

Abstract

The impacts of climate change on ports are gaining importance as they could reduce the functionality of ports and therefore negatively affecting economic activities in Ghana. However, the need for adapting ports to climate change may not have been adequately acknowledged by the Port Authority.

The increasing interconnectedness of the global economy, combined with the expanding, global importance of ports as trade nodes intensify this risk and highlight the need for adaptation.

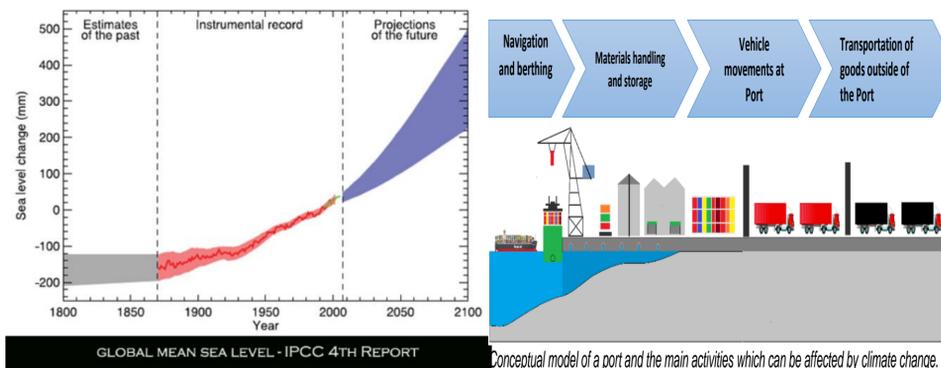
Introduction

The Intergovernmental Panel on Climate Change defines “Climate Change” as “a change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties and that which persists for an extended period, typically decades or longer.”

By virtue of their locations on the coasts and long lifetimes, seaports are often exposed to a range of climate hazards, including sea level rise, storm surges, extreme wind and waves. In general, the physical infrastructure at ports, and port activities, may be highly vulnerable to changes in climate. For instance, the risks could manifest through changes in the level or patterns of shipping, increased flooding affecting movements within ports and causing damage to goods stored, reduced navigability of access channels and business interruption. There may also be some opportunities as a result of climate change. For instance, increase depth of the port making it possible for ships with higher draft to be accommodated as a result of sea-level rise.

There is already evidence of the direct manifestations of climate change in Ghana, i.e., increasing temperatures; rainfall variability, including unpredictable extreme events; sea-level rise; and, increasing greenhouse gas emissions. Long-term measurements of tide gauges and recent satellite data show that global sea level is rising, with best estimates of the global-average rise over the last two decades centred on 3.2 mm per year (0.12 inches per year), (NOAA, 2016).

The ability to adapt and cope is a function of wealth or income, technology, scientific and technical knowledge and skills, information, infrastructure, policy and management institutions and equity (Chatterjee, 2002).



Objectives

1. To identify the effect and challenges of climate change on port operations in Ghana.
2. To address this sector of Ghana’s economy on climate change adaptation.
3. To raise awareness of climate change within the port area.

Methods and Materials

- ❑ Purposive method of sampling was employed in the determination and selection of the respondent.
- ❑ Research instruments: Interviews and Questionnaires.
- ❑ Population:
 - I. Ghana Port and Harbour Authority.
 - II. Ghana Meteorological Agency.
 - III. Ministry of Environment, Science and Technology.
 - IV. Regional Maritime University.

Results

The location and operational strategies of our ports make it vulnerable to climate change. Ports in Ghana are likely to experience a variety of impacts on operations as a result of climate change. The effect on port operations in Ghana will mostly be determined by the following factors: temperature; precipitation; sea level rise and wind speed.

Main climate change impacts on port operations includes infrastructure, equipment and cargo damages from rising temperature, rainfall and wave energy changes, increases in the energy consumption for cooling cargo, navigation and berthing as a result of storm surges and overtopping of waves into the port basin, higher port construction and maintenance costs, and health and safety of workforce.

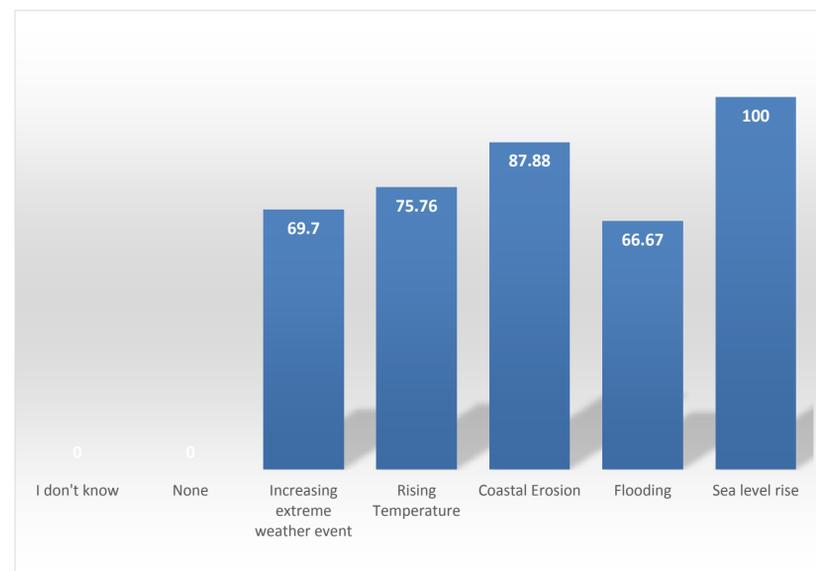


Chart 1: Respondents view on the effects of climate change on Ghana port.

Responds

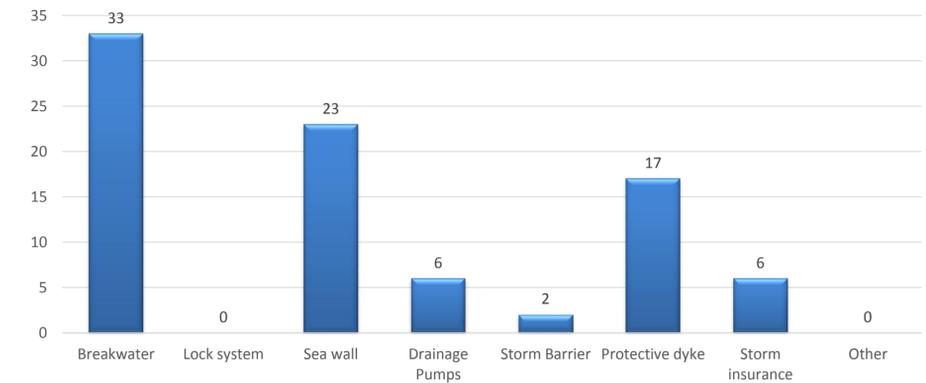


Chart 2: Respondents view on Protective measures the Port is currently having in place.

Discussion

The location and operational strategies of our ports make it vulnerable to climate change. In terms of infrastructure development, the construction designers took note of a range of climate risks such as storm surges, rising temperature, extreme waves and sea level rise.

Dredging at the port, sea defence, purchasing of temperature sensitive equipment, the use of pavement bricks for road construction are plans put in place by the Port Authority to mitigate effect of Climate Change on port facilities and operations.

Conclusions

Impacts of climate change are already being observed in Ghana and because impacts will increase in severity even if greenhouse gases (GHGs) emissions are reduced substantially in the near future, Ghana must improve her ability to adapt the port infrastructure to impacts of climate change.

Adapting the port to climate change should not only be about making infrastructure and the superstructures resilient to climate change but should also include programmes and policies to develop and raise the awareness of human skill and abilities to match the trend of climate change.

Adapting our ports to climate change is essential because the port is the backbone of the country’s economy.

Recommendation

- Establishment of climate/ weather monitoring station at the port.
- The Port Authority should take measures to strengthen infrastructure foundations and stabilize slopes taking into account, climate change projections.
- Review health and safety policies and standards and provide training to workers on changing risks.
- The Port Authority should provide appropriate Personal Protective Equipment (PPE) for port workers.

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