

# Economic Impacts of Natural Polymers

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## Abstract

Economic Impacts of Natural Polymers is a multidisciplinary discourse employing Equilibrium Perspectives to elucidate the meaning and usefulness of natural polymers to people globally. This comprises an overview of the broader spectrum of polymers, such as synthetic and biodegradable polymers, biopolymers and biomaterials.

It discusses the sources, types, properties and potentials of natural polymers and also considers the applications or uses of, demand and value of natural polymers to man.

The paper, Economic Impacts of Natural Polymers, is an exposition of the total value derivable from the existence of natural polymers, their benefit, research, development, consumption, potential for patenting and commercialization, trade and control of their diverse applications as well as distribution in countries and continents around the world, especially the West, Asia and Latin America. The value of natural polymers to man has been shown to be enormous and inexhaustible to the extent that they are universal, indispensable and historic life-support materials.

Natural polymers are known to be abundant, renewable, diverse, versatile, and represents inexpensive sources of biomaterials. In addition, most of them are biodegradable, biocompatible, safe and non-toxic. Biomaterials based on natural polymers have been used for more than 2000 years, and the scientific, engineering and technological development of these materials has culminated into highly skilled manpower with innovative industrial products and services. The growing concern about health and environmental sustainability associated with pollution caused by fossil fuel and the finite supply of hydrocarbon resources have promoted interests and

investments in natural polymers in recent years. Global biomaterials market was estimated to reach US \$88.4 billion in 2017 and the natural polymers base is notable. There is remarkable investment in studies and manufacture of different products from rubber, cotton, cellulose pulp and other traditional commodities, to films, plastics, the novel tissue engineering and nanodrug delivery systems. Improved knowledge of biochemistry science and materials engineering through industrialization and commercialization is providing solutions to some challenges of modern day lifestyle and health demands. Natural polymers have been innovated into several materials with applications in medical, pharmaceutical, agricultural, food and beverages, toiletries, cosmetics, textiles and other industrial, domestic and personal care products. Some natural polymers with useful applications in industries, nanodrug delivery and therapeutic systems such as starch, cellulose, chitosan, alginate and gelatin have been highlighted according to scale and specific applications. Meanwhile, there are some natural polymers which modern society needs to survive, for instance, starch, wood, and natural rubber which are used for food, energy, papermaking and transportation, respectively. These are historic renewable natural polymer sources used in our day-to-day living and some of the most important products produced in the world.

The economic implications of technology and capital dependency in a world with unfair and unbalanced capital formation and accumulation potentials between the Less Developed Countries - LDCs and Developed Countries - DCs, results in a lopsided distribution of the benefits of natural polymers. This, in addition to market imperfections and policies that further restrict the benefits of natural polymers from the Rest of the World - RoW, such as tariff barriers, patents, protectionist and other stringent regulations have been identified.

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Received: March 20, 2017; Accepted: June 10, 2017; Published: June 14, 2017.