

Senegal: Selected Issues



SENEGAL

SELECTED ISSUES

January 2022

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SENEGAL

SELECTED ISSUES

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JUMP-STARTING GROWTH AFTER THE PANDEMIC¹

Senegal has enjoyed an episode of high growth interrupted by COVID-19. An analysis of the growth spell suggests accelerating productivity growth will be needed to achieve faster income convergence with middle-income countries. The government's growth policies go in the right direction but try to embrace too much and do not sufficiently contribute to economic transformation. Medium-term growth prospects would benefit from effectively broadening access to education and skill development as well as a comprehensive structural reform push to address well-identified constraints to private sector development. Sectoral policy interventions could be strengthened by better identifying market failures justifying such interventions, more regular and comprehensive evaluations, a more selective choice of sectors, and, to guard against rent seeking, enhanced transparency, and policy design.

A. Introduction

1. To avoid scarring from the pandemic, Senegal faces the challenge to relaunch the economy and create sustainable jobs for the thousands of youths entering the labor market each year. Annual per capita growth between 2014 and 2019 was robust averaging 3.2 percent. The Covid-19 pandemic has brought this favorable growth spell to an abrupt end, with the urban population working in the informal sector particularly hard hit. Looking ahead, it could lower potential growth ("scarring") as it has strained the social fabric, reduced household buffers and affected education. While a recovery is underway and medium-term prospects benefit from upcoming oil and gas production (expected for 2023), returning to sustained, high per capita growth to transform Senegal into an emerging market economy by 2035 will require the dynamic development of non-hydrocarbon sectors. Fiscal space is diminishing rapidly as public debt and debt service has increased steadily over the last decade. Private investment will thus have to play a lead role in driving growth and creating jobs for the unprecedented and increasing number of young – about 200,000 – who join the labor force each year.

2. The government has adjusted its development strategy in response to the pandemic. After focusing on the health response and immediate economic support ("*Programme de Résilience Économique et Sociale*"), the authorities moved towards revising the "*Plan Sénégal Émergent* (PSE)" to reflect lessons from the pandemic. Indeed, the pandemic has exposed the insufficiently diversified economic structure, the lack of a fully-functioning social safety net, gaps in the health and education system and the country's high dependence on imports of food and basic pharmaceutical products. While the overarching objective remains to promote strong and inclusive private sector-led growth through structural transformation and diversification, the adjusted plan (PAP2A) ² puts additional emphasis on accelerating the domestic production of critical supplies through sectoral policies. This bold transformative development strategy has recently been complemented by initiatives to address

¹ Prepared by Mesmin Koulet-Vickot and David Stenzel (both AFR).

² The "Plan Sénégal Émergent: Plan d'Actions Prioritaires 2 Ajusté et Accélééré Pour La Relance de l'Économie" (see Annex II of IMF Country Report No. 21/18).

youth and women unemployment.³

3. This paper analyzes Senegal's recent growth experience and the authorities' transformative strategy. The first section examines Senegal's pre-COVID-19 growth experience, provides a cross-country perspective on the growth spell, and describes the impact of COVID-19 on the economy. The second section presents the authorities' key structural (horizontal) reforms to improve fundamentals and the business environment and targeted (vertical) policies to promote selected sectors.⁴ The third section discusses these policies against principles identified in the economics literature and makes recommendations to strengthen their effectiveness.

B. Recent Growth Developments

4. The 2014–19 growth spell was broad-based while benefitting from strong investment and a favorable external environment (Annex I). Annual GDP per capita growth averaged 3.2 percent before the pandemic. Growth was broad-based as the primary, secondary and tertiary sectors all contributed over the period. Services and retail trade, being the most important sector accounting for about 50 percent of value added, provided the biggest boost. On the demand side, private consumption and investment growth were strong. Coupled with increasing final public expenditure it consistently outpaced supply resulting in a substantially negative contribution from net exports and an increasing trade deficit.⁵ What stands out is the strong increase of gross fixed capital formation which almost doubled as a share of output over the last ten years, reaching over 30 percent of GDP in 2019 (Annex II). The investment increase stands out in sub-Saharan Africa, and Senegal now exceeds regional averages. The external environment was favorable as terms of trade improved in 2014 largely owing to declining oil prices, the real effective exchange rate declined steadily, and remittances and capital inflows were strong.

5. The growth spell was accompanied by increasing debt vulnerabilities. Central government debt rose from 36.9 percent of GDP in 2013 to 57.3 percent of GDP in 2019, reflecting investments to implement the national development plan, extrabudgetary financing needs, and real exchange rate depreciation. Vulnerabilities related to the composition of public debt also increased, with a shift towards external commercial debt. As a result, Senegal moved to moderate risk of debt distress by end-2019, with limited scope to absorb shocks in the near term.

³ The "*Programme d'urgence pour l'insertion socioéconomique et l'emploi des jeunes*" amounting to 3 percent of GDP over three years (see Annex I of IMF Country Report No. 21/127).

⁴ Horizontal policies are here defined as having the potential to improve the growth fundamentals of the economy. Examples include creating a more favorable business environment and investment climate, credible macroeconomic policies, general infrastructure improvements, or investments in general health and education. Vertical policies, or targeted sectoral interventions, are usually employed to address market failures impeding the development of a specific sector. They can include specific tariffs, local content requirements, tax incentives, public equity investments, improved access to financing through guarantees or directed lending, or special economic zones.

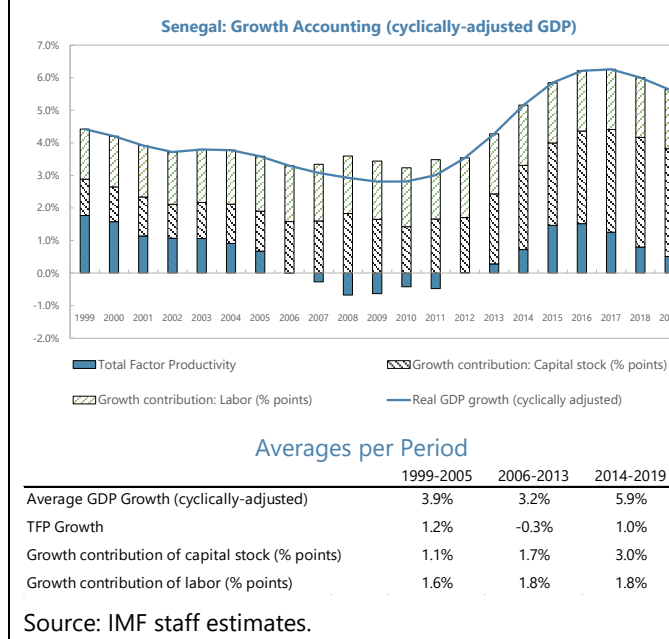
⁵ The growth contribution of the change of inventories is consistently positive with an average 0.9 percentage points from 2014 to 2019. The national statistical agency attributes this to various one-off factors, such as the accumulation of stocks in the context of major infrastructure projects (e.g. "*Train Express Régional*" and highways) and sector specific developments for groundnuts and petroleum products.

6. Productivity growth was weak and there is no notable evidence of structural transformation. Looking at fundamentals, the growth spell was driven by labor force growth, about 3 percent per year, and substantial capital accumulation (Figure 1).⁶ By contrast, the contribution of the total factor productivity growth (TFP) was subdued at 1 percent. Moreover, there was no notable structural transformation (as measured by value added by sector) nor significant advances regarding export diversification or complexity (Annex I Figure 4). And while labor has reallocated from the primary to the tertiary sector between 2011 and 2018, services sector productivity per worker declined nullifying the effect on aggregate productivity.⁷ Moreover, the formal labor market, estimated at about 500,000 jobs in 2019, is too small to absorb the rapidly increasing labor force which grew between 1 and 1.5 million between 2013 and 2019.

7. Senegal's growth episode differs from countries experiencing sustained growth spells on several dimensions (Figure 2).⁸

- **Contribution of TFP to growth.** The contribution of TFP growth was about 2 percentage points lower pointing to the factor-intensity of Senegal's recent growth period.
- **Contribution of private and public investment.** The contribution of private investment to GDP growth exceeded the levels observed in other countries whereas the contribution of public investment remained below average.

Figure 1. Senegal: Growth Accounting 1999–2019



⁶ Based on growth accounting with a Cobb-Douglas aggregate production function with constant returns to scale and capital and labor as inputs. Output growth is decomposed according to:

$$Y_g = \alpha K_g + (1 - \alpha)L_g + A_g$$

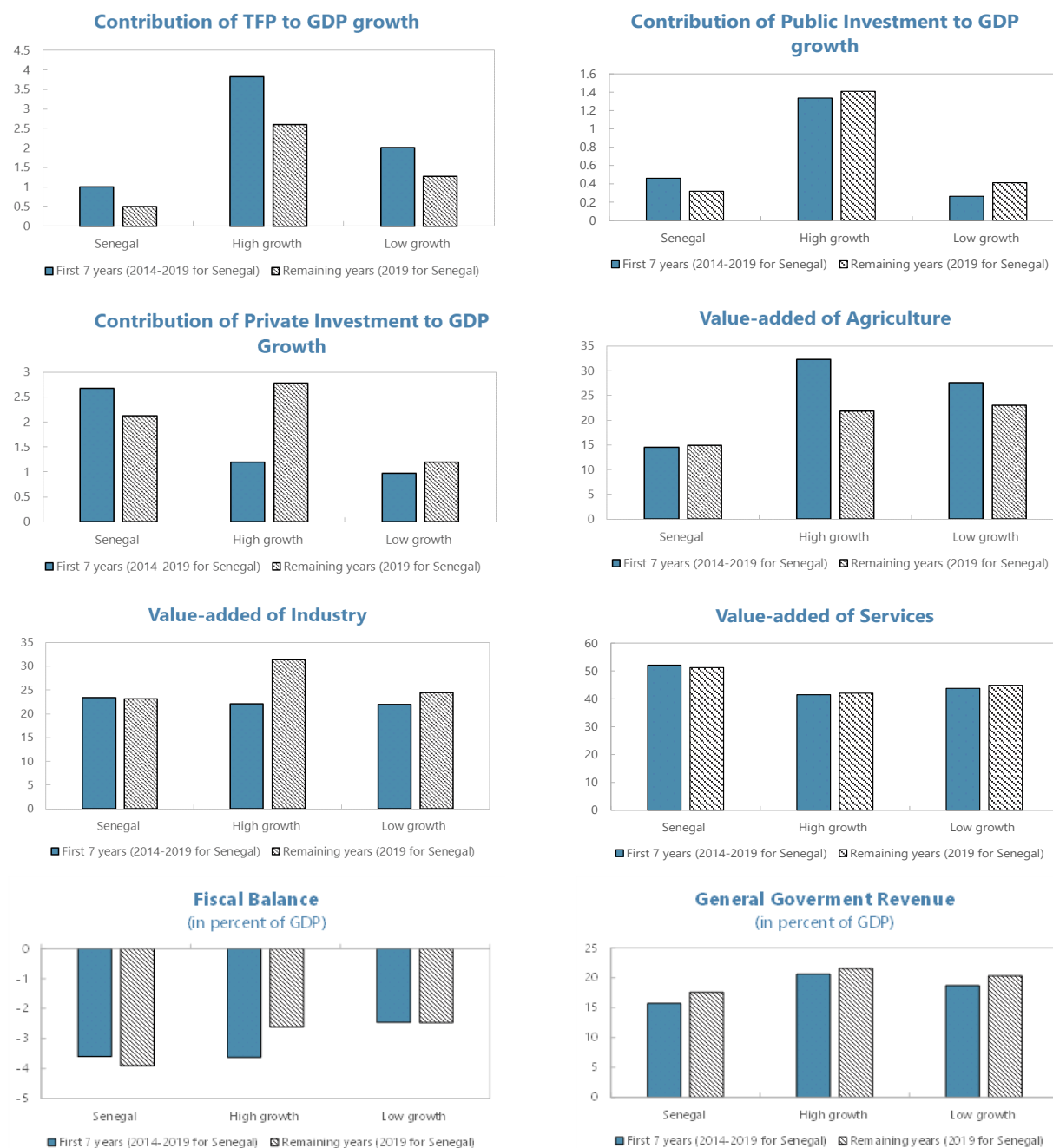
Data is taken from the national statistics office and the capital stock estimated with the perpetual inventory method based on an initial capital to output ratio of 2. The labor share of income is set equal to 0.65. Output growth is smoothed with the HP-Filter ($\lambda = 6.25$) to account for cyclical variations and temporary shocks. Estimating the labor share of income is a challenge because the labor income of self-employed is not directly observable. Assuming a lower labor share of income, for example 0.5 (which is close to the Penn World Table 10.0 estimate of 0.486), would reduce the TFP estimate from about 1 percent to 0 percent between 2014 and 2019.

⁷ Source: World Bank Jobs and Structural Change Tool based on Groningen ETD data.

⁸ Based on recent IMF staff work (IMF 2021: Cote d'Ivoire 2021 Selected Issues, IMF Country Report No. 21/171). 52 sustained growth episodes have been identified (10 years of consecutive positive real per capita growth; average annual per capita growth exceeding 2 percent; and no subsequent reversals of GDP per capita) using a global sample spanning from 1950 to 2018. These 52 sustained growth episodes have a median average annual per capita growth rate of 4.6 percent and are split along the median into two groups named "high growth" and "low growth". The period of observation is split into two periods: the first seven years of the growth episode (for Senegal the average (continued)

- **Structural transformation.** High-growth countries usually experienced a shift in value-added of agriculture to industry whereas Senegal's sectoral composition remained broadly unchanged.

Figure 2. Composition of Growth and Structural Transformation



Sources: IMF staff calculations

value from 2014-2019) and the rest of the growth spell. The comparison is done for the composition of growth and economic structure and for selected macro-fiscal indicators.

- **Macro-fiscal indicators:** A comparison of the fiscal deficit shows that Senegal's deficit over the period has been in line with that of high-growth countries. However, later stages of high-growth episodes have been associated with lower deficits, supporting the view that sustaining high growth for long periods is not associated with maintaining high deficits for long. On the revenue side, Senegal's tax-to-GDP ratio is below the average seen in other countries with high-growth episodes.

8. Informality and a high share of residential investment have likely played a role in slowing down productivity growth and structural transformation. Key constraints to economic growth in Senegal have been well-identified across multiple diagnostic studies.⁹ They include high cost of energy, a distortive business environment, lack of access to land and financing, high labor costs and labor market rigidities as well as weak human capital (education and skills). While a comprehensive discussion of the determinants of productivity in Senegal is beyond the scope of this paper,¹⁰ the two following factors have likely also played a role:

- **High degree of informality.** Weak aggregate productivity growth and the lack of structural transformation are consistent with workers not switching from lower to higher productivity activities (such as from agriculture to manufacturing). New labor market entrants seem to be absorbed primarily in the low-productivity informal services sector. Indeed, only about 1/10 of the workforce has a formal job¹¹ and informal production units dominate the corporate sector.
- **Important share of residential investment in total investment.** The implied substantial capital accumulation associated with a rising investment to GDP-ratio could benefit labor productivity, real wages, and households' incomes.¹² However, output growth did not accelerate with rising investment rates. The incremental capital to output ratio, which measures investment level and output increases (lower values indicating higher output increases for a given level of investment), improved for some time but deteriorated significantly in 2018 and 2019 (Annex II). One possible explanation is related to the high share of fixed capital formation in the construction sector. Slightly less than half of total fixed capital formation went to the construction sector (residential investment, other buildings, and structures), about ¼ in machinery and equipment and the rest in intangible assets such as research and development, mineral exploration, and computer software and databases and other. The significant share of capital formation that can be attributed to the residential sector, unlike investment in equipment, machinery, or intangibles, is likely to have little impact on future productivity and growth, in line with the traditional literature.¹³ Furthermore, the construction of oil and gas rigs and platforms, which drove part of the investment growth in 2018 and 2019, do little to boost growth in the short term due to a

⁹ For example World Bank "Systematic Country Diagnostic" (2018), MCC "Senegal Constraints Analysis Report" (2017), International Finance Corporation "Private Sector Diagnostic: Creating Markes in Senegal" (2020) and Republic of Senegal "Plan Sénégal Émergent: Plan D'Actions Prioritaires 2019-23" (2018).

¹⁰ For a comprehensive discussion see World Bank "Systematic Country Diagnostic" (2018) and World Bank "From strong growth to growing stronger" Country Economic Memorandum (2021).

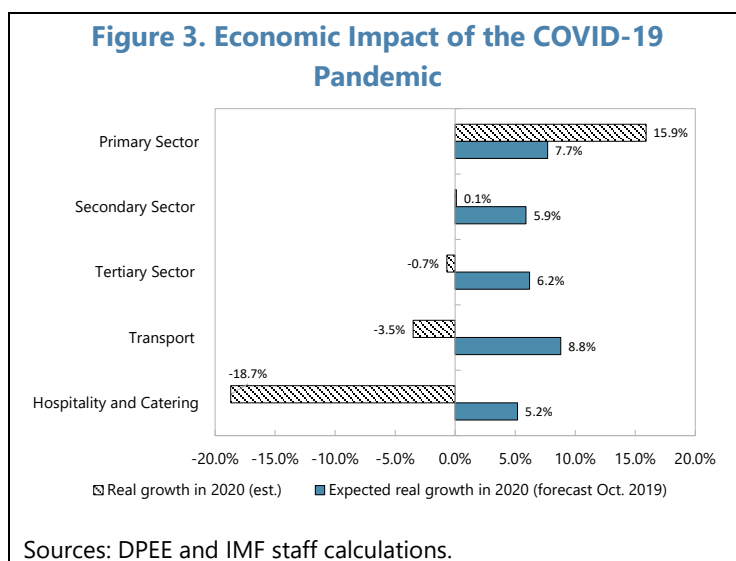
¹¹ See https://www.ilo.org/global/publications/books/WCMS_626831/lang--en/index.html

¹² IMF "Private Investment to Rejuvenate Growth", Regional Economic Outlook, Sub-Saharan Africa (2018).

¹³ De Long and Summers (1991).

very high import content.

9. The COVID-19 pandemic has brought the favorable growth spell to an abrupt end. The pandemic's impact was particularly severe on contact-intensive and mobility dependent sectors such as tourism and related activities (for example transportation and hospitality) and the informal sector (Figure 3). Manufacturing also turned out significantly weaker than expected pre-COVID-19 whereas agriculture was boosted by an exceptionally good harvest. The pandemic also had a strong impact on the social fabric, with the urban population working in the informal sector particularly hard hit and about 85 percent of households reporting declining incomes.



10. Accelerating income convergence will require policies to spur productivity growth. The broad-based nature of growth and the strong pick up of investment suggest that targeted reforms¹⁴ coupled with a favorable external environment, the absence of any major shocks such as droughts, and favorable supply shocks (in particular oil and gas exploration and pre-production investments) have helped to push growth rates between 2014 and 2019 higher than in previous periods. An average annual growth rate of 6.2 percent between 2014 and 2019 (about 3 percent on a per capita basis) could therefore be an upper bound of non-oil output growth in the medium to long term under unchanged policies. This implies further improving resource allocation and productivity growth is necessary to accelerate per capita income growth and income convergence with higher income countries.

C. Horizontal and Vertical Policies

11. The authorities pursue a multipronged growth strategy guided by their overall development plan (PSE). The envisaged policies can be grouped into horizontal (affecting all sectors of the economy) and vertical policies (affecting specific sectors).

Horizontal Policies

12. Reforms cover six main areas:

- *Business climate.* The authorities are working on overhauling the labor market, facilitating access to land, improving the commercial justice system, reducing the regulatory burden through

¹⁴ Examples include liberalizing the groundnut sector, restructuring the Chemical Industries of Senegal, and opening up the energy and cement sector for new investors. (World Bank (2018) "Systematic Country Diagnostic" p. 21).

modernizing the administration, and strengthening the competition framework via the Business Environment and Competitiveness Reform Program (PREAC III). The reforms are further supported by the cooperation with the G-20 Compact with Africa Initiative.

- *Inter-African trade.* Senegal actively promotes building a common African market by implementing its national strategy on the African continental free trade agreement.
- *Cost and access to electricity.* The transition from heavy fuel to gas and renewables as key inputs for electricity production will significantly reduce production costs and emissions.¹⁵ Access to electricity should expand rapidly from 70 percent of the population today to universal access by 2025.
- *Education and skills.* The education strategy combines investment planning and policies to enhance the quality and access of education.¹⁶ Investments in new universities and schools as well as maintenance will be scaled up. Senegal is developing its vocational training sector by providing a regulatory framework and certification standards for private operators. The new youth employment program entails a strong training component targeting the self-employed in the informal sector.
- *Transport infrastructure.* Significant investments in transport infrastructure are envisaged to improve urban transportation, the road network, regional airports, reinvigorate the Dakar-Bamako railway line, and to build a major new seaport in Ndayane.
- *Catalyzing private investment.* A new PPP framework will help accelerate and broaden the implementation of major investments financed through a mix of private and public funds. A dedicated Fund will serve to develop bankable projects and help finance the public portion. Moreover, the government intends to partially guarantee bank loans to private enterprises to facilitate access to longer term financing, set up a dedicated fund to facilitate small and medium-sized enterprises and informal sector financing, and mobilize funds from the Senegalese diaspora for investments.

Vertical Policies

13. The industrialization strategy identifies four sectors with significant potential to boost productivity, employment, and output:

- *Agriculture, forestry, livestock, and fishery processing.* This industry is currently small as many of these resources are traded with little or no processing.¹⁷ Nevertheless, the industry is the biggest direct and indirect employer of all manufacturing industries. The potential for value-addition is substantial as Senegal is abundant on agricultural, forestry, livestock, and fishery resources that offer a strategic base for the promotion of processing industries. This potential is particularly

¹⁵ Selected Issues Paper "Transforming Senegal's energy sector for sustained and inclusive growth".

¹⁶ "Le Programme d'amélioration de la qualité, de l'équité et de la transparence de l'éducation et de L'EFTP".

¹⁷ The authorities estimate the processing rate at 15 % currently.

evident in the horticulture sector where Senegal exhibits a latent comparative advantage.¹⁸

- *Mineral, hydrocarbon processing.* Senegal's subsoil contains reserves of base metals for value-addition, such as gold, iron, copper, zinc, manganese, tin, and uranium. It also has a variety of building materials (basalt, sandstone, shells, flint, sand, clay) and the presence of reserves of quality ornamental stones (marble, granite, serpentinite). However, the potential for mineral-based industrialization through downstream and upstream activities is under-exploited. Apart from limestone intended for the manufacture of cement, the other substances are mainly exported with little or no processing. Additionally, Senegal is expected to become an oil and gas producer from 2023. The authorities intend to promote the transformation of part of these resources to meet local demand of gas and oil. They also intend to incentivize, through a local content policy, the emergence of SMEs around these resources.
- *Pharmaceuticals.* Senegal is highly dependent on imports of pharmaceutical products with 90 percent of demand covered by imports (equivalent to US\$ 239 million in 2016). The authorities project that the domestic market for pharmaceuticals would grow by about 10 percent per year. There are also opportunities in the region with a market estimated at US\$ 1.2 billion in 2019. Local production of pharmaceutical products is extremely limited and concentrated in the filling and finishing segments. The authorities' ambition in the short term is to support the manufacturing of COVID-19 vaccines, the expansion of the filling and finishing segments and to develop the necessary skills to move up in the value chain.
- *High-tech and innovation-intensive industry.* The government interventions target three specific branches of activities: (i) digital economy/Industry 4.0. (ii) assembling industries; and (iii) creative industries. On the digital economy, building on progress made over the last years on telecommunications infrastructure, Senegal's ambition is to create 35,000 jobs in the sector and increase the contribution of digital technology to GDP from 5 to 10 percent by 2025. On the assembling industries, the targeted products include boats fishing; electric wires and cables; agricultural machinery; cell phones and others white electronic products; as well as motor cars, tractors, motorcycles, and bicycles. Finally, Senegal has a rich creative sector that could provide the basis for the development of high value-added services.¹⁹

14. The government's targeted interventions are geared towards supplying lacking inputs and providing incentives to overcome entrepreneurs' risk aversion:

- *In the agriculture, forestry, livestock, and fishery processing.* The government will invest in targeted R&D and facilitate the dissemination of varieties and cultivation methods to promote sustainable agriculture. A priority is to reduce the vulnerability to climatic shocks. To facilitate the processing of agricultural products, the government is setting up four agro-food processing hubs ("agropoles") in the north, south, west and center of the country and processing should be

¹⁸ Brethenoux et al. (2011): "The Agribusiness Innovation Center of Senegal Scaling a competitive horticulture sector through value adding post-harvest processing".

¹⁹ The creative industry includes performing arts and festivities; audiovisual and interactive media; design and creative services; the book and the press, and visual arts and crafts. In 2014, the creative industries accounted for more than 6,000 companies, 105,000 jobs and CFAF 877 billion.

expanded to 15 new products.²⁰ The development of value chains will be supported by scaling-up training and offering support to meet quality standards as well as incentives to modernize existing processing units.

- *In the mineral, hydrocarbon processing.* The government is developing the domestic processing of minerals and hydrocarbons. This will be done through a local content policy²¹ and expanding training opportunities to acquire the necessary skills for mining and hydrocarbon activities and the transformation of raw materials. An immediate focus is on supporting the local transformation of gold (small-scale refineries), zircon, and phosphate through a start-up fund.
- *Pharmaceuticals.* The government is supporting the establishment of an integrated park for the pharmaceutical, biomedical and pharmacopoeia industry ("Pharmapolis"). The "Institut Pasteur" is cooperating with leading global vaccine manufacturers, with an immediate focus on building manufacturing capacity for COVID-19 vaccines. Multiple reforms are envisaged, including a revision of the outdated legal framework, going back to 1954, the establishment of a national authority to ensure drug regulation, and a more rigorous fight against fake medicines. Over time, investors should have opportunities throughout the value chain.
- *High-tech and innovation-intensive industry.* The government aims to develop the appropriate skills and the know-how for the emergence of high-tech, and innovation-based industries, and the associated infrastructure. The development of digital technology and dedicated industrial parks is underway for the digital and creative economy starting with the ones in Diamniadio. Additionally, over time it is envisaged to attract investments in more advanced industrial manufacturing capacity such as car assembly.

15. To ensure the successful implementation of the vertical industrial policies, a governance framework will be set up. A High Presidential Council on Industrialization (HCPI) will be put in place to provide high-level-political support and thus ensure the strategic steering of the vertical policies. This HCPI will be assisted by a permanent secretariat provided by the Ministry in charge of industry, which will be strengthened. An industry Advisory Council, a forum for discussions and exchanges between public and private actors in the industrial sector, will be established. A monitoring and evaluation framework will be set up to assess progress in the implementation of the industrialization policy at the strategic and operational levels.

D. Assessment and Recommendations

16. The economic literature has identified several principles for successful horizontal and vertical policy interventions.²²

²⁰ These 15 products are rice; milk powder ; tomato paste; sugar ; vegetal oils ; meats; cocoa products; wheat flour and semolina; corn flour and meal; other flour and semolina; root and tuber flour; prepared fruits and vegetables; couscous; noodles; spaghetti; and mango juice.

²¹ Local content provisions in legal frameworks, regulations, contracts and bidding practices aim to increase job creation, technology and skill transfer, and private sector development.

²² For example Rodrik (2004, 2008), Cherif, Hasanov (2019), and IMF (2014) "Sustaining Long-Run Growth and Macroeconomic Stability in Low Income Countries".

- Horizontal policies should focus on tackling the main constraints to growth while paying due attention to the interaction of reforms with the institutional environment, the political economy, the cyclical position of the economy and other market failures.
- Vertical policies or targeted sectoral interventions are generally justified by sector-specific externalities, where the benefits of addressing them outweigh costs and risks. To be welfare enhancing, targeted sectoral support should address an externality that is not amenable through neutral means, such as a better definition of property rights, must pass a cost-benefit test, and government failures which could result from weak governance or lack of capacity should not undermine it. Externalities can include coordination failures and learning spillovers. Coordination failures and learning externalities are more likely in sectors that produce tradable goods and services, are characterized by high R&D intensity, and are relatively “sophisticated”.²³ For low-income countries, manufacturing has long been viewed as having the potential to boost aggregate productivity while creating many jobs. But “modern” services, such as transport and communications, financial intermediation, and business services, also exhibit increasing sophistication, tradability, scale, innovation, and learning-by-doing.²⁴ Furthermore, such interventions should be accompanied by a strong governance framework to guard against regulatory capture and rent-seeking. The effect of such policies should be regularly evaluated and, especially policies providing favorable treatment through subsidies or tax exemptions, should have automatic exit clauses.

Horizontal Policies

17. Staff recommends deepening and accelerating reforms to improve the business environment and broadening access to education and skill development. Senegal’s structural business competitiveness generally exceeds the sub-Saharan African average (Figure 4) and horizontal reform priorities are broadly adequate. The government’s development strategy focuses on tackling the main constraints to more dynamic private sector activity and investment. However, staff sees potential to accelerate income convergence via:

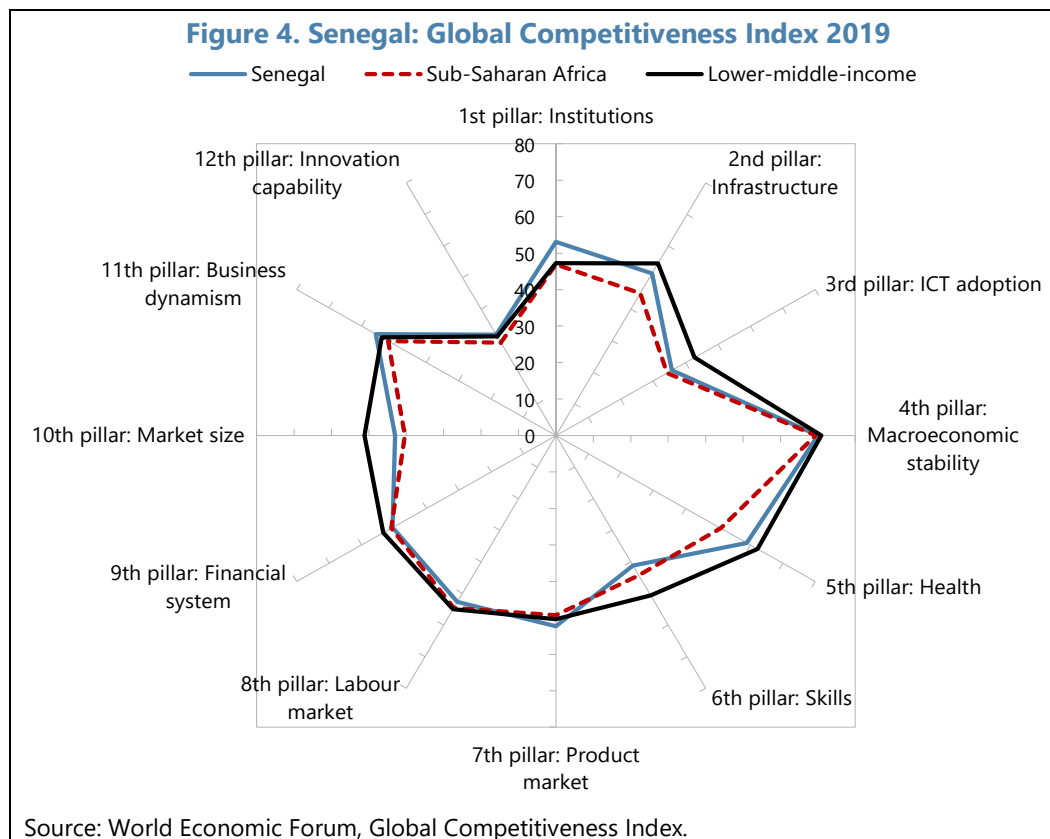
- **Broadening access to education and skill development.** Senegal’s education spending relative to GDP is comparatively high, but the average educational level of the workforce is low with more than 60 percent without formal education and a literacy rate of just over 50 percent. A low-skilled workforce can become a constraint on growth in dynamic higher-end industries and services such as ICT and tourism. Public education spending is tilted toward tertiary education and new investments in the sector are a relatively small part of overall investment under the PAP2A compared to resources allocated to building roads, ports, or industrial development (Figure 5). Against this backdrop, it should be a priority to review education spending, including the expensive scholarship program that mostly benefits upper income households, and broaden access to education services for poor and rural households.²⁵ Moreover, programs and training

²³ Cherif and Hasanov (2019).

²⁴ Hallward-Driemeier and Nayyar (2017).

²⁵ World Bank. 2021. Public Expenditure Review for Senegal.

opportunities are needed for out-of-school and underemployed youth with little formal education.

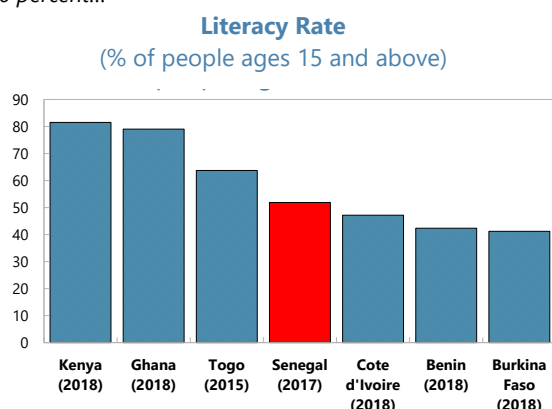


- Pace and scope of policy reforms.** While progress has been made to improve infrastructure and the business environment, reforms could be deepened and accelerated. Long-standing and well-identified issues such as low effectiveness of public support schemes due to a multitude of programs and responsible agencies (for example to support SMEs or youth employment), the rigidity of the formal labor market, lack of access to finance, restrictions to competition in domestic markets, or the ineffectiveness of selected agricultural policies could be tackled with greater urgency. IMF staff research, on a global level, found that a reform push could deliver sizeable output gains. This is based on empirical analysis of reforms between 1973 and 2014 for emerging markets and low-income countries. The data covers five areas: domestic finance, external finance, trade, labor market regulation, and product market regulation. Applying the estimates to Senegal demonstrates the potential growth dividend of accelerating and deepening reforms. If Senegal would close reform gaps, i.e. bringing its policy framework in line with the leading low-income countries in an area, annual growth could be boosted by 1.3 percentage points over the medium term (Figure 6).²⁶

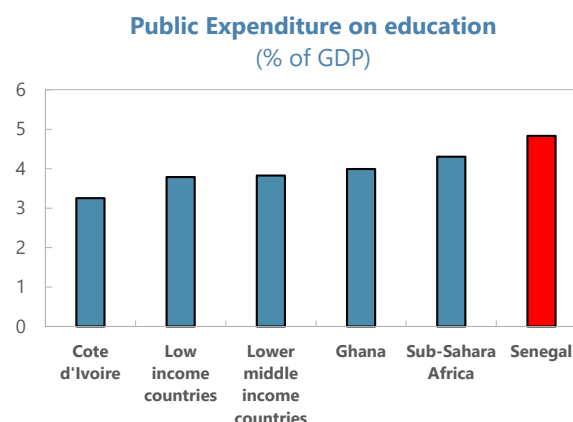
²⁶ Based on the IMF's Structural Reform Database. International Monetary Fund (2019). "Reigniting Growth in Emerging Market and Low-Income Economies: What Role for Structural Reforms?", October 2019 World Economic Outlook, Chapter 3; and Alesina et al. (2020). "Structural Reforms and Elections: Evidence from a World-Wide New Dataset", NBER Working Paper 26720. <https://www.nber.org/papers/w26720>

Figure 5. Senegal: Education Sector

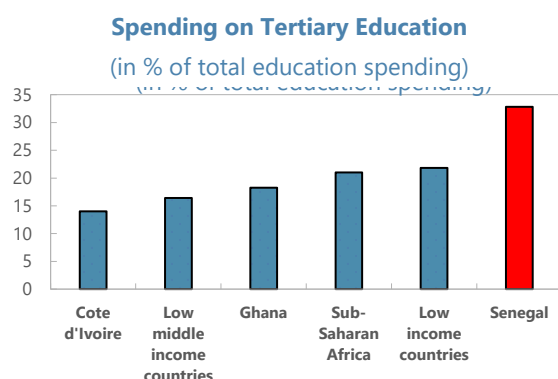
The literacy rate in Senegal stands at just over 50 percent...



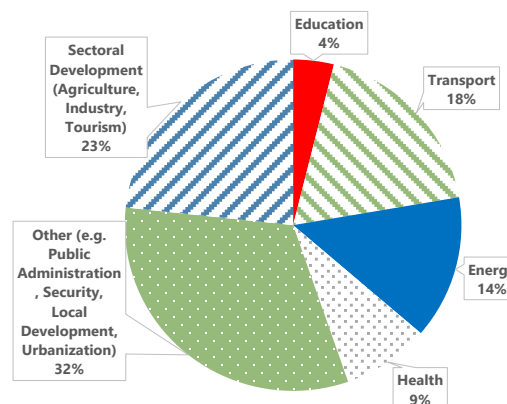
...despite comparatively high education spending.



However, a high share of spending goes to tertiary education...

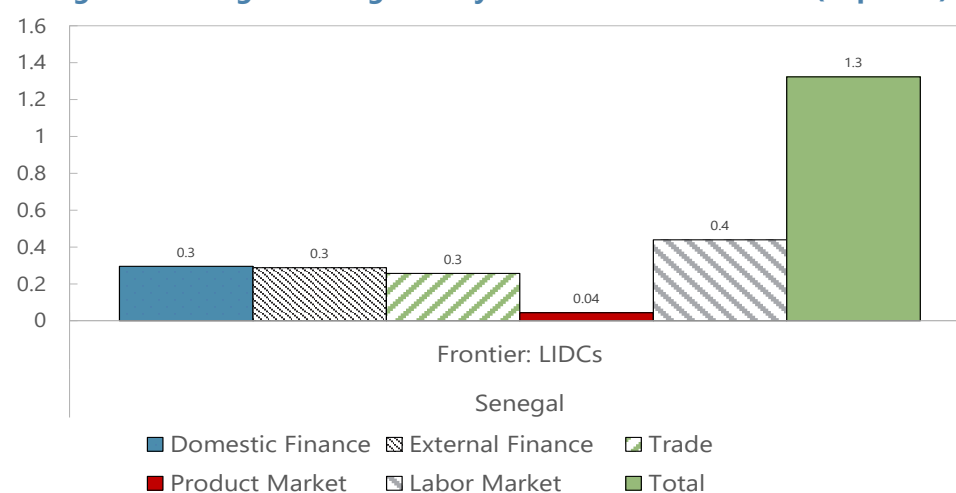


...and new investment in the sector is only a small share of total investment under the development plan.



Sources: World Development Indicators, Senegalese authorities and IMF staff calculations.

Figure 6. Senegal: Average Yearly Additional GDP Growth (% points)



Source: IMF staff calculations.

Vertical Policies

18. Staff sees several risks which could undermine the effectiveness of sectoral interventions.

The government's approach to vertical policies is consistent with some of the guiding principles outlined earlier. The government policy interventions aim at leveraging economies of scale and solving coordination and information problems through complementary upstream and downstream investments (physical infrastructure, research, human capital, etc.) and incentives to entrepreneurs (tax exemptions, venture capital, guarantees, etc.). The industrialization strategy includes a governance framework which could, in principle, serve as focal point to coordinate, analyze, and publicly disseminate policy measures taken across the government. However, there are several risks and challenges that need to be overcome to ensure effectiveness.

- **Identification of market failures.** The identification of sectors with the most pertinent market failures and externalities that could be addressed through government interventions is subject to uncertainty and technically challenging. Moreover, the political process will inevitably be subject to lobbying by interest groups, and rent-seeking. Sectors for which in-depth studies and evaluations exist, for example the groundnut value chain,²⁷ show that powerful, rent-extracting interest groups have emerged over time. This suggests that the political economy in Senegal around vertical policies is likely to be challenging and there is a notable risk that rent seeking could undermine their effectiveness. Addressing this will require strong safeguards and a policy design that allows for regular re-evaluation and adjustments, for example through automatic exit clauses for tax exemptions or subsidies.
- **Monitoring and evaluation framework.** All policy interventions such as price regulations, constraints on imports or exports, or tax exemptions and subsidies, should be regularly evaluated through transparent cost-benefit analysis and their distributional impact should be assessed. More generally, plans like the PSE are often evaluated against broad output indicators whereas a more detailed analysis considering inputs and other relevant developments, while being more resource intensive, could usefully guide decision-makers. The move towards program budgeting could be an opportunity to strengthen the evaluation of selected policies.
- **Trade-offs between objectives.** Sectoral policies often aim at addressing several policy objectives. In addition to tackling market failures, they can also serve to provide support to specific regions or benefit important interest groups. If that's the case, this is likely to undermine their efficiency to address externalities, promote growth in a sector, and create jobs. It is therefore essential to clearly acknowledge and spell out all objectives of a certain policy in relevant documents.
- **Choice of targeted industries.** It will be important to target sectors that are consistent with the economy's latent comparative advantage while avoiding those that are too ambitious because they require inputs not yet widely available such as highly skilled labor, advanced technology, or special infrastructure.²⁸ Through this lens, the choice to target value-chain development of resources widely available (agriculture, forestry, livestock, fishery, mining, and hydrocarbon

²⁷ World Bank (2017).

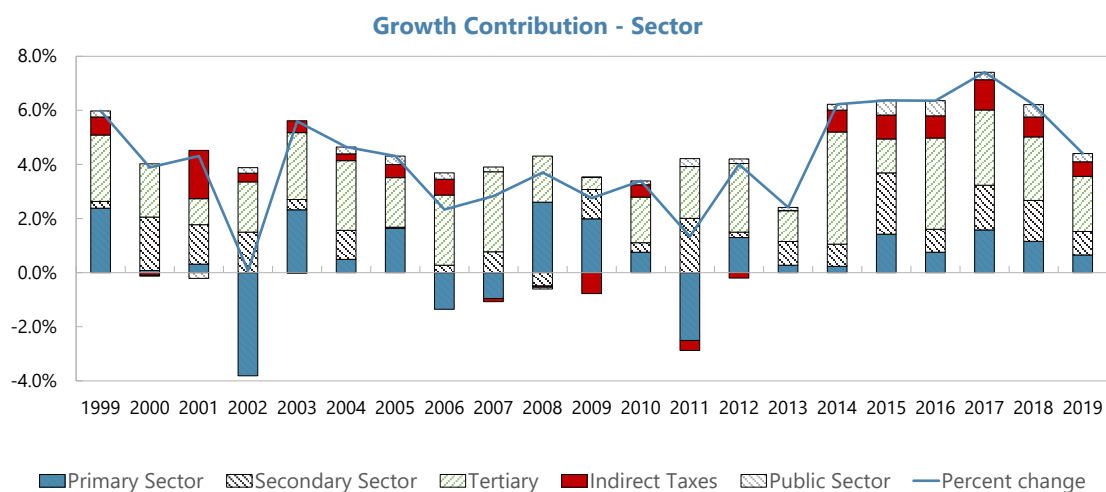
²⁸ Lin and Monga (2011).

processing industries) appears relatively straightforward, although it is not clear in every case that processing is superior to exporting raw products. However, establishing highly advanced industries such as robotics and 3D printing—as envisaged in the industrialization strategy—seems overly ambitious. In addition, targeted support to hydrocarbon processing industries may not result in long term benefits given that global demand for fossil fuels is expected to contract sharply in the next 10 to 20 years.

Annex I. Anatomy of Senegal's Recent Growth Experience

The 2014–19 growth spell was broad-based, factor intensive, and marked by surging investments.

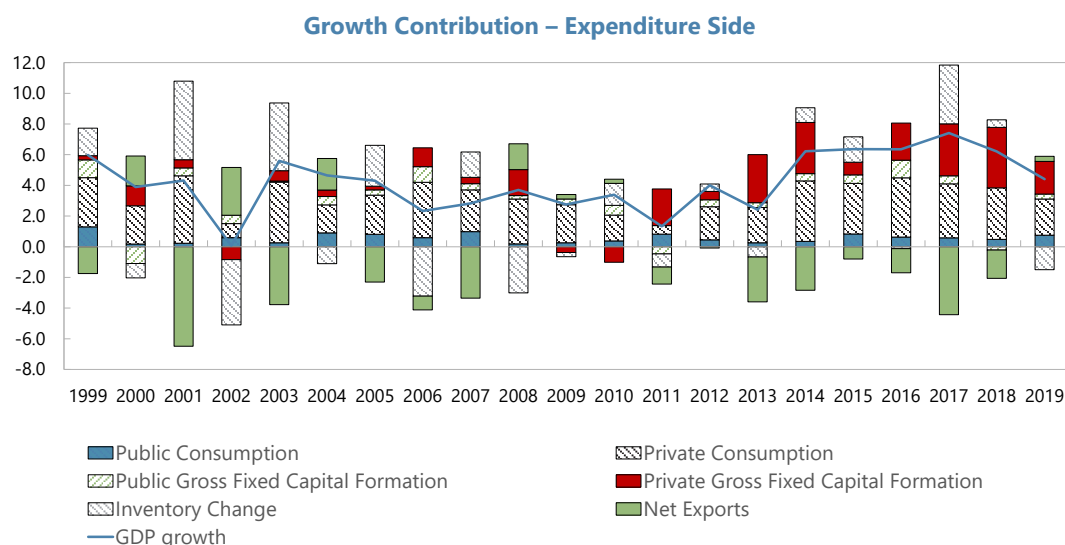
- **Growth was broad-based on the production side** (Figure 1). The growth contributions of the primary, secondary, and tertiary sector were higher than in previous episodes. The most important growth contribution came from the tertiary sector, which accounts for half of the economy, supported by robust expansions of specialized services, which capture oil and gas field exploration, public administrative services, and retail trade. Average growth of agriculture benefited from the absence of major droughts. In the secondary sector, mining, construction, and manufacturing all expanded more dynamically than in previous phases.
- **GDP growth was driven by private domestic demand** (Figure 2). Increasing private consumption was the most important contributor to growth, as in past periods. Private investment increased significantly over the last decade contributing almost 3 percentage points to growth between 2014 and 2019. Together with final public expenditure, the expansion of domestic demand has consistently outstripped supply, resulting in a substantially negative contribution from net exports and an increasing trade deficit.
- **The external environment was favorable** (Figure 3). Terms of trade improved in 2014/15 amid declining oil prices following negative shocks in 2011 and 2013, low inflation compared to trade partners caused a steady decline of the real effective exchange rate after 2010, remittances inflows remained consistently strong, the growth of goods and services exports accelerated markedly after 2013 in a context of robust foreign demand; and capital inflows were sizeable amid favorable external financing conditions for Senegal and significant Eurobond issuances.
- **The economy did not undergo significant structural transformation** (Figure 4). The share of the primary, secondary, and tertiary sector in value added remained broadly unchanged. Sectoral shares in total bank credit also remained broadly unchanged, not pointing to significant shifts.
- **Exports have not become significantly more diversified or complex** (Figure 4). While export growth was dynamic and some new products were added, this growth has been driven largely by products of lesser complexity such as precious metals (gold, zircon, titan), fruit and vegetables, and fish and related products.

Annex I. Figure 1. Senegal: Contribution to Overall GDP Growth 1999–2019; Production Side

	1999-2005	2006-2013	2014-2019
GDP growth	4.1%	2.8%	6.2%
Contributions to growth of			
Primary Sector	0.7%	0.4%	1.0%
of which agriculture	0.4%	0.1%	0.8%
Secondary Sector	1.0%	0.7%	1.3%
of which extractive Industries	0.0%	0.1%	0.2%
of which agricultural Processing/Other manufacturing	0.5%	0.4%	0.6%
of which construction	0.1%	0.1%	0.3%
Tertiary Sector	2.1%	2.0%	3.1%
of which retail	0.5%	0.5%	0.9%
of which specialized services (incl. oil/gas exploration)	0.1%	0.2%	0.8%
of which public administration	0.1%	0.1%	0.4%
Indirect Taxes	0.6%	0.0%	0.8%

Sources: ANSD and IMF staff calculations.

Annex I. Figure 2. Senegal: Contribution to Overall GDP Growth 1999–2019; Expenditure Side

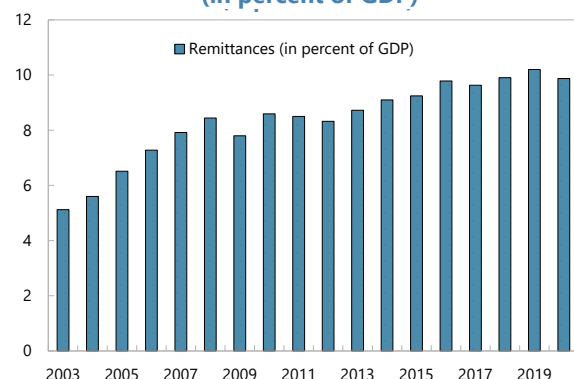


	1999-2005	2006-2013	2014-2019
GDP growth	4.1%	2.8%	6.2%
Contributions to growth of			
Private Consumption	2.8%	2.3%	3.4%
Private Investment	0.4%	1.0%	2.7%
Public Consumption	0.6%	0.5%	0.6%
Public Investment	0.3%	0.4%	0.5%
Net Exports	-1.0%	-0.8%	-1.9%
Inventory Change	1.1%	-0.6%	0.9%

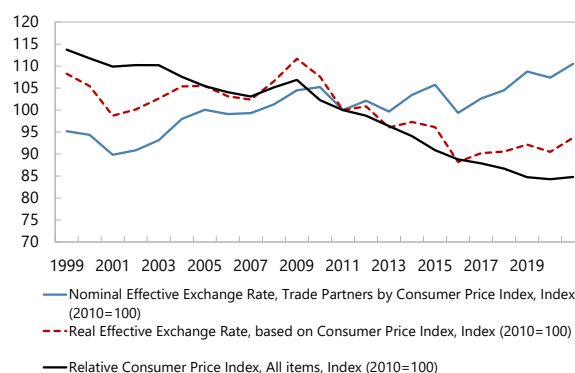
Sources: ANSD and IMF staff calculations.

Annex I. Figure 3. Senegal: The External Environment

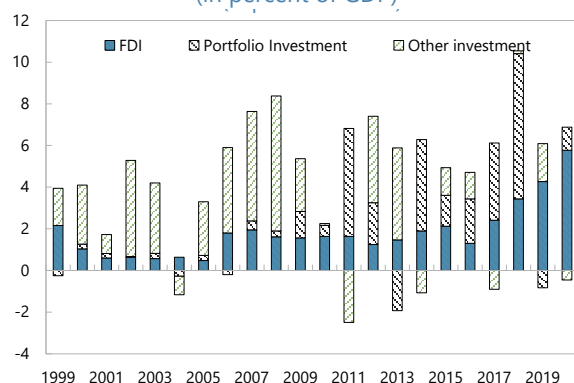
Remittances (in percent of GDP)



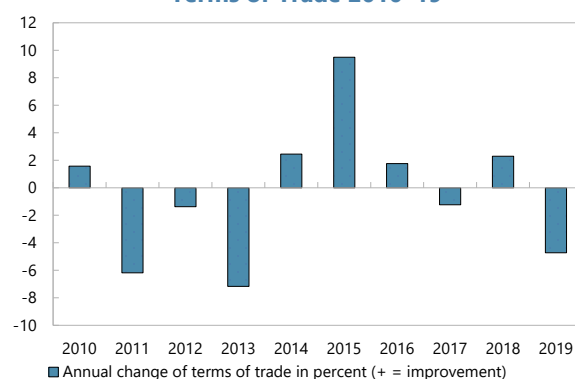
Real Effective Exchange Rate 1999–2020



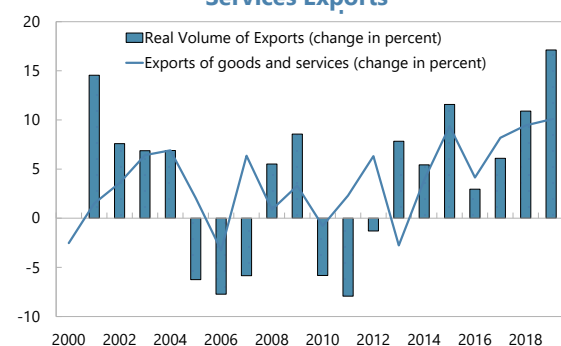
Net Capital flows 1999–2020 (in percent of GDP)



Terms of Trade 2010–19



Annual Growth of Volume and Nominal Goods and Services Exports



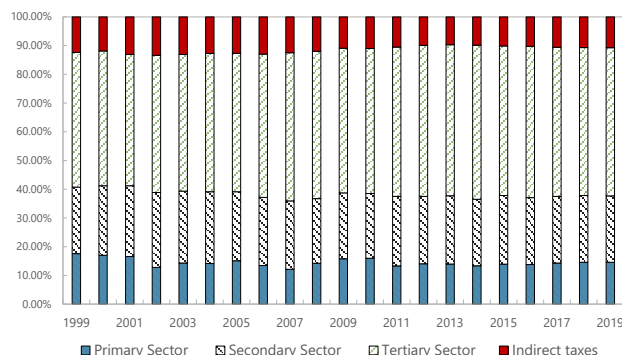
Real GDP Growths: Senegal's Trade Partners



Sources: BCEAO, WITS, and IMF staff calculations.

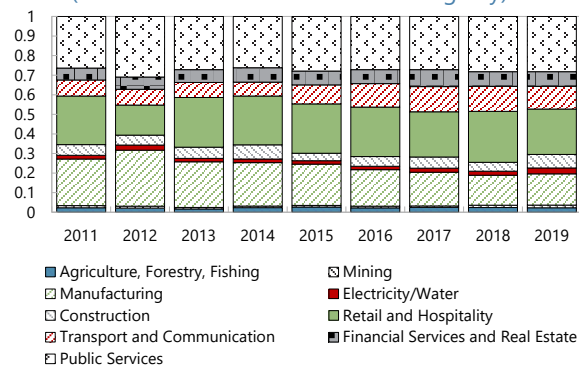
Annex I. Figure 4. Senegal: Structural Transformation and Export Diversification

Sector Shares of Gross Value Added 1999–2019

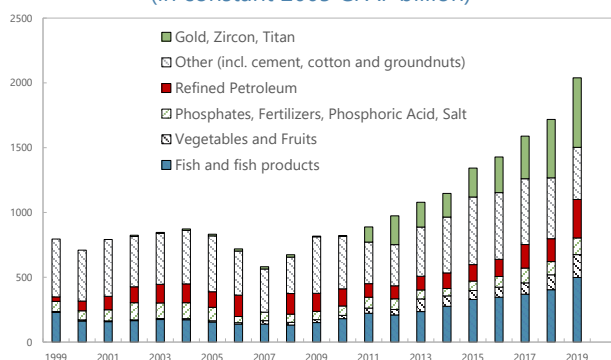


Sectoral Credit Shares

(declared to BCEAO Central Risk Registry)



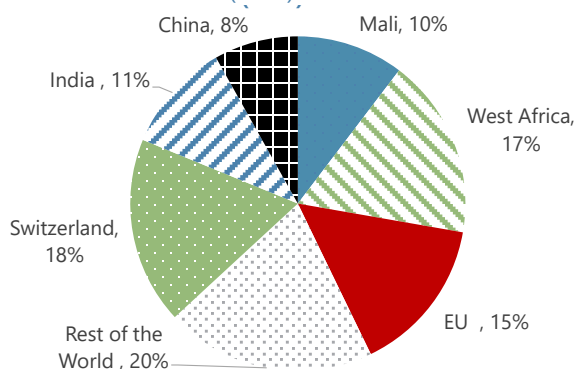
Exports Per Product Category (in constant 2005 CFAF billion)



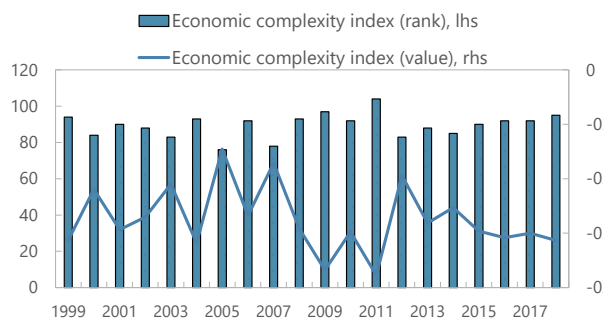
Exported Products and Trade Partners



Share of Export Per Country/Region (2019)



Economic Complexity Index



Sources: ANSD, BCEAO, WITS, Harvard Atlas of Economic Complexity.

Annex II. The Investment Surge

1. Gross fixed capital formation has increased rapidly in Senegal over the last decade, with fixed investment in the construction sector accounting for a significant share. The share of output that is invested almost doubled compared to the previous decade, reaching over 30 percent of GDP in 2019 (Figure 1). The surge was driven by sharply accelerating growth of private sector investment. The investment increase stands out in sub-Saharan Africa, and Senegal now exceeds regional averages and the level of a country group with relatively strong per capita growth over the last decade. In terms of components, slightly less than half of total fixed capital formation was in the construction sector (residential investment, other buildings, and structures), while with about ¼ in machinery and equipment and the rest to in intangible assets such as research and development, mineral exploration, and computer software and databases and other. At least part of the increase of the investment-to-GDP ratio between 2017 and 2019 was related to the inflows of foreign direct investment in the hydrocarbon project (Figure 1).

2. Benchmarks suggest the current investment-to-GDP ratio of about 30 percent could be conducive to sustained higher growth. The implied substantial capital accumulation could benefit labor productivity, real wages, and households' incomes. Generally, higher investment to GDP ratio is positively correlated with GDP growth. The average investment to GDP ratio in high growth episode countries (see footnote 8) was 23.3 percent in the first seven years and rose to 31.5 percent in the remaining years, suggesting an increase is conducive to sustain high growth. The rate of gross capital formation of four Asian countries (Thailand, Vietnam, Malaysia, South Korea) that achieved sustained per capita income growth over long periods averaged around 30 percent (Table 1). Neoclassical growth models allow to derive a "golden rule" how much an economy should invest in relation to its output to maximize consumption over time. Under plausible assumptions for Senegal this would suggest an investment to GDP ratio of about 26 percent.¹ For an economy on a path of income convergence to a higher level, this can be interpreted as a lower bound (Figure 2).

3. However, output growth did not accelerate along with higher investment rates. This could point to low or deteriorating investment efficiency. Looking at the incremental capital to output ratio, which measures investment level and output increases (lower values indicating higher output increases for a given level of investment), shows that between 2006 and 2017, Senegal's ratio improved toward a level equal to other WAEMU countries and a comparator group of countries (Kenya, Ghana, Cote d'Ivoire, Rwanda and Ethiopia). However, in 2018 and 2019 the ratio deteriorated significantly (Figure 2). One possible explanation is related to the increasing share of

¹ This is based on the "golden-rule" of capital accumulation in the Ramsey-Cass-Koopmans model which is given by:

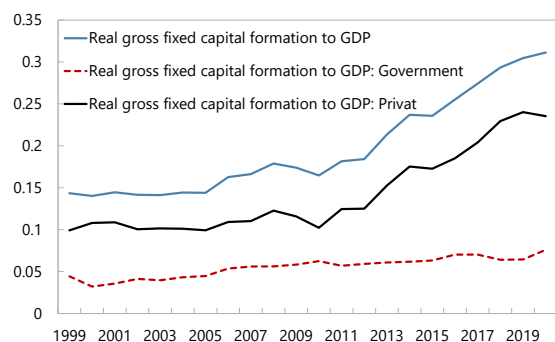
$$\frac{S}{Y} = \frac{I}{Y} = \frac{\alpha(\delta + n + g)}{(p + \delta + n + g)}$$

where α is the capital share of output; p is the social rate of time preference; δ is the depreciation rate; n is the growth of the labor force; and g is the rate of technical progress. The following calibration yields an optimal investment to GDP ratio of 26.25 percent: $\alpha = 0.35$; $p = 0.03$; $\delta = 0.05$; $n = 0.03$; $g = 0.01$. Starting from a capital-to-labor ratio below the steady state (a realistic assumption for an economy seeking income convergence to a higher level), the investment rate would fall monotonically toward the golden rule. Therefore, the golden rule value can be interpreted as a lower bound (see IMF Central, Eastern, and Southeastern Europe Regional Economic Issues, 2016)

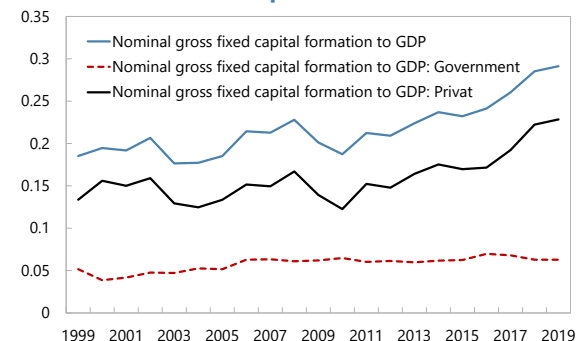
fixed capital formation in the construction sector over this period. Construction of oil and gas rigs and platforms do little to boost growth in the short term due to a very high import content. Also, the significant share of capital formation that can be attributed to the residential sector is likely to have little impact on future productivity and growth.

Annex II. Figure 1. Investment in Senegal

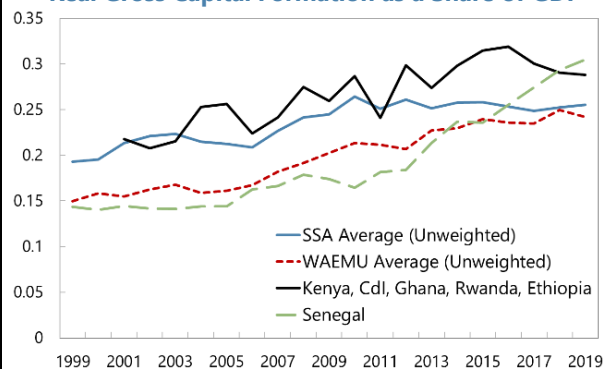
Real Gross Fixed Capital Formation to GDP Ratio



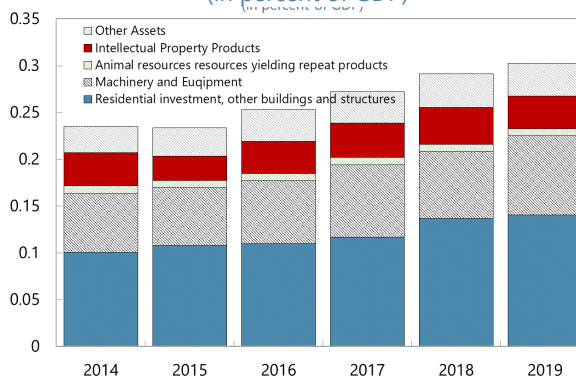
Nominal Gross Fixed Capital Formation to GDP Ratio



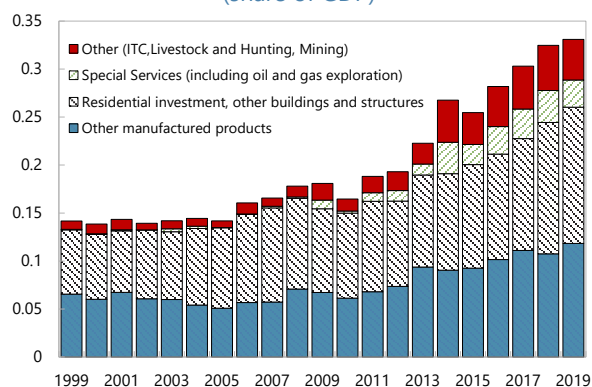
Real Gross Capital Formation as a Share of GDP



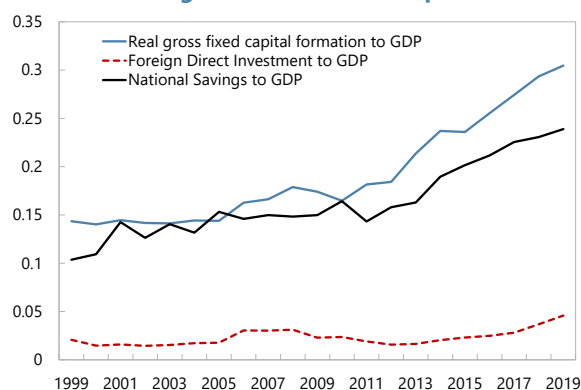
**Gross Fixed Capital Formation: Type of Asset
(in percent of GDP)**



**Gross Fixed Capital Formation by Sector
(share of GDP)**



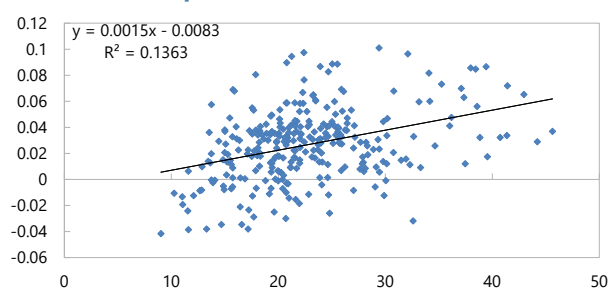
National Savings and Gross Fixed Capital Formation



Sources: ANSD, International Financial Statistics and IMF staff calculations.

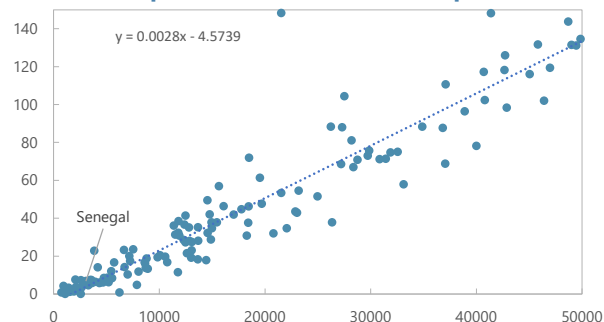
Annex II. Figure 2. Putting Senegal's Investment Ratio in Perspective

Relationship Between Investment-to-GDP Ratio and GDP Per Capita Growth in sub-Saharan Africa



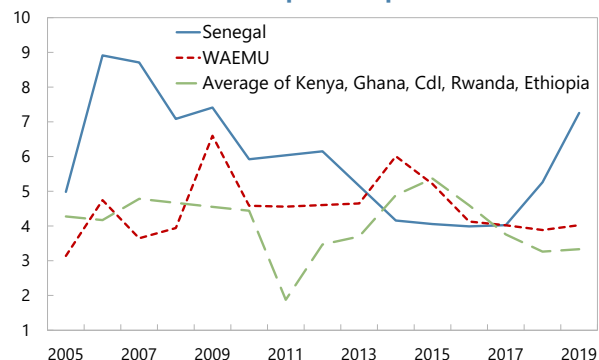
Note: Investment-to-GDP ratio on x-axis and GDP per capita growth on y-axis. Dataset consists of SSA countries between 2001 and 2020. Outliers removed.

Capital Stock and GDP Per Capita

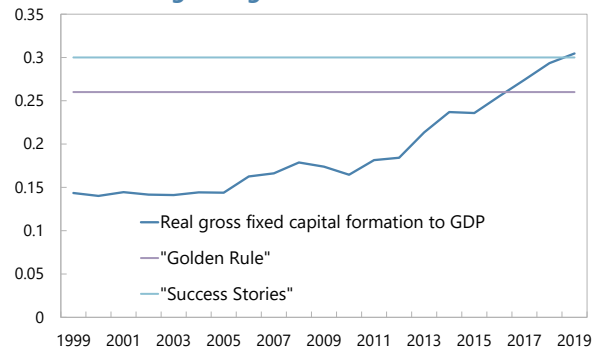


Note: GDP per capita on x-axis (PPP constant 2017 international \$) and capital stock per capita on y-axis

Incremental Capital Output Ratio



Benchmarking Senegal's Investment-to-GDP Ratio



Sources: ANSD, IMF Investment and Capital Stock dataset 2021, World Development Indicators and IMF staff calculations.

Annex II. Table 1. Success Stories

Country	Period	Real GDP per capita growth (annual average, in percent)	Gross capital formation to GDP (annual average, in percent)
Republic of Korea	1963-1996	8.0	30.8
Malaysia	1971-1996	5.0	30.6
Thailand	1973-1996	5.8	32.1
Vietnam	1992-2019	5.6	29.8

Source: World Development Indicators and IMF staff calculation

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TRANSFORMING SENEGAL'S ENERGY SECTOR FOR SUSTAINED AND INCLUSIVE GROWTH¹

Senegal subsidizes electricity tariffs and domestic fuel prices by maintaining constant prices that do not reflect international oil price movements and by compensating the electricity utility (Senelec) and fuel importers for losses. Subsidies are projected to amount to about 1.1 percent of GDP in 2022 at current world prices (about US\$75 per barrel of Brent) and could reach 1.8 percent of GDP if average oil prices are higher by about US\$10 per barrel. Energy subsidies expose the budget to significant fiscal risks, crowd out other priority spending, and are widely inefficient in improving distributional and environmental outcomes. A successful reform in this area should include not only a gradual transition towards fully automatic price adjustments, but also public financial management reforms to improve the architecture of financial flows in the sector and a redirection of fiscal space towards the funding of necessary investments to lower domestic energy costs. One such area of priority investment is the country's gas-to-power strategy that could provide a temporary solution to lower electricity prices while investments in renewable energy generation ramp up.

A. Introduction

1. Energy costs are high in Senegal and constrain growth. Senegal suffers from one of the highest electricity production costs in sub-Saharan Africa, with production highly reliant on oil imports. Such costs are reflected in relatively high tariffs compared to regional peers (Figure 1). Limited access to affordable electricity is a significant impediment to private sector development. According to the MCC, the cost of electricity is the most important binding constraint to economic growth in Senegal; the insufficient quantity and quality of electricity result in reduced productivity, output, and investment for businesses, less effective delivery of public and social services and diminished well-being and economic opportunity for households (MCC, 2017). Likewise, the World Bank sees the lack of sufficient and low-cost generation capacity to meet demand and reduce high consumer costs as a key constraint to inclusive growth (WBG, 2018).² Domestic fuel costs are also high, reflecting the lack of sufficient domestic refining capacity and the reliance on imports by private sector importers, with high associated transport and business costs.

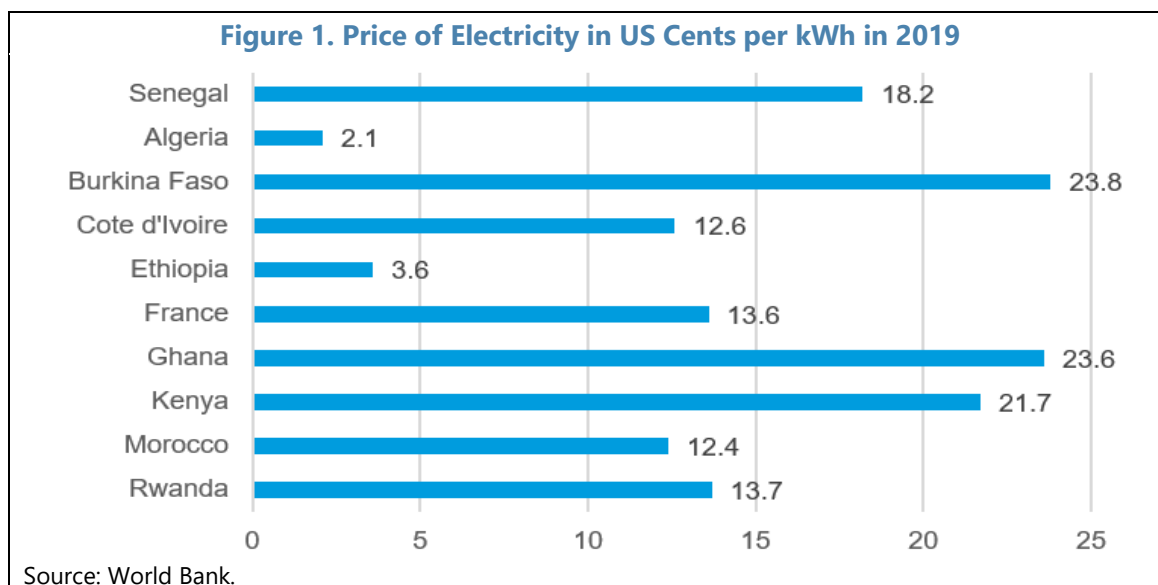
2. The provision of cheaper and more reliable electricity ranks as a top priority in Senegal's flagship development strategy (PSE - Plans Senegal Emergent). The PSE sets the targets to ensure, by 2025, more reliable and competitive electricity, while meeting high social and environmental standards.³ To reach these objectives, Senegal needs to address the root cause of the

¹ Prepared by Samuele Rosa, Nabil Hamliri, and Abdoulaye Fame.

² See also IFC, 2020.

³ The PSE aims at the following objectives: ensure availability of energy in sufficient quantity and quality; have one of the lowest electricity prices in the sub-region (~ 60 to 80 FCFA / kWh) to support economic competitiveness; halve household electricity bills; and eliminate cuts and associated losses.

high and volatile electricity costs: overdependency on oil as key input to produce electricity.⁴



3. Yet energy subsidies represent a significant and volatile burden on the budget and are largely inefficient. Senegal maintains regulated domestic electricity and fuel prices well below cost recovery levels, with no/limited pass-through of world oil prices changes and subsidizes public electricity utility Senelec and fuel importers for incurred losses. In addition to mainly benefiting the wealthiest segments of the population, such subsidies aggravate negative externalities stemming from fossil fuels consumption, crowd out other priority investment, and discourage investments that would reduce costs in the sector. They expose the budget to substantial fiscal risks when oil prices are high and budgeted amounts are insufficient. Historical underbudgeting for subsidies has also led to the accumulation of sizeable arrears which are still being paid today. Under the current PCI-supported arrangement, the authorities committed in 2020 to either adjusting prices to cost-recovery levels or to budgeting adequate amounts to avoid new arrears accumulation.⁵

4. The country's gas-to-power strategy holds the potential to durably lower electricity prices in the medium term but requires immediate investments. The strategy entails using the country's upcoming domestic gas production for power generation as part of the necessary transition towards renewable energy sources. The strategy would require investments in gas production, transport and utilization in existing and new power plants. The plan is ambitious in scale (around US\$3bn in public and private investments, based on preliminary calculations) but is potentially transformative for the electricity sector, in that it would allow for a reduction of about

⁴ At the end of 2020, the installed electrical capacity (around 1509 MW) relied on heavy fuel and diesel for about 74 percent. This over-reliance on oil result in a very expensive production cost of electricity.

⁵ The PCI includes as a continuous reform target the non-accumulation of new energy arrears, either through electricity/fuel price adjustments when required or through the allocation of additional fiscal resources, as well as the repayment of all pre-2020 arrears as part of a 2020–22 arrears clearance plan.

30 percent of domestic electricity costs.⁶ Diversifying energy sources away from heavy fuel oil towards gas as a first step, while continuing to expand renewables will allow to reduce the country's carbon emissions and avoid stranded assets and higher investment needs down the road to reach national emissions objectives.

5. The elimination of energy subsidies is a crucial prerequisite to improve distributional outcomes and support environmentally-sound policies. Large and growing energy subsidies limit the fiscal space available to fund investments in the sector and should be gradually eliminated. Investing resources in lowering domestic energy prices while supporting the poorest segments of the population in a targeted manner would help reduce poverty and foster private sector-led growth.

6. This paper analyzes the challenges associated with existing energy subsidies and options for their phasing out. The first section provides a snapshot and a quantification of existing subsidies. The second section outlines key building blocks of a successful energy subsidies reform and their possible application to Senegal. The third section discusses the way forward for Senegal's gas-to-power strategy, as a transition towards lower domestic electricity prices and higher renewable energy generation.

B. Energy Subsidies: An Increasing Drag on Scarce Budget Resources

7. Senegal suffers from one of the highest electricity production costs in Sub-Saharan Africa (SSA), partly because of the reliance of existing power plants on heavy fuel oil. Even though renewables have been ramping up in the last two decades and now represent about 30 percent of existing generation capacity, electricity remains primarily generated by oil-fired plants (70 percent of generation capacity). The lack of reliable electricity, its cost, and poor coverage are considered one of the main constraints for private sector development in Senegal and weigh heavily on private sector competitiveness.⁷ High electricity costs are mainly driven by excessive oil acquisition costs, which represent 46 percent of total costs of the public electricity utility Senelec. Electricity tariffs, despite their relatively high level (0.18US\$/kWh, on the upper range of comparable countries), do not even reflect actual production costs borne by Senelec (Table 1). Heavy reliance on oil is also climate-unfriendly and could hinder Senegal's effort to reach its greenhouse gas emissions mitigation objectives, and hurt competitiveness in the medium to long term as carbon pricing becomes prevalent.

⁶ A reduction of electricity cost in the order of 30 percent in Senegal, if passed through to tariffs, would reduce the latter to about US cents per kWh; this would be below the average for both the lower and upper middle income group countries (at US cents per 17.8 and 19.4, respectively).

⁷ According to World Bank estimates, domestic electricity production costs are on average 0.24US\$/kWh, against a global benchmark of US\$0.10/kWh, with prices highly sensitive to oil price fluctuations ([source: Senegal Second Multi-Sectoral Structural Reforms DPF, World Bank \(2018\)](#)).

Table 1. Senegal: Generation Capacity and Connectivity to Electricity

Generation Capacity (2021) 1/	MW	Percent of total
Total	1555	100.0
Oil	1320	84.9
Gas	24	1.5
Wind	52	3.3
Solar	112	7.2
Biomass	47	3.0
Connection to electricity (2021 - share of population) 1/, 2/		
		Percent
Rural		47
Urban		93

1/ Source: USAID (<https://www.usaid.gov/powerafrica/senegal>), WB

2/ Current Access Rate: 69%

8. Senegal allocates a significant and growing portion of its budget to subsidize the electricity and fuel sector. The government sets electricity tariffs and domestic fuel prices and subsidizes Senelec and fuel importers for any foregone profit, therefore limiting the pass-through of oil prices onto tariffs and retail prices of refined oil products. Current projections suggest that subsidies could reach 1.8 percent of GDP in 2022 if prices remain around US\$85/barrel, up from 0.3 percent of GDP in 2020. Fuel subsidies reached 0.2 percent of GDP in 2021 and are expected to rise to up to 0.7 percent of GDP in 2022 (Table 2).

Table 2. Historical and Projected Energy Subsidies

	2019	2020	2021	2022 low	2022 high
Average price per barrel (Brent)	64\$/barrel	42\$/barrel	70\$/barrel	(73-75\$/barrel)	(86\$/barrel)
Electricity subsidies	1.1	0.3	1.1	0.7	1.1
Fuel subsidies	0.1	0	0.2	0.3	0.7
Total energy subsidies	1.2	0.3	1.3	1	1.8

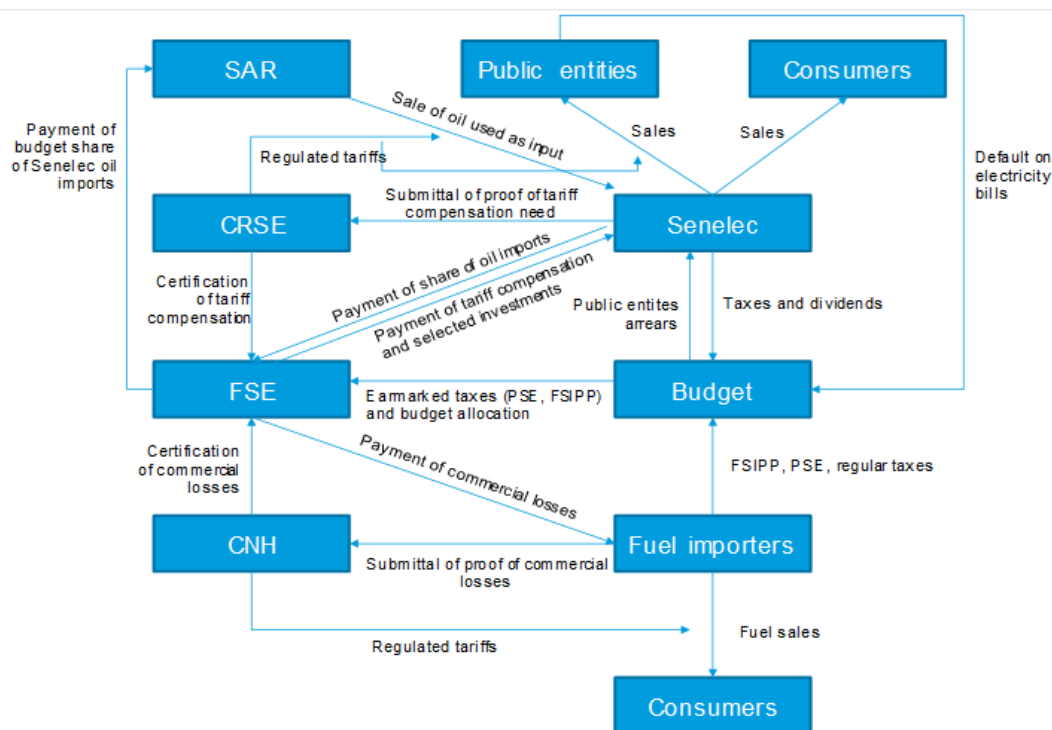
Source: IMF Staff estimates

9. The current structure of energy sector financial flows is complex, involves a multitude of players, and has led to arrears accumulation before 2020 (Figure 2). In addition to being unable to recover production costs, the energy sector⁸ is characterized by a complex web of financial flows between the government and the entities involved in the production, distribution and consumption of electricity and oil/fuel inputs. Sizeable arrears accumulated until 2020, reflecting the insufficient budgetary allocations to adequately cover for the full cost of energy subsidies and, to a

⁸ In the rest of the note the term "energy sector" will refer to both electricity as well as fuel products.

lesser extent, the complexity of revenue flows. Electricity tariff and fuel subsidy arrears reached 1.5 percent of GDP at end-2019. As part of the PCI-supported program, efforts have been made to adequately budget for tariff compensations and commercial losses and to clear outstanding pre-2020 energy arrears, in line with staff's January 2020 recommendations.

Figure 2. Senegal: Visual Diagram of the Energy Sector's Flow of Funds



Source: Senegalise Authorities.

Notes: CRSE: commission de régulation du secteur de l'électricité ; FSE : fonds de soutien à l'énergie ; CNH : comité national des hydrocarbures.

Fuel Subsidies

10. Refined oil products benefit from both explicit and implicit subsidies in Senegal.

- *Explicit subsidies.* The maximum price chargeable by fuel importers/distributors for each type of refined product is defined every month by a dedicated hydrocarbons committee. The same committee also determines cost-recovery prices for distributors according to a methodology defined by a 2014 decree. When administrative prices are below cost-recovery prices, distributors are entitled to a compensation covering their commercial losses.
- *Implicit subsidies.* Foregone tax revenues on refined products also represent a subsidy. Some refined products are exempted from VAT, and existing excise taxes on refined products are also occasionally adjusted upwards or downwards by the hydrocarbons committee depending on world oil prices, in order to maintain stable consumer prices. In the past, the authorities have also resorted to specific adjustments to the tax base to lower the tax portion of prices. Furthermore,

the non-inclusion in oil products' prices of the cost of negative health and environmental externalities, or at least of an implicit carbon cost, also amounts to an implicit subsidy.

11. Attempts to reduce fuel subsidies have been complicated by the recent surge in oil prices. The existing fuel price determination decree includes provisions to adjust prices to cost-recovery levels, but implementation has been suspended since a one-off price increase in 2019. In 2020 domestic price were kept constant and above international prices. However, prices have also been maintained constant during the substantial oil price rise of 2021, therefore creating a need for additional fuel subsidies, in a context of limited fiscal space and elevated public debt level.

12. Absent an automatic adjustment mechanism, fuel subsidies could continue trending upwards and arrears might accumulate. In the current price setting, fuel subsidies will likely reach 0.2 percent of GDP in 2021 and could amount to up to 0.7 percent of GDP in 2022 if prices remain at around US\$85/barrel. The effectiveness of the existing countercyclical tax on petroleum products (FSIPP)⁹ in compensating for oil price surges remains to be proved, as the tax remains a fungible revenue whose proceeds in a given year are not allocated to any subsidies needs in subsequent years.¹⁰

Electricity Subsidies

13. The budget subsidizes Senelec to maintain electricity tariffs well below cost recovery levels. The electricity regulator CRSE sets every quarter the level of actual tariffs and calculates full cost-recovery tariffs.¹¹ When actual tariffs are below cost-recovery levels, the regulator is required by law to either adjust the tariffs or to compensate Senelec through budget subsidies. Tariffs were below cost recovery by 23 percent in 2021, and this percentage is expected to reach 32 percent in 2022. Oil purchases account for about ½ of Senelec's operating costs and the recent oil price surge, if sustained, will push compensation needs upwards. In the current energy mix, electricity subsidies are closely linked to global oil price developments, and should reach their 2019 and 2021 level in 2022, i.e. 1.1 percent of GDP¹². Beyond explicit consumer subsidies, operational inefficiencies at Senelec also reduce tax and dividend revenues and therefore amount to implicit subsidies. Such subsidies are hard to quantify, however, given the magnitude of arrears and cross-flows.

14. The accumulation of arrears, coupled with complex cross-institution flows, has led to

⁹ The Petroleum Products Import Security Fund (*Fonds de Sécurisation des Importations de Produits Pétroliers-FSIPP*), in fact a budget revenue line, was created in 2011 to insulate the budget from the volatility of the oil imports bill. It receives a fixed tariff per unit of crude and refined products. The tariff is revised every month by the national hydrocarbons committee. However, revisions remain discretionary and not automatically linked to price fluctuations. The FSIPP rate is likely insufficient to effectively stabilize prices and its determination should be backed by a robust methodology. Moreover, FSIPP revenues are not exclusively dedicated to price stabilization: they also fund other investments in the sector (notably SAR investments) and remain fungible with other revenues.

¹⁰ In 2020, amid low oil prices, FSIPP proceeds were positive, yet in 2021 subsidies needs were funded through the central budget with the passing of a supplemental finance law.

¹¹ Cost recovery tariffs are given by a maximum allowable revenue for Senelec, which includes its costs, depreciation, and income on regulated asset base.

¹² See table 1. Subsidies also include an investment and depreciation component that explains partly the similar level of subsidies between 2019 and 2021E despite different world oil prices.

financial difficulties at Senelec. Tariff compensations have not been settled in a timely manner. The state also needs to step in regularly to take over arrears of public entities with Senelec. Cross-debt between Senelec and the state are regularly cleared through cross-debt agreements, the latest one dating back to August 2021 and covering 2019-2021, for a total amount of 1% of GDP¹³, but the accumulation of arrears generates financial costs that are eventually borne by the state. Senelec has also accumulated arrears against the state-owned refinery (SAR), who is the sole supplier of the heavy fuel oil used by Senelec for its electricity production, therefore generating financial difficulties for the latter as well. Senelec's delicate financial situation hinders the company's ability to invest in power generation projects, especially those related to conversion of heavy fuel oil plants to natural gas as part of the gas-to-power strategy (see section III). Limited leeway for investments has resulted in wide recourse to public private partnerships with independent power producers (IPPs) for power generation, under sometimes expensive take-or-pay agreements.

C. Options to Gradually Eliminate Energy Subsidies

15. Important steps are required today to restore the financial viability of the energy sector and improve spending efficiency.¹⁴ Critical steps include:

- (i) A gradual elimination of energy subsidies, building on successful international precedents;
- (ii) Public financial management reforms to streamline financial flows and improve transparency;
- (iii) A redirection of the increased fiscal space towards the funding of necessary investments in the sector.

Gradual Elimination of Energy Subsidies

16. Energy subsidies are widely recognized to be a regressive, climate-unfriendly, and inefficient fiscal instrument and should be phased out imminently:

- Subsidies mainly benefit the wealthiest households and therefore aggravate rather than correct existing income inequalities. According to IMF research, subsidies benefit on average the richest 20 percent of households six time more than the poorest 20 percent. Poor people's low access to the grid exacerbates the regressive impact of electricity subsidies.
- In encouraging excessive energy consumption, subsidies aggravate negative externalities stemming from fossil fuels consumption. Higher fossil fuels consumption adds to the country's existing emissions and may jeopardize future efforts to meet carbon reduction pledges. Subsidies encourage investments in energy-intensive industries. They also reduce incentives to

¹³ Cross-debt agreements include all arrears between the State and Senelec such as VAT arrears and unpaid utility bills.

¹⁴ For a detailed description of possible approaches to effectively reducing subsidies and restore sustainable finance in the energy sector, see IMF 2013a and IMF 2013b.

invest in cleaner energies and energy efficiency.

- Subsidies reduce the overall quality of public spending and slow the pace of cost reduction in the sector. They come at a high fiscal cost and crowd out more efficient health, education, and social spending. They are also a source of considerable fiscal risks, imposing a high fiscal burden at times when prices are high. Fiscal risks are all the higher as consumption is artificially maintained by low energy prices. Finally, the combination of administered tariffs, subsidies and arrears may discourage much-needed investments in the sector, that could allow to reduce costs and improve consumer welfare.

17. IMF research has identified six key elements of a successful energy subsidy reform.¹⁵

These are developed in the rest of this section, and include: (i) appropriately-phased price increases, which can be sequenced differently across energy products; (ii) targeted measures to protect the poor; (iii) institutional reforms to move towards automatic energy prices' adjustments; (iv) an extensive communication strategy, supported by improvements in transparency; (v) a comprehensive energy sector plan with clear long-term objectives and consultation with stakeholders; and (vi) improved efficiency of SOEs to reduce producer subsidies.

Appropriately-Phased Price Increases, Which Can Be Sequenced Differently Across Energy Products

18. As a first step, reforms could focus on lifting prices on lower-priority products and/or, as a second-best, setting a cap on energy subsidies. Prices of products such as diesel and butane, an important part of vulnerable households' energy consumption, could be maintained, while those of other products such as super-fuel and kerosene could be gradually hiked to cost-recovery levels. Alternatively, setting a cap on energy subsidies and raising prices intra-year when this cap is reached could also be an option, although it would require close coordination between the regulator and budget authorities. Similarly, for electricity, tariffs at the social tranche could be maintained while the other tranches could be gradually raised towards cost recovery levels.

19. While gradual reform has advantages, it can also create additional reform challenges.

Lower savings in the short term could reduce investments that would lower costs in the sector. The sequencing of reforms can also distort consumption patterns (e.g., shifting consumption towards subsidized products). Finally, a gradual reform may expose the authorities to more important opposition over time. A broad consensus on the benefits of the reform supported by a carefully designed communications campaign (see below) is therefore needed.

Targeted Measures to Protect the Poor

20. The elimination of subsidies will require compensatory measures targeted at the most vulnerable segments of the population, while keeping in mind the welfare impact on other stakeholders as well. Compensatory measures can go through the existing social spending channels, such as the National Unified Register (Registre National Unique – RNU) and the family

¹⁵ See Clements et al., *Energy Subsidy Reform: Lessons and Implications* (2013), Parry et al., *Getting energy prices right: from principle to practice* (2014).

subsidies program (*Programme de bourses de sécurité familiale*)—*PBSF*) and target the poor. However, to ensure effective delivery, existing social protection mechanisms should continue to be upgraded, including by institutionalizing them and moving to digital delivery mechanisms. . Other stakeholders (especially urban middle class and energy-intensive industries) will benefit in the medium term from a redirection of spending towards lowering energy costs and could be supported in the short term through ad hoc non-recurrent programs.

Moving Towards Automatic Price Adjustments

21. Moving towards automatic price adjustment mechanisms is the most effective way to eliminate subsidies. The regulators in the energy sector should be fully empowered to conduct their independent assessment of cost recovery prices and their projections should be directly reflected in adequate budget envelopes and a no-arrears policy. An institutional process should be set up to ensure regulators' decisions are endorsed by the executive. Regulators should continue to develop capacity to critically review allowable costs presented by Senelec and fuel importers. Ensuring the automatic pass-through of world oil prices to domestic energy products' prices will eliminate the need for subsidies and insulate the process from possible political interferences.

An Extensive Communication Strategy, Supported by Improvements in Transparency

22. The preparation of an extensive communication campaign associated with transparency measures will be instrumental to the success of any reform in this area. Information campaigns should transparently explain the actual magnitude of energy subsidies, made apparent by their adequate recording in the budget, their implications for other parts of the budget (i.e. crowding out other priority spending) and their current distribution between rich and poor. The benefits of removing subsidies should also be made clear. In particular, the projected use of savings should be clearly outlined in budget documents and associated with higher investments in the energy sector aimed at improving quality of service and lowering prices in the medium term, and/or higher priority social spending.

A Comprehensive Energy Sector Plan with Clear Long-Term Objectives and Consultation with Stakeholders

23. The publication of a comprehensive and unified energy sector plan will improve the acceptability of the envisaged reforms and efficiently redirect the fiscal space created by savings towards priority investments in the sector. Such a plan should state as an overarching objective a long-term lowering of domestic energy costs, through investments in lower-cost and greener power generation. A comprehensive subsidy reform is the cornerstone of a sound and sustainable energy sector. Given the important links between all energy subsectors, the plan can usefully build on and unify existing roadmaps to lower domestic electricity costs (e.g. *Electricity Strategy 2035*, prepared as part of the country's engagement with MCC) and to implement the gas-to-power strategy. It would present a framework for subsequent legal and regulatory reforms, building on the recently enacted electricity code. Ongoing efforts to improve operational efficiency at Senelec and SAR should also be reflected in the plan, as a means to limit fiscal risks and improve energy spending efficiency. The plan should benefit from extensive consultations with all

stakeholders including businesses and civil society.

Improved Efficiency of SOEs to Reduce Producer Subsidies

24. Ongoing efforts to improve operational efficiency at Senelec and SAR will be instrumental in improving energy spending efficiency. Improvements in efficiency can further strengthen the financial position of these enterprises and reduce the needs for budget transfers. The government should also closely monitor Senelec's performance under the recently signed performance contract and adequately focus Senelec's efforts on lowering electricity costs. Governance and organizational reforms are ongoing at Senelec and should be pursued. The performance contract approach could usefully be replicated with SAR.

Public Financial Management Reforms

25. The complexity of existing flow of funds and underbudgeting exacerbate the fiscal risks associated with energy subsidies. Reforms should focus on:

- *Avoiding fiscal risks and new arrears accumulation through accurate budgeting.* Any underbudgeting in a given year of the subsidies that would be required under realistic oil price assumptions may lead to the materialization of fiscal risks and to arrears accumulation when fiscal space is insufficient to absorb those risks. While electricity arrears have been cleared, new arrears may accumulate with higher oil prices and the authorities' preference to maintain constant tariffs during the pandemic. Fuel sector arrears have proven harder to clear and have been accumulating, owing to higher global prices and to complex institutional processes for their clearance. The existing delayed compensation mechanisms could be streamlined.
- *Rationalizing the existing flow of funds to avoid leakages and additional costs down the road for the state.* The cost of maintaining intermediate bodies adds up to the overall fiscal costs. The accumulation of arrears entails additional financing costs for energy sector companies that are eventually covered by the state. The reliance on an under-endowed extra-budgetary fund (FSE) to settle subsidies and arrears is not in line with good practices and the fund should be brought back to the budget and its various expenditures line settled directly through appropriate spending categories of the budget.

Investment Priorities

26. Savings should be redirected towards investments in reliable, cleaner, and cheaper energy sources:

- *Accelerate Senelec's investments in cheaper power production through energy mix diversification.* Investments should focus on cheaper and domestically available sources of power such as renewables and domestically produced gas (during an initial transition period) to diversify away from expensive and volatile imported oil.
- *Accelerate investments in transport and access infrastructure.* Senegal is being supported in this by the Millennium Challenge Corporation (MCC), whose roadmap includes supporting transmission and electrification projects and providing assistance in implementing enabling reforms. In particular, investing rapidly in transmission infrastructure capable of handling

(intermittent) solar and wind power will accelerate investments in the sector.

D. The (not so Distant) Future: Taking Advantage of Upcoming Oil and Gas Production

Gas to Power Strategy

27. The gas-to-power strategy aims to take advantage of the upcoming domestic gas production, potentially one of the largest in the continent, to produce electricity from gas and thus reduce the cost of electricity. The GTP strategy entails the construction of a sizeable stock of new gas pipelines. The *Reseau Gazier du Senegal* (RGS) company was created in November 2019 as a joint venture between Senegal's Sovereign Fund for Strategic Investments (FONSIS), the publicly owned refinery (PETROSEN), and SENELEC. RGS's main mission is to oversee the construction, operation, upkeep, maintenance, and development of the gas transport network.¹⁶ Based on initial estimates, RGS's new network should cover around 307 km of pipelines (on top of the 56 km of existing pipelines), to be built through 2027 for a total cost of nearly FCFA 272 billion (around 1.8 percent of GDP). The strategy also targets a doubling of the supply of electricity from the current 1509 MW to close to 3000 MW.

28. Senegal is also expanding access to electricity, with help from the Millennium Challenge Corporation (MCC).¹⁷ The five-year, US\$550 million MCC Power Compact, between the Government of the United States and Senegal, and a supplemental \$50 million from the Government of Senegal for a total US\$600 million program, was signed in December 2018. It consists of three projects designed to take a complementary approach to improving the power sector: improving the transmission network to meet the growing demand on the interconnected network in Senegal, increasing electricity access in rural and peri-urban areas of the south and central regions, and improving the overall governance and financial viability of the sector.

Way Forward

29. Eliminating energy subsidies now could help create fiscal space for the needed investments in the GTP strategy. Close monitoring and coordination of all ongoing initiatives in the electricity and gas sectors would also be needed. Efforts should focus on:

- **Mobilizing public and private investments in all three segments of the gas value chain** (upstream, midstream, downstream) and accelerate project delivery. Progress remains slow on the governance and execution of the strategy's major projects. The contemplated gas pipeline, to be developed as a PPP, is yet to reach financial close. The conversion of existing power plants has been formalized in 2019 but remains to be executed. Investments by Senelec have been slowed down by ongoing financial difficulties, linked in part to the substantial arrears owed by the state; this can have an impact given the large financing need required in building the new electric

¹⁶ In the first phase of RGS development, customers will be SENELEC's gas-fired power plants and independent power producers (IPPs); in its second phase, the outlets will be extended to other industries with high energy consumption (cement factories, mines, etc.).

¹⁷ See : [Senegal Power Compact | Millennium Challenge Corporation \(mcc.gov\)](https://www.mcc.gov/senegal)

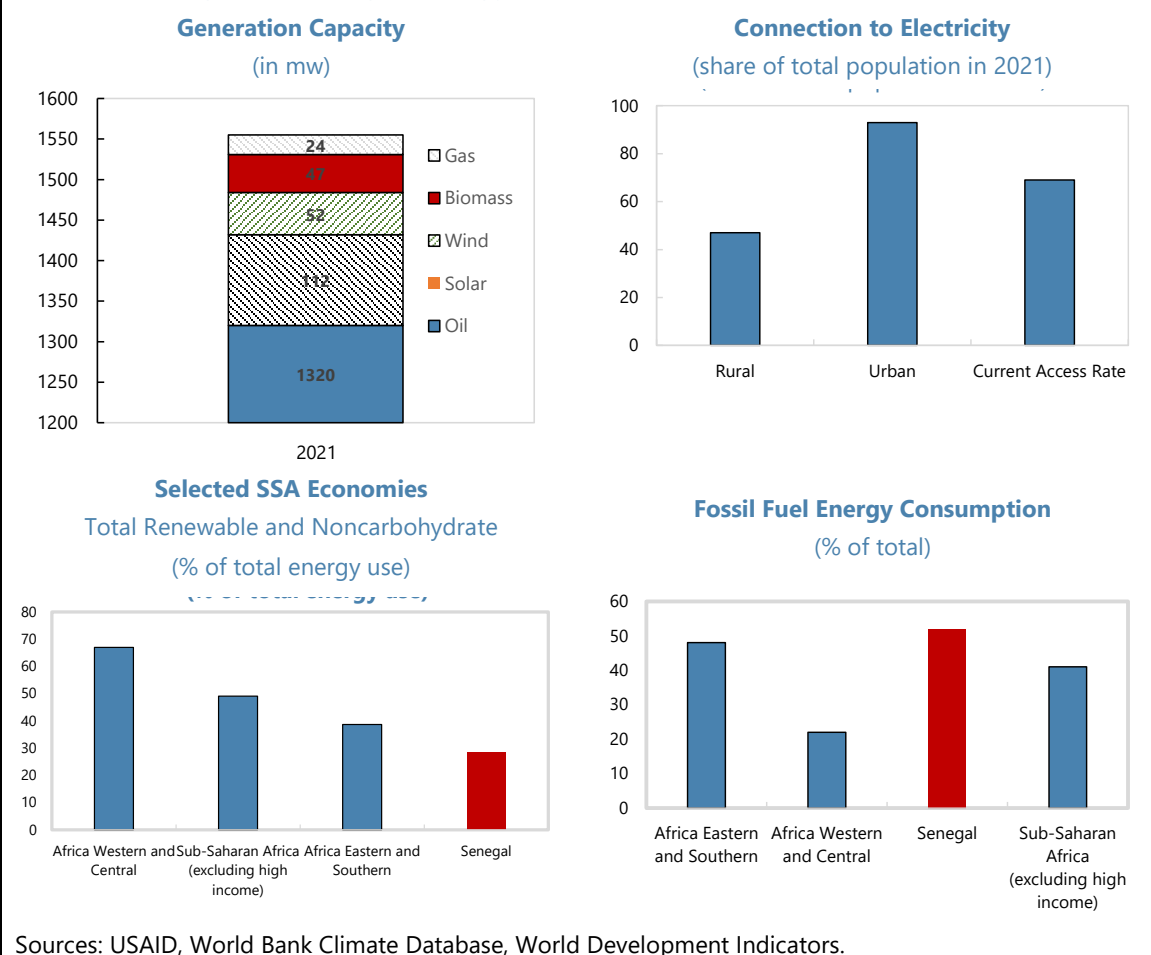
power plants.

- **Better coordinating investments in the electricity sector to ensure all investments go in the direction of the desired energy mix.** In the absence of a clear timeline for gas-to-power projects, power generation investments have been continuing at Senelec, with the recent awarding of several IPPs and the construction of new conventional power plants, or the upgrading of existing ones. Such investments may lead to an oversupply situation and therefore to losses at Senelec under the existing take-or-pay agreements.
- **Completing the legal and regulatory framework.** The recently adopted gas and electricity codes still contains counter-productive cross-regulations and loopholes in certain segments of the value chain that may deter private investment, and insufficient oversight of the gas sector by electricity regulator CRSE.¹⁸ They should be complemented with robust implementing decrees. Experience in similar countries (e.g. Ghana¹⁹) has shown that robust legal and regulatory frameworks covering the full value chain are needed early in the process to ensure effective delivery and use of gas and its full integration in a cleaner energy mix.

¹⁸ The newly adopted Electricity Code introduces important requirements related to implementation of the least cost plan and third-party access; it has, however, gaps on governance, transparent decision making, and the role of the private sector around new generation. For instance, it is regressive on governance by creating a legal basis in the sector for negotiated deals, unsolicited proposals, and unlimited State ownership in IPPs. Senegal is working with the donors to address these issues at the level of implementation decree.

¹⁹ See Ghana, Ministry of Energy. 2019.

Figure 3. Senegal: Energy Production and Consumption, 2021

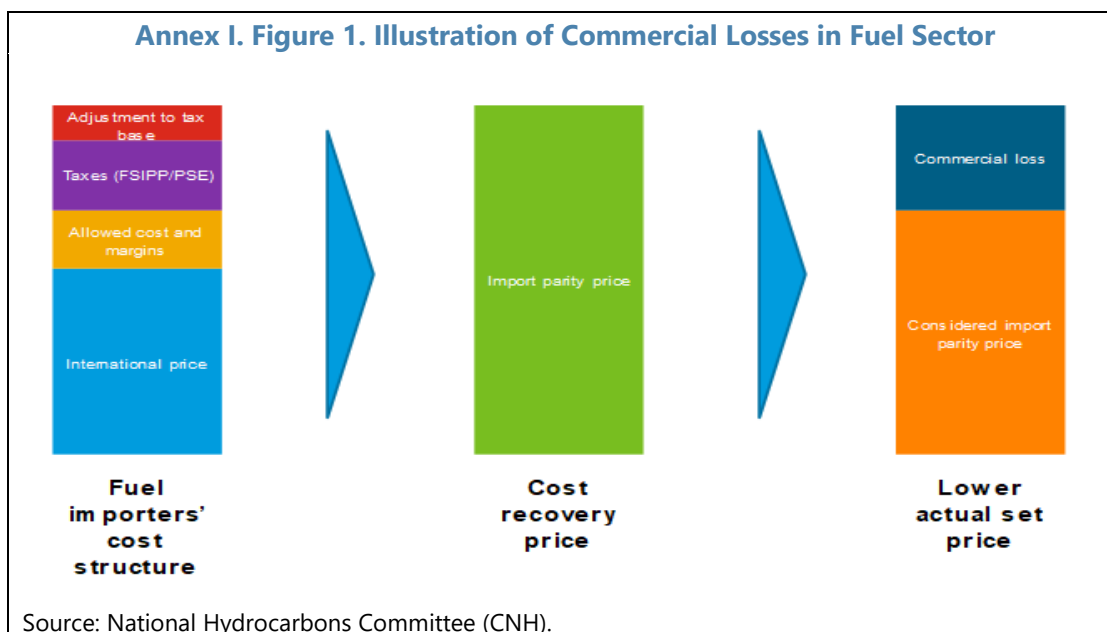


Annex I. Technical Annex

A. Fuel Subsidies

1. The cost recovery prices that should be charged to domestic consumers for crude and refined petroleum products are defined administratively. Import parity prices (*prix parité importation*) are determined every four weeks by the National Hydrocarbons Committee (*Comité National des Hydrocarbures-CNH*). They include total import cost (including transport), direct costs and applicable taxes and represent cost recovery prices. Within these prices, the state levies two taxes on imported fuel products, namely the Petroleum Products Import Security Fund (*Fonds de Sécurisation des Importations de Produits Pétroliers-FSIPP*) and the Energy Sector Support Levy (*Prélèvement de Soutien au secteur de l'Energie-PSE*). Specific import parity prices are calculated for each category of products: refined products (gasoline, etc.) and crude oil (mainly heavy fuel oil used by Senelec for power generation). These prices represent the maximum applicable price to domestic consumers by importers. The specific methodology for the calculation of each component is defined by law/decreree (Annex Figure 1).

2. In practice, import parity prices have been consistently stabilized and maintained artificially low through tax rate and tax base adjustments or through a direct capping and thus do not reflect import price variations. FSIPP and PSE rates have been regularly revised downwards in times of higher global prices for refined products to stabilize domestic prices. The authorities have also raised or lowered the VAT base through a dedicated line (*stabilisation fiscale*), although this has not been used in recent years. When both mechanisms are insufficient to keep prices under control, CNH sets an artificially lower import parity price (*prix parité importation considéré*). In 2020 however, in a low-price environment, FSIPP was raised and import parity prices were set at their fair level without artificial capping.



3. When international price rises are not factored in domestic import parity prices, fuel importers are entitled to a compensation under a 2014 decree, paid by a dedicated extrabudgetary fund. Compensations (*pertes commerciales*) cover commercial losses incurred by importers when real import parity prices published by CNH are lower than theoretical import parity prices. Losses have been important at SAR, which imports heavy fuel oil on behalf of Senelec. Losses are reimbursed by a dedicated extrabudgetary Energy Support Fund (FSE - Fonds de Soutien à l'Énergie), upon validation by regulator CNH. Recent episodes of capping of import parity prices have led to considerable commercial losses and arrears. Price were capped between Feb-2016 and Jun-2019, and commercial losses reached 120bnCFA in 2017-19. Arrears are now being cleared, and they have generated difficult financial situations and additional financing costs for licensed importers and for SAR.

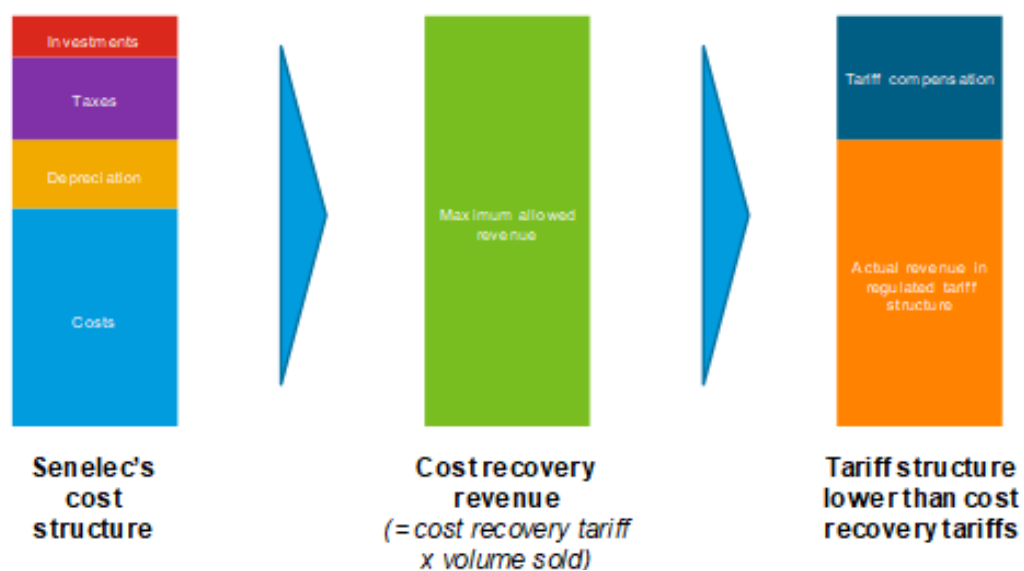
B. Electricity Subsidies

4. Cost recovery tariffs and actual applicable tariffs are determined every quarter by the electricity sector regulator. The National Electricity Regulation Commission (CRSE - *Commission de Régulation du Secteur de l'Électricité*) determines every end of year cost-recovery tariffs, computing a maximum allowed revenue for public utility Senelec, which includes all relevant costs that should be covered by electricity sales revenues (i.e. direct and indirect costs, depreciation/amortization, financial costs, and revenue on a regulated asset base). Projections for maximum allowed revenue are made at the end of the year for the following year. During the year, maximum allowed revenue is updated on a quarterly basis to reflect changing economic conditions and their impact on Senelec's cost structure.

5. In practice, electricity is provided in Senegal at a price which is on average well below the production costs and thus requires fiscal compensation to Senelec. Any decision by CRSE to set tariffs that are below cost recovery tariffs makes Senelec eligible to a tariff compensation (*compensation tarifaire*). Actual tariffs have not reflected the actual cost structure of Senelec. In 2021, tariffs were underestimated by c. 32 percent. Senelec is eligible to a c. 170bnCFA tariff compensation in 2021. Compensation needs are mainly driven by the size of Senelec's oil import bill for its power production (c. ½ of Senelec's costs) and related sharp price fluctuations. Compensation is paid by the FSE but its funding in the past years has been insufficient to cover actual needs.

6. Compensations are highly sensitive to oil prices. Any rise in oil prices of US\$10 per barrel increases tariff compensation needs by about 0.3 percent of GDP. The relationship between oil prices and costs should weaken over time if Senelec succeeds in diversifying its energy mix.

Annex I. Figure 2. Illustration of Electricity Tariff Compensation



Source: Senegalese authorities.

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