

Abstract

The role of R&D in economic growth and development is increasingly acknowledged globally. With this is an acceptance that collaborative research ensures the benefits of R&D largely accrue to society as a whole. The growing recognition of the importance of R&D in economic growth and development through the generation and application of new knowledge, new skills, new processes, new technologies, functions, and new products by those involved in production processes has enhanced the drive by nations to build integrated systems of innovation. Systems of innovation encourage collaborative research through partnerships, cooperation, and participation in innovation networks. This is important in reducing R&D transaction costs and in ensuring that new knowledge, skills, processes, and products emanating from R&D activities are widely distributed within an economy.

This study aims to identify and explain the challenges in relation to the ‘less integrated’ nature (OECD, 2007) of South African systems of innovation which has resulted in ‘weak coordination and linkages and limited resources and capacity’ (Greenberg, 2010) in the South African forestry sectoral system of innovation (SSI), with the effect that the benefits of the system of innovation to the economy are still not known (OECD, 2007). The study analysed the challenges in the formation and maintenance of partnerships, collaboration and networks as some of the issues working against the integration of the South African National System of Innovation (NSI), hence the forestry SSI. The study employed a qualitative methodology and a number of qualitative methods and techniques, such as semi-structured interviews, and observations, and case studies were used in data collection. This was guided by the systems of innovation approach, particularly the SSI as the conceptual framework within a critical research paradigm. A thematic analysis indicated that the lack of integration and the existence of ‘weak coordination and linkages and limited resources and capacity’ that limit the application of R&D by firms in the forestry SSI for the benefit of the economy as a whole are not a result of a single factor but of a convergence of factors that cannot be addressed quantitatively by neat technical solutions. The lack of integration of the South African System of Innovation (SI) is thus explained in terms of multiple realities. However, some of the challenges, such as limited funding and skills, could be greatly lessened through collaboration at sectoral, national or at supra-national levels.

The historical and evolutionary approach adopted by the study allowed the tracing of the development trajectories of the forestry industry in South Africa since it started and the nature of racial interactions as determined by colonial and apartheid philosophies of separate development. This was important in understanding power relations under the colonial and apartheid systems in relation to knowledge generation and skills development and the differential economic outcomes linked to forestry resource development in the homelands and the white segments of colonial and apartheid South Africa. Historicising was also important in understanding the ideological changes brought in by the transition to democracy hinged on participatory approaches that informed policies such as the BBBEE. This also enabled the problematisation of the state of affairs in South Africa with regard to the emergence of a predatory and politically connected ‘class for itself’ (*comprador bourgeoisie*) dependent on state tenders as the main source of accumulation among the former revolutionaries (nationalists) *vis-à-vis* the empowerment of the ordinary South African and SMEs.

The democratisation processes have to some extent led to emergence of crony capitalism as exemplified by the state capture case. The evolutionary approach and the historicisation of forestry resource development in South Africa therefore enabled the debunking of some ideas that have persisted unchallenged with regard to the nature of skills development, knowledge generation and application, accumulation processes and the benefits of the South African SI to the economy. These myths have clouded our understanding of R&D processes and role in economic growth and development hence imposing limitations in constructing suitable intervention measures enabling the emancipation of South Africans from the triple threat of inequality, unemployment, and poverty. The study rejected the argument by Kruger & Bennett (2015) that the South African forestry research system as it developed was exceptional and was not influenced by the Indian and European traditions. It again rejected the idea by Kruger & Bennett (2015) that the apartheid forestry research system was more integrated than the current research system. It also rejected the argument by the OECD (2007) that the benefits of the NSI, especially with reference to the forestry sector, are unknown. It further rejected the Sachs-Warner hypothesis (Sachs and Warner, 1995) that ‘all’ natural resource rich countries suffer from resource dependency curse and cannot derive industrialisation and economic diversification from the exploitation of their resources. Moreover, the study rejects the notion that the big companies established during apartheid times are always exploitative of small upcoming

businesses in value chains and demonstrated that, if anything, and at times, these big firms and their partnership schemes have offered the most effective way of transferring skills and technologies to SMEs outside the skills system. The emergence of crony capitalism debunks the argument that the current development crisis in South Africa is only explained in terms of colonial and apartheid policies. The persistence of such arguments clouds the processes of designing suitable measures important in integrating the South African system of innovation for the benefit of the economy. While the thesis does not contribute to a major revision of the theory and conceptual framework, it does illustrate, through the case of forestry and the nested case studies of R&D, new ways of thinking about this literature that takes account of South Africa's complexity.