

Impact of the Manageable Waterfront Proposed Advancement of Bani Suif Corniche on the Power through Pressure of the Nile Stream

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Description

The main objective of this research is to study the impact of the new proposed development of Bani-Suif waterfront on Nile River hydraulics, developments include creating a walkway extended in the Nile and open theater which supported by piles inside the Nile [1]. A mathematical simulation using Delft3D was created to represent the new development. Three interconnected grids with different grid sizes were created and then the domain decomposition technique was used to represent piles with small sizes inside the large grid. Model was calibrated using field data such as hydraulic measurements, water levels and discharges [2]. It was concluded that there was no effect of the proposed development on water flow in the main channel of the Nile River except in the places close to the corniche on the west bank at the minimum discharge condition after the implementation of Bani-Suif corniche, which does not affect the sustainability of the project.

Nile waterfront is the interaction between local communities and the river, developing waterfront provides an opportunity for entertainment and recreation for local communities. Additionally, waterfront can be defined as the part of the town or city adjoining a river, lake, harbor, also as the area of interaction between urban development and the water [3]. Many terms can be used to give the same meaning such as city port. The environment's quality has become one of the leading sustainable development goals to achieve in the coming years. Several researchers discuss the sustainable development and its environmental impact, mentioned the concerns about environmental degradation have led governments to establish policies that force firms to adopt clean, sustainable, production systems, mentioned that long-term investment in the logistics sector by the public sector has twofold economic benefits [4]. Planning is essential for successful waterfront development, three elements are considered: public access, walkways and open spaces; urban design and landscaping; and land uses along the river's edge. Accessibility of the water can be evaluated by three formats: City-waterfront connectivity, inter-waterfront zone continuity and waterfront-water connectivity. Many factors may change the hydrology and hydro-morphology of rivers in natural conditions, which in turn have an impact on the river hydraulics and on sediment transport, including the floodplain. Stated that river waterfront is a vital part of the community bordering on a river anywhere in the world, irrespective of the stage of its development. River waterfront represents tremendous natural assets with high development potential for the community and its population. Therefore it should wherever possible remain a public property, free and accessible to all people at all practical times.

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Date of Submission: 01 July, 2022, Manuscript No. hycr-22-78769; **Editor Assigned:** 03 July, 2022, Pre QC No. P-78769; **Reviewed:** 15 July, 2022; QC No. Q-78769; **Revised:** 19 July, 2022, Manuscript No.R-78769; **Published:** 27 July, 2022, DOI: 10.37421.2157-7587.2022.13.417

The environment's quality is considered one of the leading sustainable development goals to achieve in the coming years. Several researchers discuss the sustainable development and its environmental impact. The concerns about environmental degradation have led governments to establish policies that force firms to adopt clean, sustainable, production systems. The long-term investment in the logistics sector by the public sector has twofold economic benefits. Road map was investigated by linking between energy, economic growth, and environmental quality for the sustainable development.

Waterfront development is considered a part of urban planning. Its design is governed by many factors that affect the main function of the rivers. The factor as physical, political, management, biological, transportation, environmental are considered an important factor in designing waterfront. Neglecting any factor might have a severe unanticipated impact on development plans elsewhere along the river [5]. The design may affect the hydraulics of the river and in turn affect the other morphological and physical characteristics of the river such as width and bed level, especially when these developments are extended inside the river. Human civilization originated from the river, and the waterfront was commonly the origin of cities. The researches on waterfront development mainly included two sides, determination of the development direction and evaluation of the development effect. Regarding the development direction, different methods were adopted to determine the waterfront development orientation.

Conflict of Interest

The authors declare that there is no conflict of interest associated with this manuscript.

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How to cite this article: Irvine, Dylan. "Impact of the Manageable Waterfront Proposed Advancement of Bani Suif Corniche on the Power through Pressure of the Nile Stream." Hydrol Current Res 13 (2022): 417.