

A Research on Industrial Biotechnology Studies in Turkey

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Abstract— The role of the private sector in industrial research and development (R&D) has increased significantly in developing countries over the past two decades. However, information on the nature of private sector R&D in agriculture its focus, location, size and output is limited in availability, thus limiting any analysis of the potential risks and opportunities of this growth trend. The aim of this paper is to review the available information on public research institutes, universities, private sector investment in industrial R&D in the developing Turkey as a means of contributing to an evaluation. In this study the project-based industrial R&D studies conducted on Knowledge-Based Bio-Economy (KBBE), Biotechnology, Biodiversity and Genetic Resources by research institutes, universities and the private sector in rapidly-developing Turkey were examined and evaluated.

The research results show that the R&D studies are fully supported in Turkey and that, in this context, the project-based researches are put into practice and transferred to bio-economy through public research institutes, universities private sector and the biotechnology firms, which are the driving force of the bio-economy, operate in the fields of Health and Medicine by 57%, Energy and Environment by 24% and Agriculture and Food by 19%.

Keywords— Industrial Biotechnology, Bio-Economy, Biodiversity, Biological Sciences, Genetic Resources.

INTRODUCTION

In the agriculture industry, the main purpose of Industrial Biotechnology is to create a Knowledge-Based Bio-Economy (KBBE). The Bio-Economy is an

economic process addressing the commercial distribution and consumption of such products as goods, energy and services produced from biomaterials and genetic resources (plants, animals, microorganisms) through biological process, and embraces all industrial and economic sectors producing, managing and disseminating biological resources. Having a superior competitiveness and a high added value, creating new areas of employment, showing consistency with ethical, cultural and economic demands of the society and having a high eco-efficiency are among the sustainability characteristics of the modern bio-economy. Industrial Biotechnology constitutes the driving force of the bio-economy (1,2).

Biological Sciences, Life Sciences and Industrial Biotechnology function in harmony with other technologies. Their common goals are to ensure a knowledge base for the sustainable management, production and use of biodiversity and genetic resources, to provide new, safer, more cost-effective and eco-efficient products, to promote the competitiveness and sustainability in the industry (3,4).

RESULTS

The research results show that the R&D studies are fully supported in Turkey and that, in this context, the project-based researches are put into practice and transferred to bio-economy through public research institutes, universities private sector and the biotechnology firms, which are the driving force of the bio-economy, operate in the fields of Health and Medicine by 57%, Energy and Environment by 24% and Agriculture and Food by 19% (Table 1).

Table 1: Sectoral R&D Studies in Turkey

SECTOR	R&D
Health and Medicine	57 %
Energy and Environment	24 %
Agriculture and Food	19 %

CONCLUSION

Large Agricultural Capacity and arable land areas of Turkey will be very important factor for providing feedstocks (crops, seeds, plants etc.) to be needed for production bio-based products in future. Large feedstock capacity of Turkey will be good genetic resource. Number of plants producing bio-fuels (bio-alcohol and bio-diesel) are increasing in course of time. There are substantial number of enterprises producing food (such as baker yeast) using Industrial Biotechnology Processes (5).

Turkey is a major agricultural producer. Most of the technologies related to the KBBE (Knowledge Based Bio-Economy), are related to the agriculture in Turkey. Turkey is aware of the fact that application of new technologies to agriculture will play a major role in its development and growth (6). Agri-food industry has been and will be the base for Turkish economic growth. Turkey covers the “Knowledge Based Bio-Economy” for its sustainable bioeconomic growth in its development strategies as other European Member States. To benefit from Industrial Biotechnology, Turkey needs to increase the number of scientists working in this area, and also it should not only involve technology transfer but also the creation of new products from rich genetic resources and benefit economically from the “nature and natural resources” nationally and also at European level, which KBBE-NET may provide such an opportunity during the candidacy period through cooperation and integration within the Framework Programmes (7).

Finally, KBBE (Knowledge Based Bioeconomy), Industrial Biotechnology, are accepted in Turkey as a key for the sustainable development of the country because of its agricultural and industrial production potentials.

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