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# Curbing Accelerated Deterioration of Structures Built in Corrosive Environments

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## INTRODUCTION & BACKGROUND

- Corrosive environments not only arise due to local conditions- climate/environment but also from the presence of corrosive pollutants.
- Corrosive environment may be categorized as industrial, marine, rural and indoor.
- Deterioration of a structure basically entails a significant loss in its structural strength.
- Kenya is a tropical country with a vast coastline and many agricultural-related industries hence a variety of corrosive environments were studied.



## METHODOLOGY & CASE STUDIES

- Various built structures spread across different corrosive environments were sampled. Data collection tools employed were case studies, checklists, surveys and questionnaires.

### CASE STUDIES:

#### 1)THE SINKING GRAVES OF IVORY COAST



- Lahou-Kpanda located 140km southwest of Abidjan was once a thriving historic town
- Coastal erosion over a period of 30 years has seen their prison, hospital and school submerged . To the point that some there have begun to exhume bodies of their relatives for fear of the same
- Experts reveal poorly planned construction too close to the coast or using coastal sand as a building material has accelerated deterioration. (Courtesy Reuters)

#### 2)HISTORICAL CITY OF VENICE

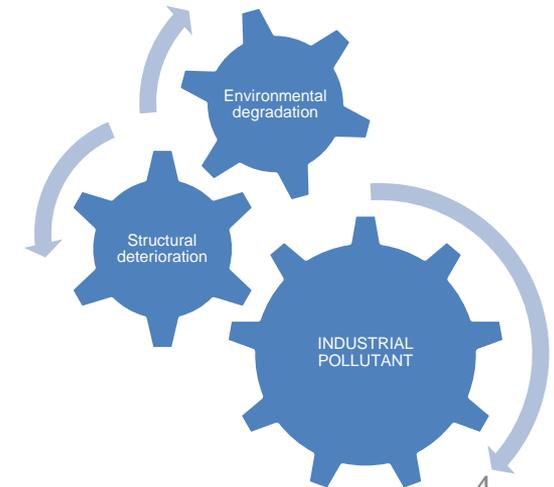
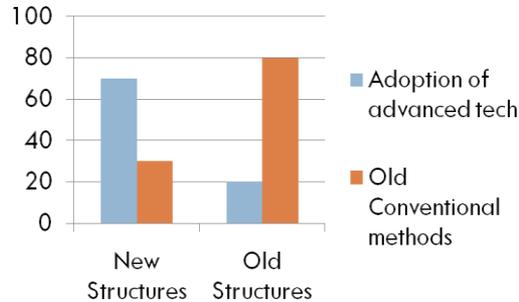
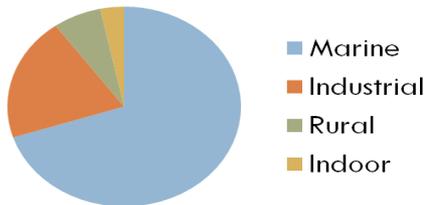


- Venice is a [UNESCO World Heritage Site](#) with over 118 small islands. It contains some of the world's most revered buildings.
- Italian City hit with its worst floods in 50 years. Water levels rose to 1.87 metres, leaving most of the city submerged. High waters have continued throughout the week, resulting in over €1 billion worth of damage.
- Saline waters have deposited lots of salt
- Mesovenezia flood barrier project delay (Denezen)

# FINDINGS

- For a corrosive environment to cause deterioration of a worrying magnitude there is usually a lengthy build-up.
- Improper use of a built structure and accumulation of pollutants may occur during occupancy.
- Early detection of deterioration if any is vital; assessment of soundness of a structure is effective if done during or immediately after construction.
- Mitigation is effective in the long term if it halts continuity of the defect without exerting extraneous strains/ stresses.

**Deterioration Levels**



## CONCLUSION & RECOMMENDATIONS

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- Effective project planning tools should be adopted such as employing combative methods before construction materials are delivered to site.
- Design of structure should be professionally executed and certified with elaborate details. In such delays and ineptitude will be avoided.
- Advanced building technologies should be explored and adopted in place of conventional technologies with emphasis on building construction fundamentals such as lighting, ventilation and drainage
- Construction personnel should be well trained to ensure that all construction materials brought in are properly tested for compliance and certified where necessary. In ensuring the longevity of structures better utilization of natural resources is instilled, whence construction materials are derived.