- Solution to environmental flooding and poor waste management
- Conclusion

STATISTICS OF FLOODING IN NIGERIA

- Flood-risk map of Nigeria showing vulnerable States and LGAs Chukwudi et al. May 2020
(https://www.researchgate.net/figure/Flood-risk-map-of-Nigeria-showing-vulnerable-States-and-LGAs_fig10_341279305)



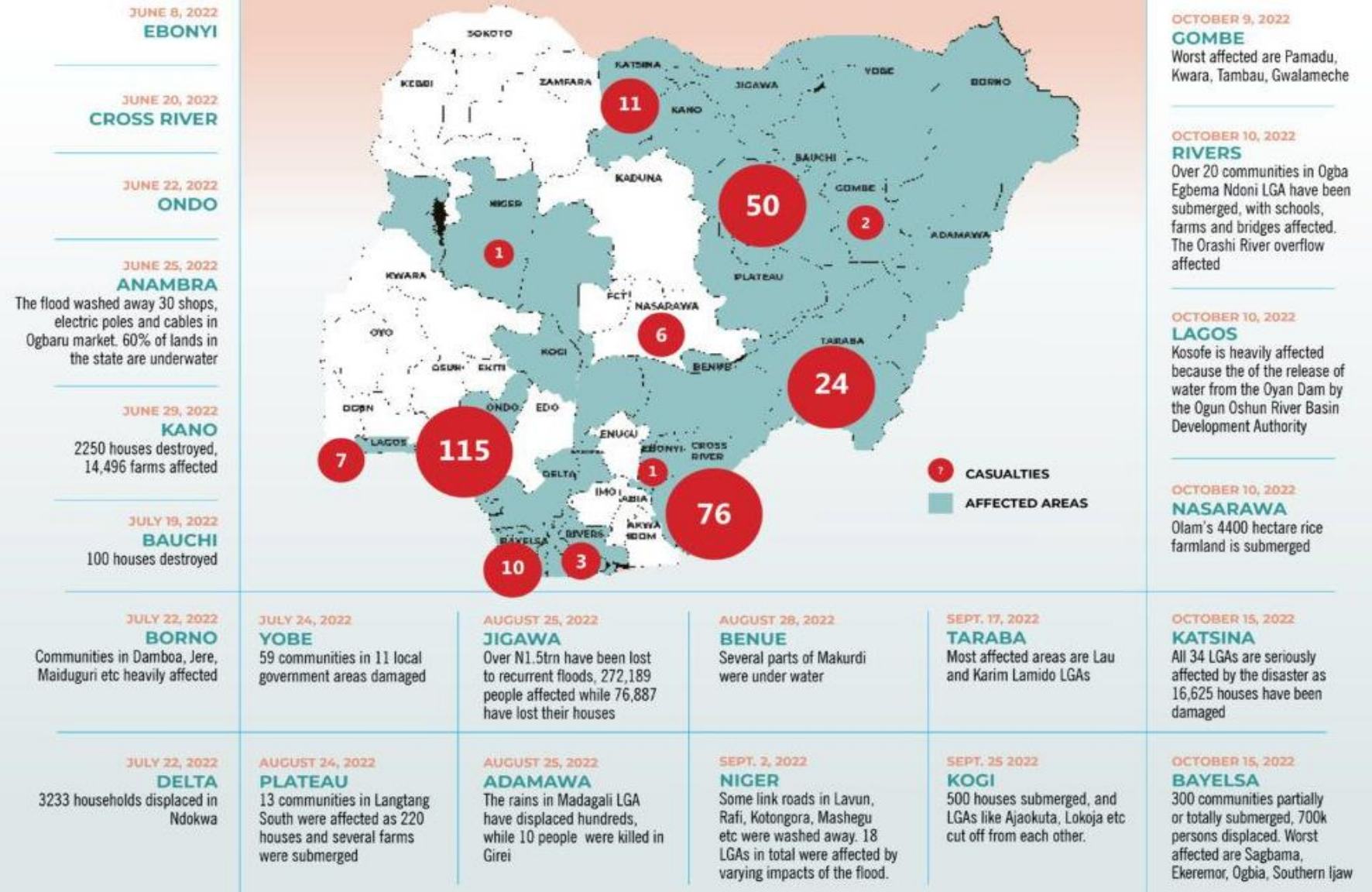
STATISTICS OF FLOODING IN NIGERIA



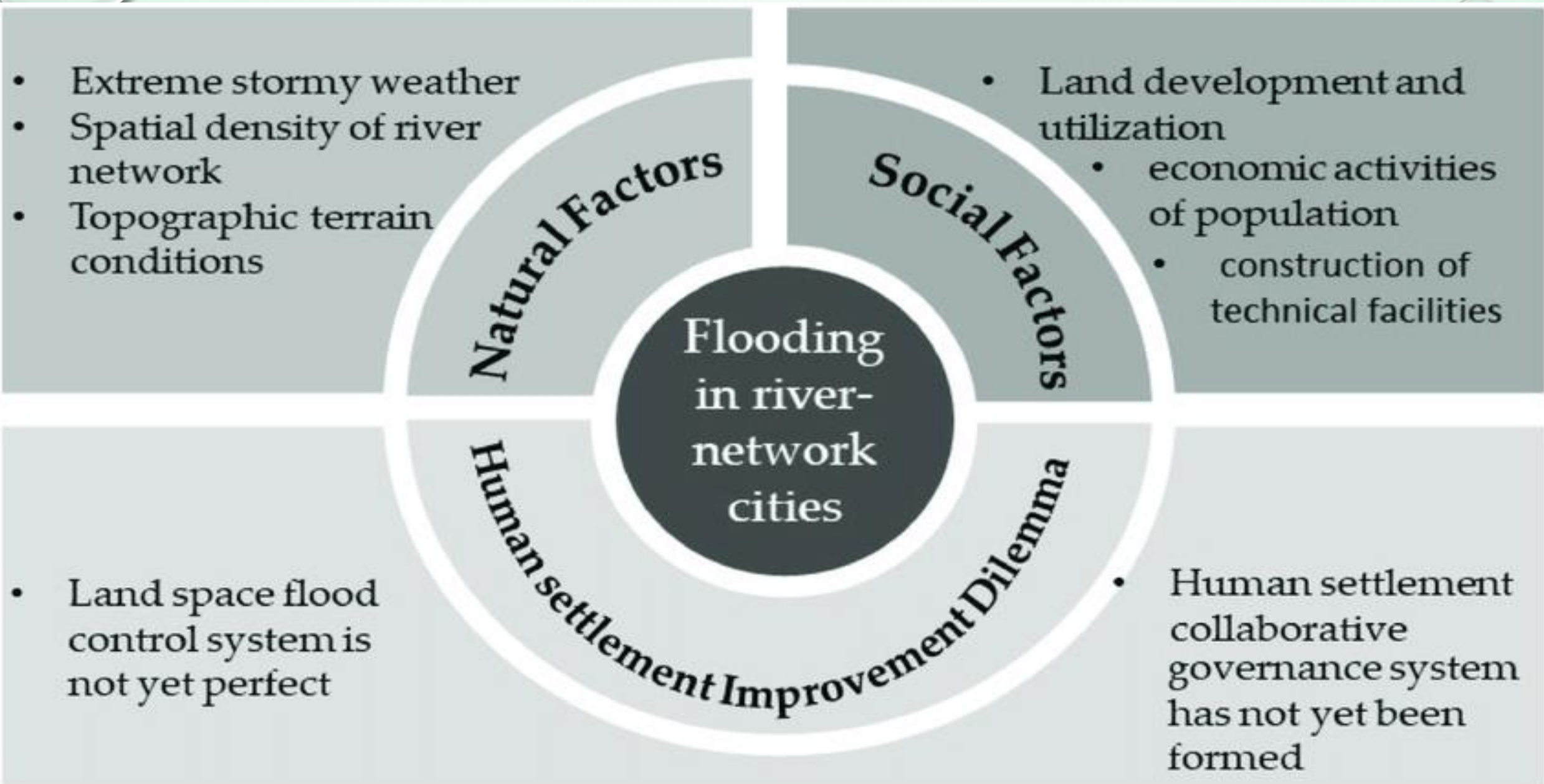
➤ Reliefweb

<https://reliefweb.int/report/nigeria/selected-flood-incidents-nigeria-june-october-2022>

SELECTED FLOOD INCIDENTS IN NIGERIA (JUNE - OCTOBER 2022)

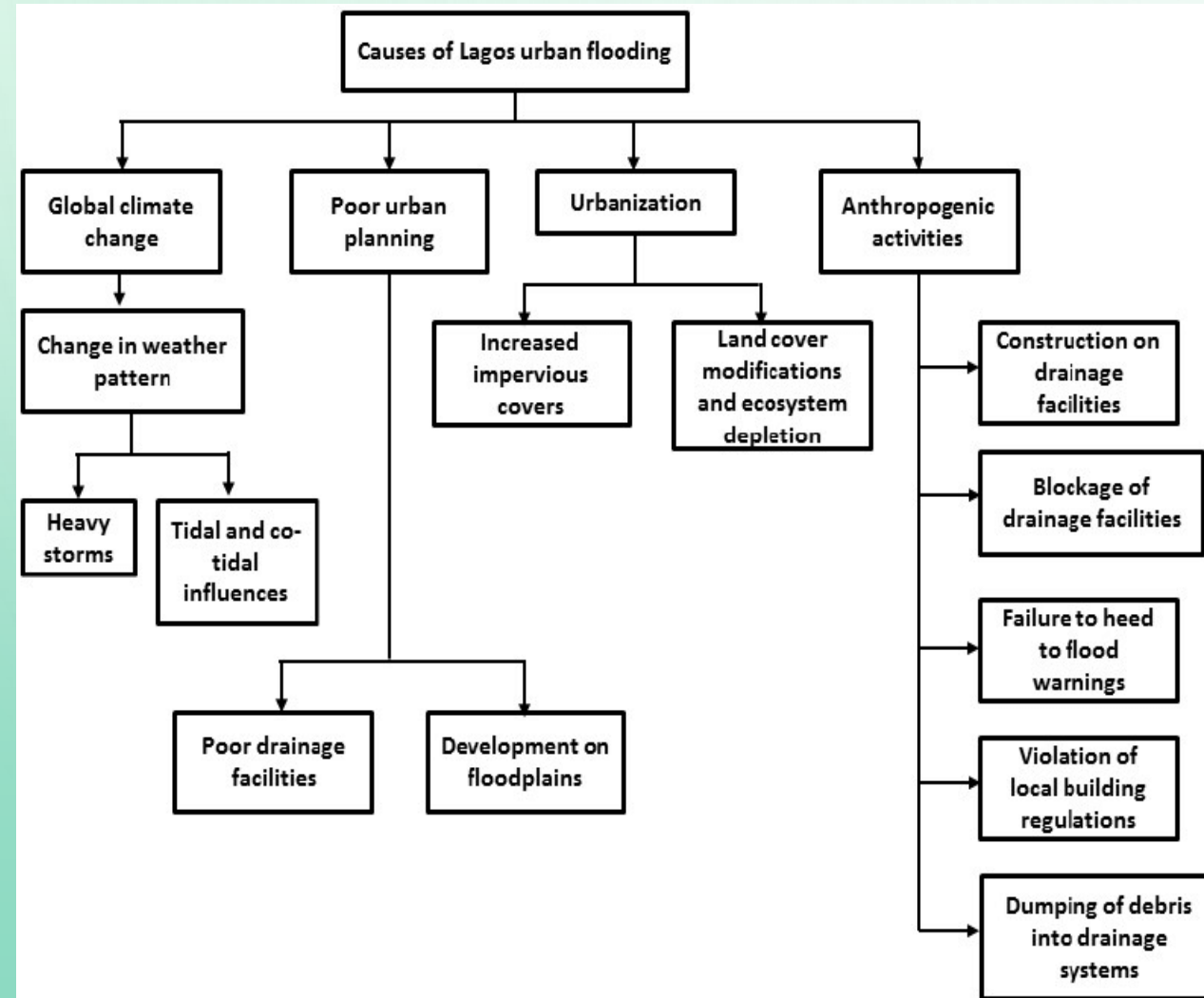


WHAT CAUSES FLOODING?



WHAT CAUSES FLOODING?

- Main causes of urban flooding in the Lagos area of Nigeria *Ugonna Nkwunonu et al.* February 2016



(a)



(b)



(c)



(d)

THE ROLE OF WASTE IN FLOODING

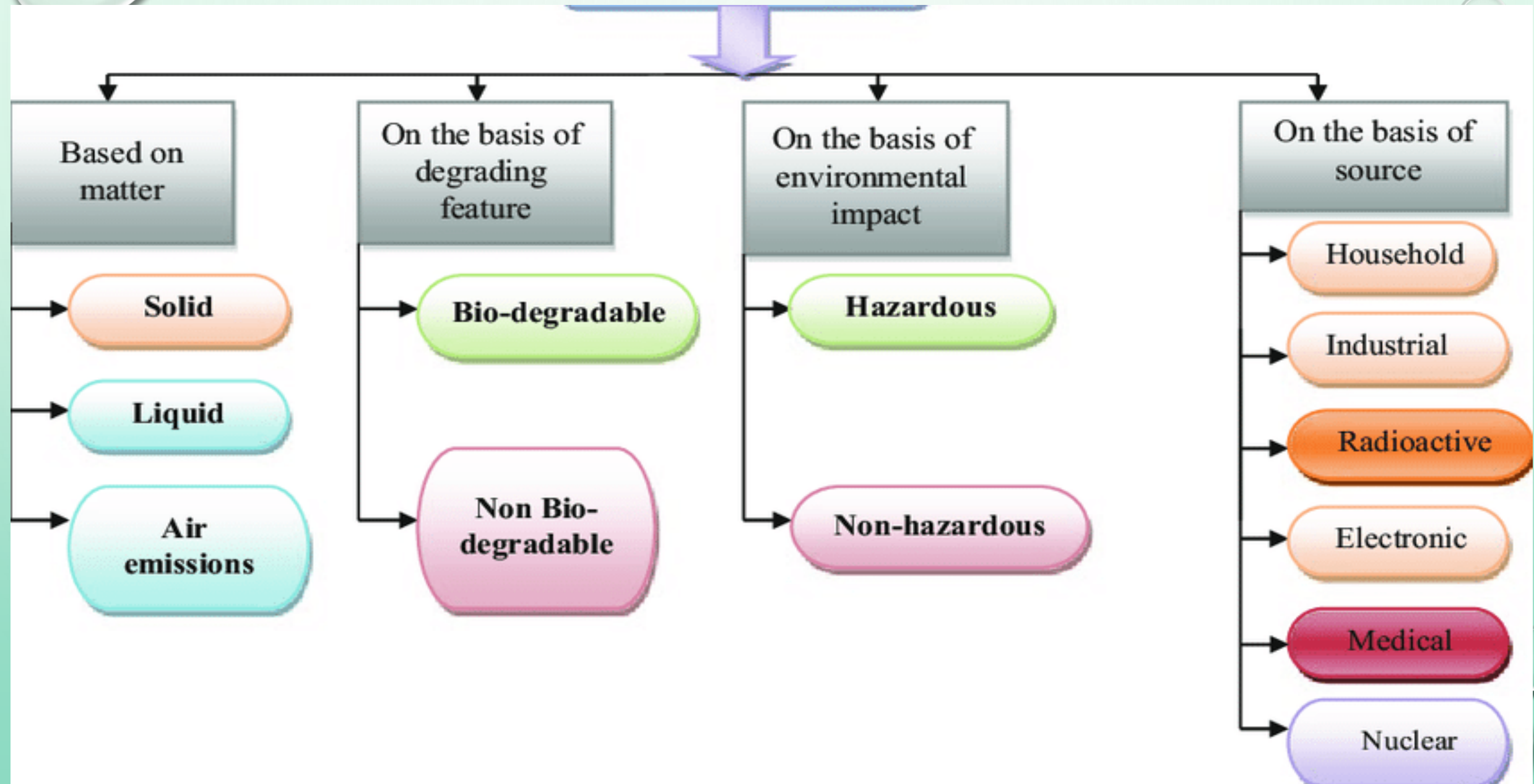
➤ Waste is any unwanted or unusable material.

Waste contributes to flooding in the following ways;

- blockage of the drainages systems.
- Influence the flood of runoff in the canal system.
- blockage of sewage systems.
- open waste dumps in low lands / wetlands reduces the natural flood retention capabilities.

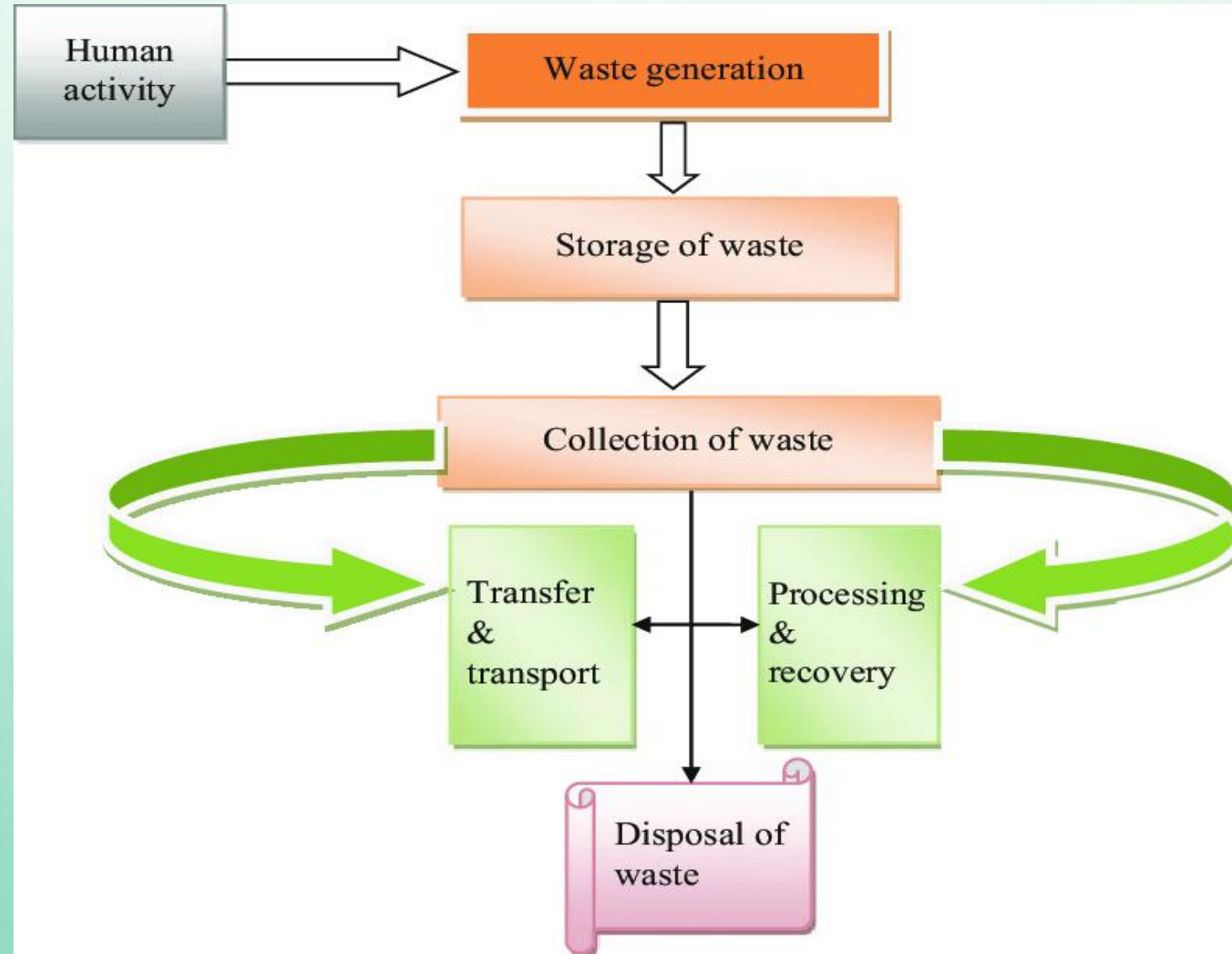


WASTE TYPES AND CATEGORIES



MUNICIPAL WASTE MANAGEMENT

➤ Sustainable Municipal Waste Management



MUNICIPAL WASTE MANAGEMENT

➤ Recycling

Plastic Products Recycling Process



➤ Composting

COMPOSTING

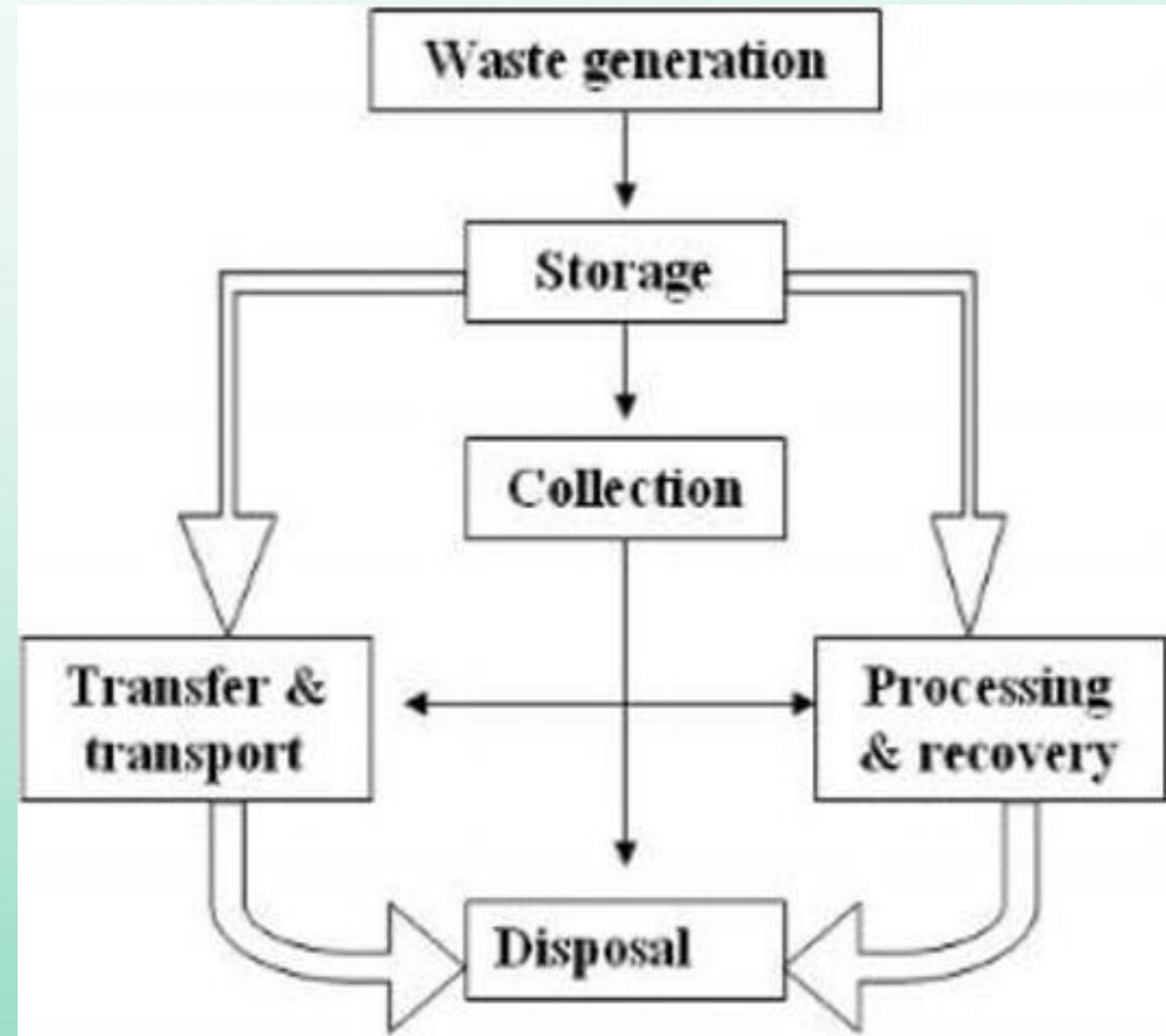


MUNICIPAL WASTE MANAGEMENT

➤ Hazardous waste management

These include;

- Radioactive substances
- Bio-medical waste
- Chemicals
- Flammable waste



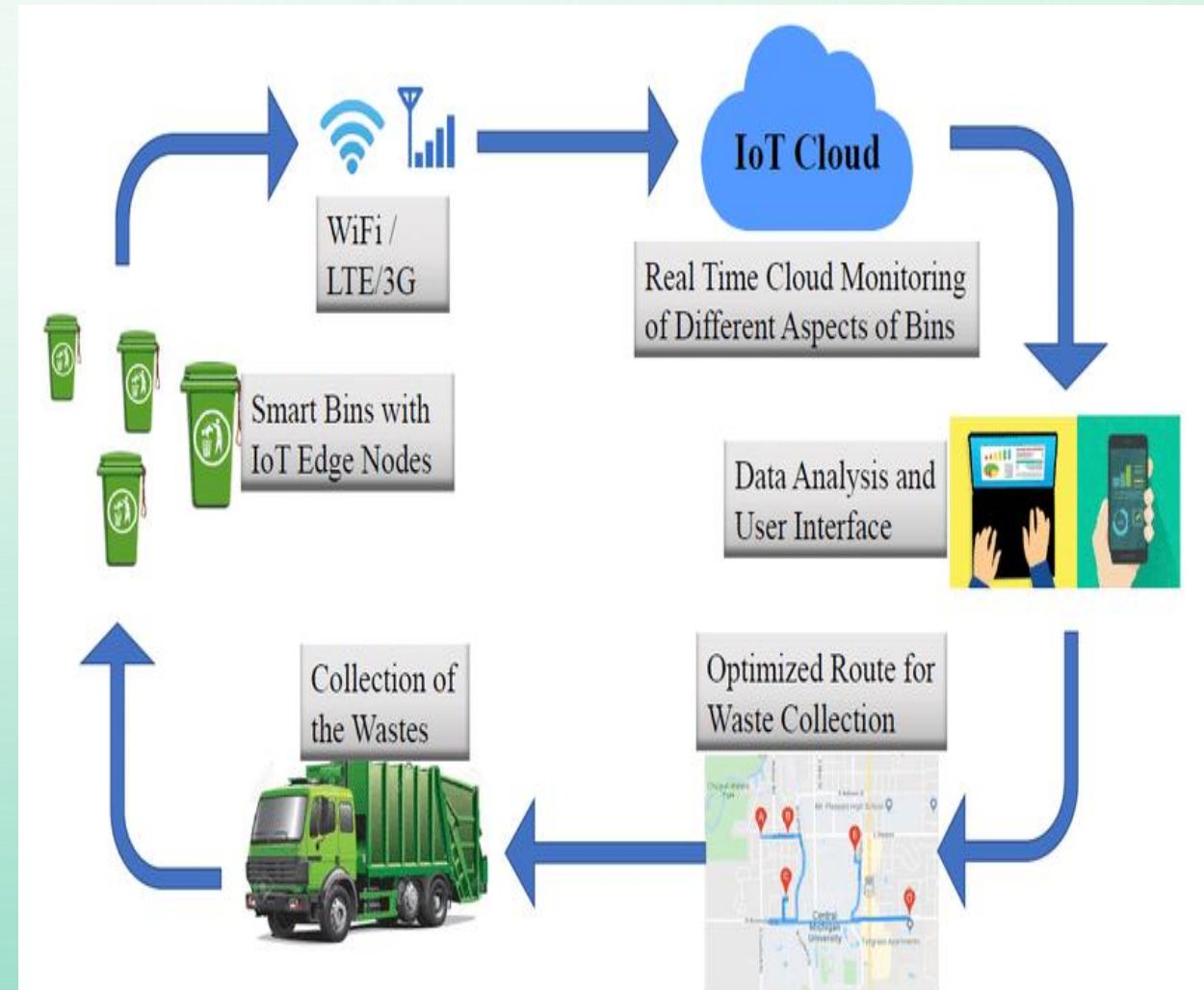
MUNICIPAL WASTE MANAGEMENT

- Hazardous waste management Best practices for handling
- The risk associated with the hazardous waste include;
- improper disposal of hazardous waste include;
- Water pollution
 - Climate change
 - Air pollution
 - Animal and marine death
 - Plant death
 - Radiation and hazardous material poisoning (e.g. lead)
 - Identify and classify waste materials
 - Label and store waste properly
 - Choose a reputable waste transporter and facility
 - Train staff on the proper ways of handling hazardous waste.
 - Review and improve your waste management plan

TECHNOLOGY AND WASTE MANAGEMENT

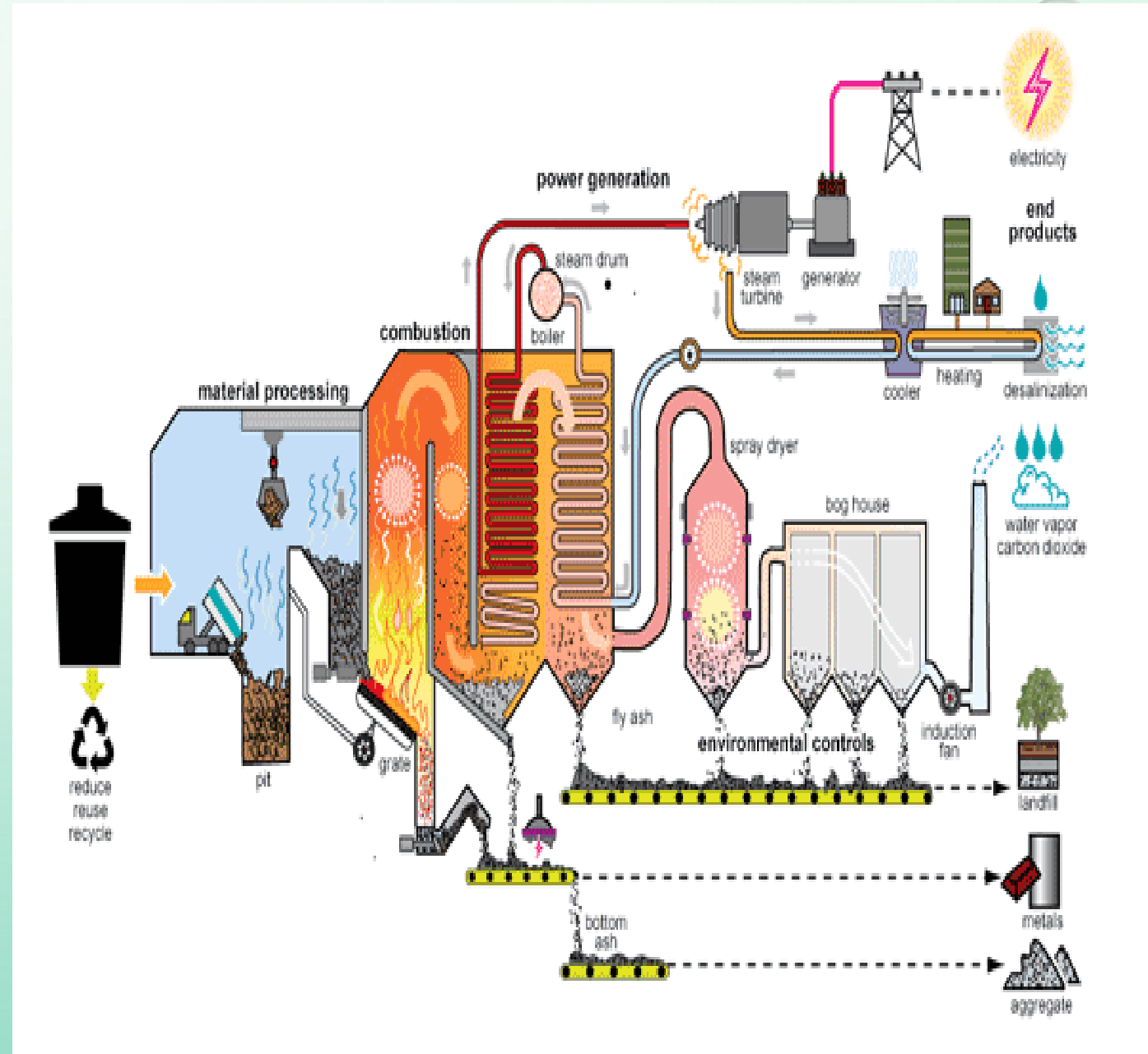
➤ Innovations in waste management are;

- Smart waste bins
- Waste level sensors
- AI recycling robots
- Garbage truck weighing mechanism
- Pneumatic waste pipes
- Solar-powered trash compactors
- E- waste kiosks
- Recycling apps.



TECHNOLOGY AND WASTE MANAGEMENT

- Some waste to energy organizations in Nigeria are;
 - RecyclePoints, Lagos [2012]
(Incentive based recyclable waste collection system)
 - High Collar Sustainable Solutions Limited, Kaduna [2022] (Uses food waste from community as source of biogas)
 - McFadic Energy Group, Port Harcourt [2023]
(Production of carbon-free cooling-and-power-generation facilities powered by waste-heat.)



BENEFITS OF PROPER WASTE MANAGEMENT

- Reduces pollution
- Prevents flooding
- Creates jobs
- Conserves resources
- Promotes public health



COMMUNITY ENGAGEMENT

- Educating the community on the process of waste management is important in the following ways;
- Increase knowledge and awareness of the causes and consequences of waste problems.
- The potential solutions and benefits of waste reduction, reuse, and recycling.
- Enhance the motivation and commitment of people to adopt sustainable waste practices and behaviors thereby avoiding littering.
- Improve the collaboration and coordination among different stakeholders, such as local authorities, waste collectors, NGOs, and businesses.
- Foster social cohesion, trust, and equity among community members.

COMMUNITY ENGAGEMENT

- Examples of community engagement activities



**Cataunidos network in Brazil
Organizing Waste Pickers**



**Umande Trust in Kenya
Organizing Community Led
Sanitation Project
(Conversion of Human Waste
to Biogas)**



**Morit International School in Ajegunle,
Lagos accepts Plastic Bottles as
School Fees.**

GOVERNMENT POLICIES AND REGULATIONS

- Nigeria doesn't have any law that deals specifically with flood management but the following touch flood management in a little way;
- The National Emergency Management Agency Act
- The River Basin Development Authorities Act
- National Environmental Standards and Regulation Enforcement Agency (Establishment) Act 2007
- National Hydrological Services Agency (Est. Act) NIHSA/2010
- Nigerian Meteorological Agency (Est. Act) NIMET Act
- National Environmental Policy 1999
- National Erosion and Flood Control Policy (NEFCP/2005)



GOVERNMENT POLICIES AND REGULATIONS



- The National Emergency Management Agency Act –
The mission of this agency is to coordinate resources towards efficient and effective disaster prevention, preparedness, mitigation and response in Nigeria.

The functions of the Agency in relation to flood include;

- a. Educating and informing the public on disaster prevention and control measures.
- b. Distribute emergency relief materials to victims of natural or other disaster and assist in rehabilitation of the victims where necessary.
- c. Liaise with the United Nations Disaster Reduction Organization or such other International bodies for the reduction of natural and other disasters.



GOVERNMENT POLICIES AND REGULATIONS

- National Hydrological Services Agency Act (AFIHSA) – This Agency was established in 2003 with the vision of providing weather, climate and water information & services for sustainable development & safety of lives and property.

The main function of the Agency that touches on flood is update the common Nigeria citizens on weather forecasts and predictions. This aids some decision making, reducing serious cases of accidents due to weather – related mishaps, of which flood is part off.



GOVERNMENT POLICIES AND REGULATIONS

- Nigerian statutory provisions for environmental protection and waste management are;
 - National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations of 1991
 - Section 20 of the Constitution of the Federal Republic of Nigeria
 - The National Environmental Standards Regulation Enforcement Agency Act, 2007 (NESREA)
 - The Harmful Waste (special criminal provision) Act of 1988



GOVERNMENT POLICIES AND REGULATIONS

- The direct law in Nigeria regulating solid waste management is National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations of 1991. It regulates the collection, treatment and disposal of solid (and hazardous) waste from municipal and industrial sources. The objectives of solid waste management include;
 - Identification of solid, toxic and extremely hazardous waste dangerous to public health and the environment.
 - Provision of surveillance and monitoring of extremely hazardous waste (and substances) until they are detoxified and safely disposed of.



GOVERNMENT POLICIES AND REGULATIONS

- Provision of guidelines for proper record keeping (sampling and labelling) of extremely hazardous waste.
- Establishment and provision of suitable requirements necessary to facilitate disposal of hazardous waste.
- Carry out research into possible re-use recycling of hazardous waste.

Challenges affecting the implementation of the stated objectives are;

- Non availability of fund to the agency.
- Inadequate qualified man power.
- Lack of functional equipment and laboratories.
- Corruption
- Inadequate sanctions.



SOLUTION TO ENVIRONMENTAL FLOODING AND POOR WASTE MANAGEMENT

- Environmental flooding and poor waste management can be reduced to the minimum level by;
 - Dump waste in the appropriate dump sit and not on the road.
 - Recycle hazardous waste by taking it to a waste treatment facility.
 - Use grass clippings as a source of compost manure in gardens.
 - Practice environmental education of individuals to create awareness on the importance of proper waste management.
 - Plant trees to reduce the effect of global warming and environmental degradation.

CONCLUSION

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There is no such thing as 'away.' When we throw anything away, it must go somewhere

~ Annie Leonard

THANK
YOU



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