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MODELLING SUSTAINABLE PUBLIC INVESTMENT INTO SPACE SCIENCES AND DEVELOPING THE SPACE READINESS INDEX

Abstract

The focus of my PhD dissertation, is the development of an economic model for sustainable public funding of space science research and infrastructure in developing nations, with a focus on Africa. This will enable the definition of a "space readiness index" for each country, thereby allowing relative rankings of countries in this domain. Understanding the political, economic and policy drivers and outcomes with respect to space science in developing nations is a complex process of weighing up statistical information and subjective indicators, such as policies, regulation and political agendas. Data is obtained for each state in Africa in the following categories: Population demographics, Poverty, Education, Economic Growth and Technological Level. Each category will be analysed utilising data sets or, where comparable data are unavailable, indices and proxies. Developing nations face an additional dilemma when considering expenditures on space activities. The requirement for space services and infrastructure to ensure a nation's growth and involvement in the global space industry, as well as the development of a knowledge economy for economic expansion, is readily recognized. However, developing nations must justify the large expenditure to do so against the cost of provision of basic necessities to the population. This requires political conviction that a country is indeed capable of realising the promised benefits of space activities, and this is where a space readiness index can assist decision makers to establish which aspects of their space arena require development in order to meet national policy objectives. It is essential to explore, understand and quantify the ways in which space benefits developing nations and how space science, technology and industry are being used to build capacity. Space programme activities offer support for national and global solutions to current and emerging problems including food security, resource management, climate change impacts and in improving disaster mitigation and response. In order to support sustainable economic development, space science and technology need to be implemented as part of a long-term capacity building plan to be sustainable and it needs to be supported with the appropriate policy and legal frameworks, institutional development, community participation and human capital development.