INDIA-SENEGAL RELATIONS: PARTNERING IN PHOSPHATES SECTOR

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Abstract

India and Senegal share a long-standing diplomatic relationship rooted in common democratic values, post-colonial experiences, and mutual aspirations for economic growth. This paper explores the deepening bilateral cooperation between India and Senegal, focusing on the strategic phosphate sector. Given that agriculture forms the backbone of India's economy, and the country is heavily dependent on fertilizer imports to support its agricultural productivity, Senegal emerges as a crucial partner with its rich phosphate reserves and established mining industry. The article contextualizes the collaboration within the broader geopolitical and economic framework, tracing Senegal's phosphate mining history and India's evolving fertilizer needs. The paper highlights the significance of Senegal's phosphate reserves and how these have shaped not just the Senegalese economy but also India's resource security strategies. The Indian fertilizer industry's reliance on external phosphate supplies underscores the necessity of sustainable partnerships. The study also delves into the infrastructural, economic, and policy challenges facing both countries in maximizing the potential of this collaboration.

Keywords: Fertilizer Sector, India, Phosphate ,Phosphate Mining Senegal

With the establishment of a resident Indian Mission in Dakar in 1961, diplomatic ties between the two nations were established. In 1974, Senegal established a resident embassy in New Delhi. The two nations have cordial and amicable ties and share democratic and secular principles. Both nations belong to the G-15 and the Non-Aligned Movement. Urban transportation, agriculture, fisheries, rural electrification, human resource development, information technology, health, and other areas are all covered by the bilateral relationship. Additionally, Senegal and India collaborate under the auspices of TEAM-9, the Techno Economic Approach for Africa India Movement, which consists of India and eight West African nations. Senegal and India collaborate closely in multilateral forums.

Senegal's democratic experiment and enormous economic potential have drawn international interest. Additionally, Senegal has been in the forefront of West African regional integration, which has improved the

political, economic, and social landscape of the area. Because of their similar political experiences and worldviews, India and Senegal have maintained a friendly relationship over the years. With Senegal's comeback as a nation with political independence and stability, economic chances and prospects, attractive natural resources, a demographic dividend, and regional obligations, this reciprocal linkage has taken on new significance.

Senegal's growing prominence parallels that of India, a new global force that has expressed a strong desire to collaborate with the West African nation on its development and growth initiatives. Although Senegal and India have collaborated in a number of areas, this paper will concentrate on their collaborations in the phosphate industry, which is a crucial component of their agro-industrial partnership. The paper will pay particular attention to the trade, investment, and capacity building facets of the India-Senegal phosphate production collaboration, both current and prospective.

Indian Fertilizer Industry

One of the most significant economic sectors in India is agriculture. In India, around 60% of the population depends on agriculture for their living, while the industry alone accounts for more than 18.5% of the nation's GDP. India's agriculture is significantly impacted by the monsoon as well. The majority of farmers rely on unpredictable rainfall due to a lack of irrigation facilities. Chemical fertilizers for agriculture are not supplied to farmers in sufficient quantities. Ensuring the supply of primary and secondary nutrients in the necessary proportions is the major goal of the fertilizer industry.

The International Fertilizer Association (IFA) projects that global urea consumption would increase by 123 LMT between 2006 and 2010, from a total of 1313 LMT in 2006 to 1436 LMT in 2010. In contrast, it is anticipated that the overall supply will rise by 298 LMT from a total of 1344 LMT in 2006 to 1641 LMT in 2010. By 2010, West Asia and North Africa would have a surplus of 11.2 million tonnes of nitrogen from urea, followed by East and Central Europe with 4.5 million tonnes and Central Europe with 0.3 million tonnes. The excess urea in Asia will reach 1.3 million tonnes (Cisse, L., & Mrabet, T, 2004).

It is projected that global urea production capacity will increase by 28% overall, reaching 180 million tonnes in 2010. The capacity was increased by 14 million tonnes in 2010 alone. From 2006 to 2010, about 50 projects

were developed. China and West Asia saw the majority of the additions. Given the excess urea available globally, it is recommended that, following the commissioning of the urea projects currently under construction, the government engage in talks or encourage Indian fertilizer companies to form partnerships with nations with excess urea capacity in order to secure long-term urea supplies.

India's economy is mostly dependent on agriculture. About 25% of the nation's GDP comes from the agriculture industry and other related industries, which also employ a sizable portion of the workforce. One of the related fields of agriculture in India is the fertilizer industry. The third-largest producer of nitrogenous fertilizers is now India. The implementation of consecutive Five Year Plans has made it possible for food grain production to become self-sufficient, and in fact, it has progressed to the point where food grain exports are now feasible. The usage of chemical fertilizers has made this surplus possible (Khabarov, N., & Obersteiner, M., 2017).

The Fertilizer Association of India (FAI) has established a model that takes into account a number of variables, such as fertilizer pricing, high-yielding regions, irrigated areas, fertilizer nutrient prices, and fertilizer usage in prior years. The following graphic provides an estimate of supply and demand through the end of the eleventh five-year plan:

Fertiliser Demand & Supply: 2007-2012				
Year	**Supply N+P**	**Demand N+P+K**	**Demand Supply Gap N+P+K**	**Demand of K**
2007-08	16950	23125	8835	2660
2008-09	17585	24085	9305	2805
2009-10	18595	25035	9405	2965
2010-11	19912	25960	9178	3130
2011-12	19965	26900	10235	3300

Note: N = Nitrogen, P = Phosphate, K = Potasium
Source: Fertilizer Association of India, 2021

India is currently the world's third-largest producer and consumer of fertilizer. It has been noted that fertilizer subsidies have been increasing. The government's incapacity to raise the maximum retail price of fertilizers and the increase in manufacturing costs are the causes of this.

One of the main drivers of overall agricultural development is the rise in fertilizer output and consumption.

The growth of Indian agriculture is significantly influenced by the fertilizer business. Its contribution may be seen in the following points:

1. Agricultural development: Indian agriculture has advanced considerably as a result of the growth of the fertilizer industry. In the Green Revolution, it has been essential.
2. Capital Investment: The fertilizer business is now one of the most significant economic sectors, having received over Rs. 5700 Cr in investment.
3. Corporate Development: This industry has evolved into an organized one over the past 30 to 40 years. It has joined a number of joint ventures with cooperatives and global corporations.
4. Regional development: States with a variety of fertilizer factories include Gujarat, Maharashtra, Punjab, Uttar Pradesh, Andhra, Assam, Bengal, Rajasthan, and Bihar.
5. Employment: Over the past 50 years, this industry has directly employed 3.5 lakh families and supported a large number of related industries over the past 30 years.

In the past, especially from the middle of the 1970s to the 1990s, the fertilizer industry drew significant investments. But during the 10th Plan period, very little investment was made. By the end of 2005–06, a total of Rs. 25,923 crore had been invested in the fertilizer industry. Other industries enjoy higher rates of return on investment due to the Indian economy's faster expansion, whereas the fertilizer industry has not been able to draw in more investment because of its poor returns. At present capital costs, India will need to invest at least Rs. 36,000 crore in the urea industry in order to raise its production capacity by around 12 million tonnes to 31.5 million tonnes by 2011–12 (Khabarov, N., & Obersteiner, M., 2017).

Five ill units in India's fertilizer sector are in dire need of coal, gas, and LPG. These units will aid in the nation's agricultural rebirth if they have access to raw materials. These sick units, which are situated in the country's eastern region and include HFC, FCI, MFL, FACT, and PPCL, will provide some parity in the development of urea production capacity in the states of Bihar, West Bengal, Chhattisgarh, Jharkhand, and Orissa, which currently lack urea plants. It is anticipated that reviving these plants

will result in an extra 50 LMT of urea capacity annually (Subash, S. P., Jhajhria, A., & Pal, S., 2020).

Outdated plant equipment, high energy usage, overworked staff, and the high fixed expenses of the new ammonia plant (900 MTPD) are the causes of FACT's illness. While the NPK plant is running at low capacity due to high prices and insufficient phosphoric acid supply, the ammonia plant is not working at full capacity since the capacity of urea plants does not match, resulting in losses for the MFL unit. Production costs are greater than what the business makes from concessions and MRP. Its depreciation charges are excessive as compared to the group's averages under the NPS. The Department of Fertilizers is actively considering a package for reforming MFL and resolving FACT issues (Subash, S. P., Jhajhria, A., & Pal, S., 2020).

The fertilizer industry needs ports, road connections, rail and river access, and storage facilities. The majority of ports have significant capacity limitations when it comes to consistently managing large quantities. At the moment, Mundra Port is the only port that can accommodate Panamax ships. Lack of processing facilities at Indian ports has become a serious constraint as a result of the growing number of shipments from the US and the CIS made by sea. It will be more cost-effective to upgrade current small ports rather than build new ones in order to support the work of big ports, which handle 60–70% of the final fertilizers. By extending and constructing roads that can support higher loads on a national scale from high capacity vehicles, road transport development and maintenance will need to be significantly expanded. If timely fertilizer supplies is to be guaranteed, railway infrastructure and port-rail communication must be greatly improved during the Plan period. The expansion of coastal shipping and inland rivers must be encouraged in order to transport fertilizer (Goldstein, A., Pinaud, N., Reisen, H., & McCormick, D. 2009).

In addition to transportation infrastructure, warehousing infrastructure should be strengthened to accommodate the nation's evolving needs due to conflicting demand from various agro-products. This is especially true as fertilizer does not lend itself to JIT (Just in Time) inventory planning and has a clear peak and nonpeak demand distribution.

India will need 300 million tonnes of food grains by 2025 to feed its projected 1400 million people (based on rice, i.e. unhusked paddy rice). The demand for other crops including cotton, sugarcane, fruits, and vegetables would rise in tandem. The nation will need roughly 45 million tonnes of nutrients from different plant sources, including as fertilizers,

organic manures, and biofertilizers (30 million tonnes of food grains and 15 million tonnes of nutrients for other crops). Since there is little room to expand the cultivated land, the higher demand for crop yields will need to be met by higher yields. In the nation, most agricultural yields are comparatively low, but there is a lot of room to improve them by using more inputs, including fertilizers. As a result, fertilizer use will continue to be crucial to agriculture's future growth (Goldstein, A., Pinaud, N., Reisen, H., & McCormick, D. 2009).

Transport, handling infrastructure, and storage will be under strain as more fertilizer is handled. Activities that encourage greater rates of use, improved nutrient balance, and increased efficiency will all be necessary for fertilizer use. In order to guarantee that farmers have access to fertilizer, consideration must also be given to the availability of loans. India will be a significant importer of intermediates, final goods, and raw materials. Urea and DAP will continue to dominate fertilizer production, and it is doubtful that the pattern of fertilizer products will alter anytime soon.

There is room to establish a fertilizer technology mission. If fertilizer application is balanced and in accordance with crop and soil requirements, the usage pattern may alter. The need for urea will change as the proportion of fertilizer that is used that is phosphoric and potassium-based rises. Therefore, this Sub Group believes that experts should investigate this subject. Therefore, it is recommended that a fertilizer technology mission be established, including experts from agricultural research institutes and agricultural universities, to examine how fertilizer usage patterns will change in the years to come (Saran. S, 2012).

Phosphate Industry in Africa

Producing 22% of the world's phosphate-based fertilizers, the African phosphate market is the second largest in the world. Due to the increased need for fertilizers based on phosphate, the market for phosphate chemical reagents is expected to develop at a compound annual growth rate of 10.1% between 2011 and 2016. The market for phosphate chemical reagents in South Africa and Morocco generated US$ 1.10 billion in 2011, according to a recent Frost & Sullivan report, and is expected to generate US$ 1.96 billion in 2016. Among the phosphate chemical reagents examined in the study are ammonia, fatty acids, and soda ash (Hrituleac, A., & Nielsen, J. U. M. 2011).

Because of increased phosphate mining and growing demand for phosphate-based fertilizers, the market is expanding in both South Africa

and Morocco in terms of both volume and income. According to Dilshaad Booley, a research analyst at Frost & Sullivan's Chemicals Materials & Food division, "the lack of effective substitutes for phosphates will ensure a constant increase in demand for this raw material for use in fertilizers." "Phosphate-based fertilizers are made from almost 85% of the phosphates mined in Africa."

Africa's growing population will result in a higher need for food. Additionally, the need for fertilizers is expected to rise as African countries work to become self-sufficient in their food production. However, the market for fertilizer is expanding more slowly due to insufficient government support for farmers. Fertilizers are typically too costly to be applied in the ideal amounts to maximize yields. Furthermore, the majority of African nations have deregulated their fertilizer markets, making them more accessible to global competition. "Farmers are unable to use recommended quantities of fertilizer because of the high cost of fertilizer, which will make production unprofitable even when output is reduced," Booley noted. "Farmers can buy the cheapest fertilizers from the international market instead of the local one due to the deregulated phosphate-based fertilizer market."

To ensure higher productivity and more affordable locally grown products, the governments of South Africa and Morocco will need to provide fertilizer subsidies to both new and existing farmers. As an alternative, farmers could organize into unions that advocate for improved fertilizer market regulation and subsidies. "The implementation of subsidies and regulations will protect local fertiliser producers, as government-owned companies dominate the phosphate-based fertiliser manufacturing sector in both countries," Booley said. "Along the value chain, it will also boost employment in the agricultural sector and raise demand for domestic fertilizers."

Phosphate Sector in Senegal

Senegal is situated close to the Atlantic Ocean in the westernmost region of Africa. Large interior plains that are fewer than 200 meters above sea level are the source of the Senegal, Gambia, and Casamance rivers. The foothills of the North-South striking Bassaride mountain range are formed by plateaux up to 600 meters high in the country's southeast. Except for the Senegal River's floodplains, a large portion of the country is arid north of the Gambia River.

A significant portion of the Senegalese economy is made up of the tourism and mining industries, as well as the agricultural sector, which is

dominated by crop production and coastal fishing. In 1999, almost 60% of the working population was employed in agriculture, which contributed 18% of the GDP. Rice, millet, and sorghum are the Senegalese people's basic foods. Cotton and groundnuts are Senegal's primary export commodities. A significant portion of the nation's total sugar needs is met by the extensive production of sugarcane.

Senegal's mining sector is dominated by the production and export of phosphate rock and fertilizers based on phosphate, and phosphate production has been comparatively steady over the past few decades. Senegal is also known to have small amounts of industrial minerals and gold. Limited offshore oil resources and significant amounts of onshore natural gas (106 billion cubic feet) have been found through hydrocarbon exploration (Bonnot-Courtois, C., & Flicoteaux, R.1989).

The folded Precambrian basement in the east of the country and the shallow-dipping Upper Cretaceous to Quaternary sediments in the majority of the central and western regions make up Senegal's two main geological units. The Paleo-proterozoic Birimian volcano-sedimentary sequence, the Neo-proterozoic Madina-Kouta Basin Series, and the two folded Neoproterozoic/Cambrian Pan-African mountain ranges, the Bassaride Branch and the Koulonton Branch, comprise the Precambrian in the country's east and southeast. Tillites, cherts, and limestones are examples of the Lower Cambrian in the Faleme Basin. There is a basin containing Cambro Ordovician conglomerates, mudstones, and sandstones situated between the two Neo-proterozoic/Cambrian Pan-African phases ((Fall, M., Ndiaye, S. A., & Diop, M. (2018)..

Senegal has a number of phosphate deposits and occurrences. Neoproterozoic/Cambrian phosphates in the Namel region (South-East Senegal), Eocene phosphate deposits along the Senegal river, including the "Matam" deposits, Eocene primary phosphate deposits in western Senegal, mined at Taiba and Lam Lam, Aluminous phosphates of Thies, and weathering products of the Eocene phosphates, also found in Western Senegal, are the four main phosphate deposits.

One of Sub-Saharan Africa's leading producers of phosphate is Senegal. Senegal produced 616,700 tonnes of phosphate in total in 1997 (British Geological Survey, 1999). In 1993, the country sold almost one million tonnes of phosphate concentrate to Canada, Australia, Mexico, and China. The industrial processing and manufacturing of soluble P-fertilizers, such as SSP, TSP, DAP, and NPKs, uses a significant amount of the concentrate. P-fertilizers that have been treated are mostly exported.

Since its discovery in 1948, the Taiba phosphate deposit has served as Senegal's primary phosphate mining region. The Compagnie Sénégalaise des Phosphates de Taiba (CSPT) is the company that mines the deposit. North-east of Dakar, there is a vast phosphate-bearing region that includes the phosphate beds. The Keur Mor Fall deposit area in Taiba, which is about 110 kilometers by rail from Dakar, is the primary location for phosphate mining (Fall, M., Ndiaye, S. A., & Diop, M. (2018)..

Here, the Middle Eocene (Lutetian) Phosphatic sequence can be divided into three major beds: 2-3m homogenous Phosphates, heterogeneous Phosphatic ore containing Flint, thin indurated Coprolitic Phosphates (Phosphate gravel), 3-4 m thick. Below the 5-12 m (average 7m) thick Phosphatic beds are Middle Eocene finely laminated 'paper' clays, made up largely of Palygorskite (Attapulgite). Above the Phosphates are up to 25 m thick Quaternary Aeolian Sands (Pascal and Sustrac 1989). The proven reserves of the Keur Mor Fall deposit are 100 million tonnes, with ore grades ranging from 18-39 per cent P2 O5 (McClellan and Notholt 1986). The average grade is 24 per cent P2 O5 (Fall, M., Ndiaye, S. A., & Diop, M. 2018).

Two sizable phosphate mines, Taiba and Lam-Lam, were opened in the Thies region, 70 kilometers from the city, Dakar, in the 1940s and 1950s, marking the beginning of modern mining in Senegal. For many years, the expansion of the Senegalese economy was guaranteed by these crucial phosphate reserves. Other outstanding prospects that are currently being explored or evaluated, particularly the phosphates of Matam, Cocki, Gossas, and Niakhene, are now matching the reserves of Taiba (Flicoteaux, R., & Hameh, P. M. (1989)..

Since 1984, it has been known that phosphate deposits with an average proven resource of 40Mt exist in the province of Matam in the northeastern portion of the Basin. A small-scale mining facility is using a small portion of these reserves to produce natural fertilizers for Senegal's farming sector. Senegal might generate 500–1000 Mt of phosphate if these mineral discoveries are confirmed, placing the nation among the top ten phosphate producers worldwide. Calcination can be used to evaluate the substantial Aalumino-Calcic Phosphate reserves (about 80 million tons) in the Thies-Lam Lam area for use in animal feed and natural fertilizers.

The neutral Ammonium Citrate solubility of the Taiba Phosphate concentrate (37.4 per cent P2 O5) is 3.1 per cent P2 O5 (McClellan and Notholt 1986). The Cd content of the Taiba Phosphates are elevated, ranging from 60-115 mg/kg, and averaging 87 mg/kg. of weathering of

Phosphatic sediments, cover large parts of the Thies Plateau of Western Senegal. The city of Thies is located in the centre of this extensive, elevated area. Natural outcrops of the Aluminous Phosphates are sparse. The best exposures are seen in open pits between Lam Lam and Pallo, approximately 15-km North-West of Thies.

The Aluminous Phosphates of Thies are the result of lateritic weathering of the underlying Middle Eocene to Oligocene Argillaceous Phosphatic sediments. The weathering episode is estimated to have occurred from Middle Miocene to Lower Pliocene. For his doctorate thesis, Flicoteaux (1982) studied the genesis of this deposit in detail, and found at least four stages of weathering: Apatite leaching (stage 1), accumulation of Kaolinite and Fe-Millisite (stage 2), 'ochreous' Aluminous Phosphate development (stage 3), and leaching into 'white facies' Phosphates in topographic depressions (stage 4). The main Phosphatic weathering products are Ca-Millisite, Sr-Crandallite and Wavellite. Mineralogical studies showed that the neutral Ammonium Citrate solubility of the typical Al-phosphate product of Pallo (32.0 per cent P2O5) is high at 12.0 per cent P2 O5

The Société Sénégalaise des Phosphates de Taiba (SSPT) mines these Aluminous Phosphates in open-pit operations near the village of Pallo, 10-km North-West of Thies. The mineable Phosphate ore at Pallo is 10m thick and has an overburden of 3m. The Aluminous Phosphates are crushed, calcined to increase the grade to 34 per cent P2 O5 and also to increase Citrate solubility, and marketed as 'Phosal' for use as fertilizer or 'Polyphos', which is used in animal feed.

Proven Aluminous Phosphate reserves in the 32,000 hectare concession amount to 50 million tonnes, with 29 per cent P2 O5 (Flicoteaux and Hameh 1989). Between 1979 and 1983, the annual production of crude Phosphate ore from the Aluminous Phosphate deposit of Pallo was 180,000-280,000 tonnes, and the corresponding Calcined ore between 78,000 and 140,000 tonnes.

Senegalese Economy

Senegal is France's oldest colony in Africa, and surprisingly, decolonization has only reinforced ties between the two countries. France remained a key bilateral aid donor and trade partner. In 1901 in Dakar, Senegal, the French established the "Bank of West Africa (BWA)", which was considered the central bank of the colonies in French West Africa. It was initially built as a private investment bank. Shortly, the French Government authorized the bank to print currency and its board always included colonial officials. The creation of BWA was a modality, with the

intent of injecting investment into French colonies. In 1880, almost all French economic interests in the area were in the form of family-run trading houses based in French port cities such as Bordeaux and Marseilles. The creation of this bank occurred while these houses consolidated into joint stock companies (Fall, M., Ndiaye, S. A., & Diop, M. 2018).

By the 1920s, business in French West Africa was dominated by solely three private joint stock companies: Compagnie Française d'Afrique Occidentale, Nouvelle Société Commerciale Africaine, and Société Commerciale de l'Ouest Africain. The BWA board largely overlapped with the boards of these trading companies. While the Bank of France in Paris remained essentially a bank for banks, the BWA, on the other hand, was a brokering bank. In years that followed, more banks similar to this emerged. In 1924, BWA expanded to French Equatorial Africa by opening more branches.

However, the strategy of opening these banks to foster inward investment was not as successful as expected, since capital extraction was the main source of wealth in West Africa. In fact, most of the capital that France collected through taxes was redirected to Africa as an investment. The BWA held a capital of 6 million Francs before 1914, and that amount rose to 50 million in 1931, though it declined thereafter. In 1940, all banks in French West Africa retained a total investment of just over 1.5 million Francs. Nevertheless, forestry alone had an inward investment of almost 3.4 million Francs that year.

The French offered to enforce mercantilist and protectionist measures in colonial trade. Another difference between the colonial powers was the degree of international trade openness. French colonies were obliged to import goods from France, to sell all their products only to Frenchmen and to use French ships as a means of transportation. France preferred forced labour, which included public work, work that substituted for payment of taxes, work that could be traded for money and army recruitment for public works. They encountered resistance to this labour system, which later developed into organized forms of class struggle, such as labour unions and strikes (Goldstein. A, Pinaud, N., Reisen, H., & McCormick, 2009).

Senegal was the oldest French colony in Africa. The four communes: Dakar, Saint Louis, Goree and Rufisque were a 'experimental laboratory' for the theory of assimilation. Senegal is considered to be one of Africa's model democracies. The country has one of the region's most stable economies. After 1960's, France remained one of the key aid donors and

trade partner, a fact that helped Senegal to gain political and monetary stability by joining the Franc zone (Prian, 2014).

Senegal is situated in West Africa with a total area of 196,000 square kilometres, and includes deserts in the North and a moist, tropical South. Only 12.51 per cent of land area is arable from which 0.24 per cent is under permanent cropping. Senegal has a population estimated at about 12.5 million. Wolof is the most spoken language and only 20 per cent of the population is actually literate in French, a fact that excludes a majority of the population from the best jobs in the public and private sectors, and from participation in politics. 42 per cent of population lives in urban areas (Goldstein. A, Pinaud, N., Reisen, H., & McCormick, .2009).

Senegal relies largely on donor assistance. The country's key export industries are Phosphate mining, fertilizer production and commercial fishing. The country is also working on iron ore and oil exploration projects. Senegal's economy is dominated by few strategic sectors like groundnuts, fisheries and services.

In January 1994, Senegal undertook a bold and ambitious economic reform program with the support of the international donor community. This reform began with a 50 per cent devaluation of Senegal's currency - the CFA Franc - which was linked at a fixed rate to the French Franc. Government price controls and subsidies have been steadily dismantled as part of economic reforms. However, this devaluation had severe social consequences since most essentials goods were imported. Overnight, the prices of products such as milk, rice, fertilizer and machinery doubled. As a result, the country suffered a large exodus, with many of the most educated people and those who could afford it choosing to leave the country.

After an economic contraction of 2.1 per cent in 1993, Senegal made an important turnaround, thanks to the reform program, with a growth in GDP averaging over five per cent annually during 1995-2004. Annual inflation had been pushed down to the low single digits. As a member of the West African Economic and Monetary Union (WAEMU), Senegal is working toward greater regional integration, with a unified external tariff and a more stable monetary policy. Senegal still relies heavily on outside donor assistance, however. Under the IMF's Highly Indebted Poor Countries debt relief program, Senegal will benefit from eradication of two-thirds of its bilateral, multilateral, and private sector debt, contingent on the completion of privatization program proposed by the Government and approved by the IMF.

In 2012, Senegal's economy recovered, with growth estimated at 3.7 per cent of GDP, up from 2.1 per cent in 2011. Projected growth for 2013 and 2014 is 4.3 per cent and 5.1 per cent respectively. These projections assume that the Government's socio-economic programme will be implemented along with the Policy Support Instrument (PSI-II) 2010-13 agreed upon with the IMF. The main investment programmes are for road infrastructure, with the continuation of a toll motorway and Blaise Diagne International Airport, as well as energy (electricity distribution (Cairó-i-Céspedes, G., & Colom-Jaén, A. (2014).

The National Strategy for Economic and Social Development (SNDES) for 2013-17 was approved in November 2012. It centres on three areas of action: growth, productivity and wealth creation; human capital and sustainable development; and government, institutions, peace and security. The direction taken by the new administration in the area of good governance should lead to better management of public resources. The implementation of necessary reforms to achieve growth objectives may be made easier by the strong legitimacy of the new ruling team that emerged from the presidential and parliamentary elections in early 2012. However, the opening of the Senegalese economy makes it vulnerable to fluctuations in world commodity prices, the economic crisis in Europe and political crisis in neighbouring Mali. There are also internal risks linked to floods and other climatic shocks, and to the slowness of the road infrastructure programme and reforms, especially in the energy sector (Cairó-i-Céspedes, G., & Colom-Jaén, A. (2014).

Recent studies indicate that from 1980 to 2009, labour migration was from the primary and secondary sectors to the urban informal sector. But structural transformation of Senegal's economy remains slow. About 60 per cent of the working population still depends on agriculture. Senegal has not become mining-oriented, despite the potential offered by Phosphate and Gold. Mining and quarrying accounted for less than 1.5 per cent of GDP in 2002-11. Reforms to improve the business environment and the quality of human resources are, therefore, crucial.

On the supply side, the return to normal agricultural production enabled the primary sector to contribute 16.7 per cent to the GDP in 2012. This growth is forecast to continue in 2013 and 2014. Agriculture recovered because of good rainfall and better quality seeds and fertiliser distributed on time by the Government. The groundnut sector grew in volume, as did cotton, tomatoes and watermelons. . The value added by livestock farming fell by an estimated 1.1per cent in 2012 due to fall in the number of recorded slaughters. The fisheries sector rebounded, growing by 6.8 per

cent in 2012, thanks to increased landings by traditional fisheries. Senegal has stopped granting fishing licenses, while Mauritania has granted more licenses to Senegalese boats (Hazard, E., De Vries, L., Barry, M. A., Anouan, A. A., & Pinaud, N. 2009).

Growth in the primary sector has been erratic and subject to floods, droughts and other external shocks. After recording negative growth of 10.8 per cent in 2011, the sector grew by 8.9 per cent in 2012, and is projected to expand by 6.1 per cent in 2013. Medium- and long-term transformation of the economy depends on the stabilisation of rural revenues and the diversification of sources of value added.

The secondary sector (excluding mining and quarrying) contributed 22.2 per cent of GDP in 2012. In 2013 and 2014, this growth is expected to be supported by manufacturing, as unrest in Mali stabilises. The 1.4 per cent decline in value addition by the secondary sector in 2012 was the result of a drop in the production of Phosphates, fats, flour and cement. Industry, which is concentrated on processing of raw materials, still needs diversifying. Sugar production rose as a result of a five-year sugar self-sufficiency plan, which ends in 2015. Similarly, production of textile fibres increased following the implementation of the three-year (2010-13) plan to revive the cotton industry. Energy production increased, thanks to restructuring of the sector since 2011. But these increases were not enough to drive growth in industry as a whole.

The tertiary sector, including Government, contributed 58.2 per cent to GDP in 2012, with a growth of four per cent. The sector was driven mainly by financial services, telecommunications and trade. In contrast, transport (especially rail and air), hotels and restaurants suffered a setback in 2012 due to difficulties encountered by the tourism and leisure sectors. The tertiary sector should rebound in 2013 and 2014, with growth of around four per cent, since the crises in Europe and Mali are expected to wane, VAT on tourism will stay at 10 per cent and agricultural production and manufacturing is forecast to grow.

Here is a reframed and reduced version of the text (approximately 25% shorter), preserving the key points:

Domestic demand grew from 3% in 2011 to 5.3% in 2012, helping offset weak exports and driving a 5% rise in imports. Household consumption accounted for over 70% of GDP in 2011–12, largely due to rising remittances estimated at XOF 737.7 billion (10% of GDP) in 2012. Public investment supported gross fixed capital formation, which rebounded after

a 1.9% drop in 2011, fueled by major infrastructure projects like a toll road, Blaise Diagne International Airport, and energy sector investment.

In 2013–14, capital formation and job creation will be bolstered by Zircon and gold mining. The Apix agency invested XOF 432.6 billion in a water desalination plant, energy production (400 MW/day), and salt production, backed by German, Turkish, and Senegalese capital. A 2013 tax reform will rationalize exemptions and reduce household purchasing power by XOF 29 billion (0.37% of GDP). Under the SNDES, growth is projected at 4.3% in 2013 and 5.1% in 2014. Public investment will focus on rural seed capital, equipment, and infrastructure, funded partly by the Millennium Challenge Account. These initiatives aim to reduce risks from shocks like the Mali crisis and climate variability.

India-Senegal Partnership on Phosphate

Senegal has expressed its willingness to cooperate with India in the development of the fertiliser (Phosphates) sector in its territory. Senegalese delegation appreciated the contribution of India and IFFCO in developing the Phosphate sector in Senegal through ICS Senegal. As per Ministry of Chemicals and Fertilisers press release, a meeting between the visiting Senegalese Mining, Industry, Agro-Industry and SME Minister, Abdoulaye Balde, and the Minister of State for Chemicals and Fertilisers, Srikant Kumar Jena, was held and both countries showed interest in deepening ties in the Phosphate sector.

The draft MoU proposed to be signed was forwarded to the Senegalese authorities through the Indian Embassy for the constitution of a task force between the two countries, to carry forward techno-commercial feasibility for exploiting the Matam mines for the benefit of the two countries, according to an official release.

The draft MoU proposed to be signed was forwarded to the Senegalese authorities through the Indian Embassy for the constitution of a task force between the two countries, to carry forward techno-commercial feasibility for exploiting the Matam mines for the benefit of the two countries, according to an official release.Abdoulaye Balde, Senior Minister, Mining, Industry, Agro-Industry and SME, Republic of Senegal, met Srikant Kumar Jena, Minister of State, Chemicals and Fertilisers, along with his delegation and discussed possibilities of cooperation between the two countries in The Phosphate sector. Sutanu Behuria, Secretary, Department of Fertilisers, and other senior officials were present. The Senegalese delegation appreciated the contribution of

India and IFFCO in developing the Phosphate sector in Senegal through ICS Senegal (MEA, GOI, 2021).

The draft MoU proposed to be signed at the Government-to-Government level was forwarded to the Senegalese authorities through the Indian Embassy in 2008, and response from the Senegalese side is awaited. If the Senegalese side agrees, a task force will be constituted between the two countries to carry forward the techno-commercial feasibility in exploiting the Matam mines for the benefit of the two countries. The Senegalese side expressed its willingness to cooperate with India on the same. On the request of the Senegalese delegation, Jena mentioned that he would take up the matter of India's support for development of agricultural sector in Senegal with concerned Ministries in the Government of India (MEA, GOI, 2021).

Political Symmetry

Diplomatic relations between India and Senegal were established at the Ambassadorial level in 1962, with a resident Indian Mission in Dakar. Both countries enjoy warm and friendly bilateral relations, sharing common commitment to democracy, development and secularism. Both countries are members of the Non-Aligned Movement and G-15. Senegal has appreciated India's cooperation and support for the development of Africa on a number of occasions at the international fora. Partnership with India in the field of urban transport, agriculture, fisheries, rural electrification, human resource development, information technology, health etc. is particularly well appreciated here. Senegal, being the leading Francophone country in West Africa, played a significant role in the creation of TEAM-9, and is also a prominent beneficiary under the programme.

This strong political relationship between India and Senegal is sustained by the steady exchange of ministerial and Heads of State, Heads of Government-level visits between the two sides. The exchange of such visits include, *inter alia,* the visit by President Leopold Sedar Senghor in 1974 and 1984 (President Senghor received 1982 Jawaharlal Nehru Award for International Understanding), Minister of Foreign Affairs Assane Seck in 1974, Minister for Industrial Development Cheikh Hamidou Kane in 1979, Minister of Commerce Abdourahmane Toure in 1986, Minister of Industrial Development Famara Ibrahima Sagna in 1989, President Abdou DioufAug in 1997, Minister for Transport and Equipment Youssuf Sakho in 2002, President Abdoulaye Wade in 2003 and 2008, Minister of Foreign Affairs Cheikh Tidiane Gadio in 2004 and 2005, Minister for

Health Dr. Issa Mbaye Samb in 2005, Miniter for Transport, Equipments and Infrastructure Mamadou Seck in 2005, Minister of Mines and Industry Madicke Niang in 2008, Minister of Armed Forces Abdoulaye Balde in 2010, Minister of Foreign Affairs Maitre Madicke Niang in 2010, Minister of International Cooperation, Land Development, Air Transport and Infrastructure Karim Wade in 2010, Minister of Foreign Affairs Maitre Madicke Niang in 2011, Minister of Surface Transport, Railways & Land Development Mme. Nafy Diouf Ngom in 2011, Minister of Mining, Industry, Agro-Industry and SMEs Abdoulaye Balde in 2011, Minister of Commerce Alione Saar in March 2013.

Minister of External Affairs Sardar Swarn Singh in 1972, Deputy Minister for External Affairs Bipinpal Das in 1975, Minister of State for External Affairs Samarendra Kundu in 1978, Minister of State for Fertilizers K. Natwar Singh in 1986, Minister of Commerce and Tourism Arun Nehru in 1990, Minister of External Affairs Madhav Sinh Solanki in 1992, Minister of State for External Affairs Kamala Sinha in 1997, Minister of Fertilizers and Chemicals Surjit Singh Barnala in 1998, Minister of State for External Affairs Omar Abullah in 2002, and Minister of State for Commerce and Industry Dr. Raman Singh in 2002 are among the Indian visits.Minister of State for External Affairs Digvijay Singh in 2003, Minister of State for External Affairs Rao Inderjit Singh in 2005, Minister of External Affairs K. Natwar Singh in 2005, Minister of State for External Affairs Anand Sharma in 2008, and Minister of State for Petroleum and Fertilizers RPN Singh in 2011 (MEA,GOI,2021).

Economic Symmetry

India and Senegal remained suppliers of raw materials and recipient of finished products under the colonial economy. They retained their shared commonality in the post-colonial trade era also. Nevertheless, India has, over the years, witnessed substantial economic growth and acquired experience in industrial production under its 'command' and the subsequent 'demand' economy regimes, as mentioned earlier. Meanwhile, domestic production has failed to meet constantly rising resource demands pushed by economic growth. The increasingly external dependency for resources has pushed India to enter into transnational resource ventures. India's quest for overseas resources coincides with opening up of the resources sector in Senegal, especially its Phosphate, Iron and other mineral resources, thereby evoking renewed interest by external factors such as India.

According to the Export Import Database, Department of Commerce, Government of India, India's export to Senegal were US$ 188.70 million,

US$ 210.16 million, US$ 365.05 million and US$ 490.24 million, respectively, in the financial years 2009-2010, 2010-2011, 2011-2012 and 2012-2013. India's Import from Senegal were US$ 237.03 million, US$ 205.65 million, US$ 429.25 million and US$ 372.22 million, respectively, in the financial years 2009-2010, 2010-2011, 2011-2012 and 2012-2013. India's total trade with Senegal were US$ 425.73 million, US$ 415.81 million, US$ 794.30 million and US$ 862.46 million, respectively, in the financial years 2009-2010, 2010-2011, 2011-2012 and 2012-2013. Major exports from India to Senegal include textiles, food items, automobiles and pharmaceuticals. Major imports from Senegal include Phosphates and Iron scrap (MEA,GOI, 2021).

In July-August 2010, the Industries Chimique du Senegal, in which an Indian consortium holds majority stake, sponsored a programme titled 'Operation Regaining Mobility' in Senegal, under which the prosthetic 'Jaipur Foot' was fitted to around 500 people, including soldiers and civilians, who had lost their limbs due to anti-personnel landmines, and well as also to those who had become handicapped due to accidents or natural causes. A workshop on Capacity Building in International Business for senior executives was organized in Senegal by the Indian Institute of Foreign Trade (IIFT) in October 2010.

The third 'World Festival of Black African Arts and Culture' (FESMAN-III) was held in Dakar in December 2010. Two Indian cultural troops - 'Seher' and 'Siddi Goma' - were invited by the Government of Senegal to perform at the Festival. In February 2011, an important Federation of Indian Chambers of Commerce and Industry (FICCI) delegation visited Senegal and, apart from calling on Ministers and holding meetings with senior officials in the Government of Senegal, also participated in B2B meetings and a conference with Dakar Chamber of Commerce, Industry and Agriculture. The President as well as the Foreign Minister of Senegal participated in the second session of the India-Africa Forum Summit (IAFS-II) meetings, held in Addis Ababa in May 2011. A Cultural troupe - 'La Linguere' - visited India in June 2012 and participated in the Africa Festival in New Delhi (Embassy of India, Dakar. (2018).

The largest investment from India in Senegal is in Industries Chimique du Senegal (ICS). ICS is a flagship company in Senegal in the business of manufacturing Phosphoric Acid from rock Phosphate available in plenty in Senegal. Many other companies, including the Tata Group (Tata Motors, Tata Unitech and Tata Africa Senegal), Kirloskar Brothers, Expotech, CSL Ltd, NIIT, Ranbaxy, Ajanta Pharma, Coppice Technologies Ltd., Lucky

Group, Angelique, Inma International, Mohan Energy etc. are active in Senegal and the region (Chakrabarty, 2016).

Apart from India's growing trade and invest linkages with Senegal, New Delhi undertakes development cooperation with the partnering country through its provision of Lines of Credit (LoCs) and capacity building programmes. India provides concessional LoCs to enable people in Senegal to access Indian goods and services on affordable terms. India has extended LoCs to Senegal for (i) development of rural SMEs and purchase of agricultural machinery and equipment from India, (ii) supply of buses and spares by Tata International (Tata Motors), (iii) irrigation projects; (iv) Poverty Alleviation Programme for women and acquisition of 400 vehicles from India (v) IT Sector, hardware and logistics movement (vi) rural electrification (vii) fishing industry development project (viii) acquiring railway coaches and locomotives from India And (ix) supply of medical equipment etc. to four hospitals in Senegal.

Capacity building represents a major thrust area of India-Senegal development cooperation. For the financial year 2012-2013, 35 slots have been allotted for Senegal under Indian Technical and Economic Cooperation (ITEC) programme. The Hub Earth Station of the Pan-African e-Network Project is located in Sebikotane village of Senegal. The project, inaugurated in February 2009, is now operational in 47 countries of Africa. India's Duty Free Tariff Preference (DFTP) scheme is applicable for import of select commodities from Senegal. An Entrepreneurial Training & Development Centre (ETDC) was setup under G-15 Cooperation Programme (inaugurated in 2002).

The Indian community numbers around 300. Most of them work for Indian companies, including those executing development projects under Lines of Credit extended by India. Some of them also run their own businesses.

Policy Calibration

Over the decades, a significant number of African youth, including Senegalese, have participated in the Indian Technical & Economic Cooperation (ITEC) programme and have acquired skills to contribute to their home countries' economies. Also, Indian universities and other educational institutions have received young students from Senegal and the larger African continent. It is very often asked if India can positively utilize these contacts? There is a need for strategic synchronization between capacity building and resource production partnership in case of the India-Senegal engagement. Especially, the

Phosphate industry should remain the prime recipient sector when New Delhi has to allocate its scholarships to Dakar aimed at imparting skills to its people.

What is more important is that there should be political, geographic and ethnic representation of stake holders in scholarship allocation to ensure that New Delhi, in any political eventuality, has a steady pool of resource persons, trained under Indian scholarship programme, who can be banked upon to push for partnershisp in the Phosphate sector of Senegal. The Indian embassy can play a key role in calibrating scholarship allocation, since it holds a discretionary quota of 50 per cent of the total scholarship slots allotted to the host country, as already mentioned in earlier chapters. Furthermore, the employability of Senegalese beneficiaries of New Delhi's ITEC programme can be leveraged by giving them internships at Indian phosphate companies after completion of their training under the scholarship scheme.

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