Chapter 15
The Innovation Infrastructure of Kazakhstan:
Why did the Innovation "Boom" not Happen?

Yelena V. Smirnova
Suleyman Demirel University, Kazakhstan

ABSTRACT

Innovation infrastructure is one of the key elements of a national innovation system, but the very creation of the innovation infrastructure does not guarantee a "boom" in innovations. Although the innovation infrastructure has been legislatively and physically shaped in Kazakhstan, most recent figures show that the innovation performance in the economy falls short of the expectations. Based on a legislative framework, this chapter introduces the concept of innovation infrastructure in Kazakhstan and elaborates on its elements and the way they interact with each other. In addition, supported by the previous studies, it attempts to measure the effectiveness of existing innovation infrastructure. The results of the study reveal that the innovation infrastructure of Kazakhstan is not effective. The ineffectiveness is primarily caused by an inadequate innovation policy which results in scanty linkages between the elements of infrastructure, in particular, between education institutions and industry. Kazakhstan's experience might prove useful to other countries which are in the process of building innovation infrastructures.

DOI: 10.4018/978-1-4666-4769-5.ch015

INTRODUCTION

It has become obvious today that the innovative development of a country is critical to its economic success. This is evidenced by the growing interest and increased discussion on industrial and innovative progress in political and scientific realms. The creation of national innovation systems and the development of innovation strategies and programs have become key priorities for many economies. This is especially a 'hot topic' for discussion in developing countries such as the Asian and Commonwealth of Independent States (CIS) countries, since in order to align themselves with developed countries, they must focus on innovation.

Kazakhstan is a rapidly growing Central Asian economy with a focus on industrial and innovative development over the next two decades. A number of programs, strategies, and laws were developed in order to facilitate the formation of national innovation system (hereinafter - NIS) of the country. But unfortunately, the system does not seem to work that effectively. Kazakhstani policymakers claim that the main cause of ineffective innovative development is the country's innovation infrastructure which lacks integration. There is a deficiency of synergy between the elements of the innovation infrastructure and, in particular, between science and industry (Ministry of Industry and New Technologies, hereinafter – MINT, 2010).

Much research has been devoted to conceptualizing and examining national innovation systems (Freeman, 1987; Lundvall, 1992; Nelson & Rosenberg, 1993; Edquist & Lundvall, 1993; Niosi *et al*., 1993; Patel & Pavitt, 1994; North, 1994; Metcalfe, 1995; and Feinson, 2003). Yet, others have explored the elements of NIS, specifically, the issues of innovation infrastructure (Galli & Teubal, 1997; Furman *et al*., 2002; Woolthuis *et al*., 2005; Nurmukhanova, 2007; Stejskal & Matatkova, 2011; Hekkert & Negro, 2011; Dutta, 2012; etc.). Additionally, Porter & Stern (2001) and Kelly (2008) developed approaches for the analysis of innovation infrastructure effectiveness.

The purpose of this paper is to address the issue of ineffective NIS of Kazakhstan and explore whether the existing innovation infrastructure could be a primary cause of this ineffectiveness.

BACKGROUND

National Innovation System

The idea of a national innovation system was born in the early 1980s and is traced through the works of Nelson, Lundvall, and Freeman. The full concept of 'National Innovation System' was first used by Christopher Freeman in his book 'Innovation in Japan' in 1987 (cited in Horst & Pyka, 2007). Freeman (1987) describes NIS as "the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies" (Freeman in Bauer *et al*., 2012). These interactions are "either located within or rooted inside the borders of a nation state" (Lundvall, 1992). They impact not just innovative performance of national firms (Nelson & Rosenberg, 1993) but also technological change in the society (Edquist & Lundvall, 1993; Patel & Pavitt, 1994). The interactions basically occur between private and public firms, universities and government (Niosi et al., 1993) to create and disseminate new knowledge and technologies (Lundvall, 1992; Metcalfe, 1995). NIS approach involves networks of policies, institutions and people that mediate knowledge flows (Feinson, 2003).

NIS consists of the elements that continuously interact with each other including political, bureaucratic, regulatory, social, educational, knowledge-oriented, and bridging bodies as well as non-profit organizations and public agencies (North, 1994). Briefly, these are networks of policies, institutions and people that support creation, diffusion and application of new knowledge.

In Kazakhstan, national innovation system started being shaped in 2003 in the form of institutional and physical infrastructure (MINT,