Panama-India Co-operation in S&T and Agriculture

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Introduction

India and Panama represent two fast growing economies in their parts of their growth. In 1962 diplomatic relations between India and Panama were established and Panama was the first country in Central America to establish diplomatic relationship with India. In the recent years there has been an increase in activities on bi-lateral relations. The India-Panama trade has grown from 274.81 (in million $) in 2013-14 to 424.31 in 2016-17, in million $. The key bi-lateral agreements are MoU on Cultural and Educational Co-operation 2001and Mutual Cooperation between Ministry of Agriculture of India and the Ministry of Agricultural Development of Panama in the Field of Agricultural Research and Education, 2001. Last year, during the visit of Vice-President of India, Hon. Venkiah Naidu, India announced two Credit Lines of assistance , to set up a Centre for Biodiversity and Drug Discovery [valued at US$ 10 million] and a Centre for Innovation & Technology [valued at US$ 15 million]. Although the S&T co-operation between the countries is very limited , it is suggested that a beginning can be made, using this as a stepping stone. Panama can learn a lot from India and also can explore the growing market in India for goods and services. India can help Panama in making its S&T system more dynamic and innovative and can play a critical role in capacity building. In this paper I focus on S&T co-operation while it is obvious that both countries can work together and grow together. National Secretariat of Science, Technology and Innovation (SENACYT) which is the Panamese equivalent of

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National Science Foundation of USA has an Office of International Cooperation, can play a key role in this as promoting internatuional and bi-lateral collaboration is part of its mandate. Agriculture represents another area for mutually beneficial collaboration between India and Panama. Taking advantage of location of Panama, India can set up joint ventures in agriculture to tap the South and Central American markets and to help agricultural sector in Panama to realice its potential. However a challenge in this will be the growing collaboration between China and Panama in inter alia, agriculture.

Panama's S&T Plan

Panama has an ambitious S&T Action plan which was announced in 2015 as National Strategic Plan for Science, Technology and Innovation (PENCYT) 2015-2019. The Plan's key objective is to meet the three challenges in achieving sustainable development, social inclusion and sustainable competitiveness. With this in mind the Plan has the following Programs:

- Program "Science, Research, Technological Development and Innovation for Sustainable Development
- Program "Science, Research, Technological Development and Innovation for Social Inclusion"
- Program "Science, Research, Technological Development and Innovation for Competitiveness and Dynamic Entrepreneurship"
- Program "Development of Science and Scientific Capacities"
- Program "Strengthening the Governance Capacities of the National Science, Technology and Innovation System"

Review by OECD has pointed out the strengths and weaknesses in the National Innovation System of Panama. (OECD 2015) . The underinvestment in R&D is a major weakness and data from the World Bank shows that Panama dedicates 0.35 % of its GDP expenditure in Research and Development, This shows the lack of investments in pure science research in the country (World Bank Group, 2019). Recent reports by the Inter-American Development Bank have shown a deficiency in the educational system in Panama, quantifying that only 3.3 % of the GDP is spent in education (Vega Loo, 2017). The United Nations Educational Scientific and Cultural Organisation (UNESCO) recommends that number to be at least 8%, so that it matches similar investment by the countries part of the Organisation for Economic Co-operation and Development.

This figure is also worrying in higher education, the Global Competitiveness Report of 2008, rates Panama's quality of vocational training 45.8 out of 100, and the skillset of graduates with 47.4, which makes Panama 91 and 97 out of 140 in the world in those fields, respectively (World Economic Forum, 2018). Regarding the easiness of finding skilled employees, Panama is rated 110th best in the world, according to this report.

In order to take advantage of this potential a priority most be given to the field of sciences, technology, Engineering and Mathematics. In 2009 the results of the Programme for International Student Assessment showed that between 70% to 80% of students in high school don't have the basic knowledge in Science in Math (Molina, 2018).

For reasons of space we will not review the strengths and shortcomings in Panama's S&T policy and National Innovation System. However it is worth pointing out that Panama faces the same issues as in the case of many other developing countries, such as, low investment in R&D, lack of expertise or non-availability of experts in key and emerging fields in S&T and lack of synergy among the different actors in the National Innovation System.

India-Panama Cooperation in S&T and Agriculture

Taking advantage of the recent positive developments including the two credit lines provided by India, both countries should establish a working group to identify potential areas in S&T collaboration. The idea should be that the collaboration should enable Panama to meet its objectives in S&T and enhance its competitiveness

and achieve social inclusion. The bi-lateral collaboration can benefit from India's experience and expertise in frugal innovation, grassroots innovation and application of S&T to meet basic needs. Similarly India's capability in emerging technologies like Nanotechnology can be useful in deploying relevant applications in health, water and sanitation. It is suggested that India and Panama can use the national strategic plan of Panama in S&T to identify specific applications, opportunities in capacity building and scope for joint R&D. Later in this paper I argue that Panama can join the International Solar Alliance and benefit from it.

Service sector contributes more to GDP than any other sector and this has more to with the location of Panama that enables it to benefit from marine/shipping related services. Agriculture represents a 17% of the country's GDP, while Panama under invests in agriculture(World Bank Group, 2019).

India has had a significant success in agriculture and their experience could help Panama in the renovation of this economical segment through the development of a seed market, modernization and specialization of farm machinery and the use of ICT (Srinivas, 2018).

Panama is really far behind the seed-selling business as it can possibly be. With near to non-existent procedures or frameworks for a formal seed system to take place. However, the country has taken steps to facilitate investment in this sector with financing from the banking sector being more accessible. This opens up the opportunity for the exploration of this line of business. India's commitment to help Panama to increase its productivity could be through comprehensive plans for technical assistance, credit lines in agriculture and capacity building in value addition related initiatives. In African countries seed and agro inputs sector has seen many partnerships and collaborations such as, the partnering of Indo-American Hybrid Seed Ltd, Nirmal Seeds, Ganga Kaveri, Ankur Seeds, Rasi Seeds and Nuziveedu Seeds with Syngenta Seeds2B/African Seed Trade Association (AFSTA) (Srinivas, 2018). In Panama while the seed sector is not well developed, India can take advantage of location of Panama to promote export oriented agriculture and value addition by processing. Panama's location and climate combined with availability of land can be harnessed to set up integrated farms that can combine farming with food processing. Panama has a well-developed logistics infrastructure, the best one in the region, so this can come handy is export and import of agricultural produce and processed food.

.Finally, the implementation of ICT´s into agriculture is the way forward in the modernization of Panama's agriculture. There is a nation-wide access to 4G LTE mobile network and a very reliable structure of optical fiber providing access to high speed internet in the country.

With that being said, there are issues in transportation and infrastructure in agricultural sector. These have to be addressed.

Can Panama and India Collaborate on Energy?

The recent collaboration between Panama and China is unprecedented an could lead the ways between the Panama other big players of the south. Should this decision lead the way to strengthen its science background? If their vision is to become a key player in the Americas, the answer is yes.

The Solar Alliance is an example of a major achievement in Science Diplomacy and in Triangular Cooperation. The decision, led by India, to create an International Alliance to motivate the use of renewable energy thus taking advantage of the sun demonstrates the need to move towards a clean and affordable way of accessing and using energy.

This initiative that was introduced to the world just before the 2015 United Nations Climate Change Conference show the world that collaboration will define the economic development of the next decades. Nowadays, 121 countries make of the alliance but why isn´t Panama in the membership record of this alliance?

Panama has decided that the country must base 70% of its energy use on renewable energy by

2030. The country has very diversified means of production of energy. It has already established 21 hydroelectric plants nationwide, 4 thermoelectric plants and 1 wind park. However, it still relies on natural gas and oil.

A great way to take advantage of Panama's position would be to become part of the Solar Alliance. So far, Panama has not had any big project to produce solar energy for domestic or commercial purposes so the decision to enter this market will represent significant expenses to its first mover, who will bare the burden of innovation in this field.

With the great resources of experience that the International Solar Alliance has to offer, Panama could make the initial steps to produce solar energy and decrease its reliability on fossil fuels, which has both economic, social and environmental benefits. Panama is listed as a prospective member of the International Solar Alliance in its website but there is missing political willingness to take the necessary steps to enjoy the benefits of going solar.

Conclusions

The biggest challenge, perhaps, to Panama would be enabling the necessary internal mechanisms to ensure it takes full advantage of the India, world's fastest growing economy. Exports to India should be increased and diversified. Similarly Panama should enhance its capacity to absorb technology and benefit from it. This will take time but cannot be ignored. India can lend a helping hand in this. India's institutions in technology transfer and commercialization can help their counterparts in Panama in technology absorption, valorization and in using the intellectual property system effectively. There are many opportunities that are waiting to be explored, ranging from training of scientists to working together in building institutions and transforming the current ones. There needs to be a greater involvement of scientific and technical institutions in transfer of technology..

A stronger, more effective agricultural and energy sector could help diversify Panama´s economy which heavily relies on services. At the same time, it could enable the achievement of the Sustainable Development Goals by Panama.

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