

Q Researchers from National Institute of oceanography will work on a research project to reveal the internal working the ocean at cellular level. In this context, analyse the various outcomes of the project. (200)

Ans

NIO is going to launch the first of its kind project of Genome mapping in the Indian ocean.

Objective of the project: To gather samples for genome mapping of microorganism in the indian ocean, and to understand the biochemistry and the response of the ocean to climate change, nutrient stress and increasing pollution.

Outcomes of the project:-

(i) Understanding Ecosystem: It will help scientist understand the internal working of the ecosystem of the indian ocean.

(ii) Identify the factors controlling the changes in RNA, DNA in the oceans, and various stressors impacting them.

(iii) Large pool of RNA, DNA library of the ocean will be utilised for using the indian ocean to human benefit in the future.

(iv) Increased Biotechnology Application: Genome mapping will enable an increase in the growing number of commercial biotechnology applications, extending from multiple anticancer treatment to cosmetics and industrial enzymes to antiviral molecules.

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(v) Optimization of conservation efforts— Exploration of the ocean at a genetic level will result in new insight into taxonomy and adaptive capacity that can help optimize conservation efforts.

(vi) The ocean has several micronutrients like nitrates, sulphates, and silicates, minerals like Iron ore and zinc and trace metals like cadmium or Copper.

(vii) The Genome mapping will show the presence of which these microbes have adapted to, in addition to their reaction to atmospheric carbon dioxide.