DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

SURINAME

COMPETITIVENESS AND INNOVATION

(SU-L1043)

ECONOMIC ANALYSIS ANNEX

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I. Introduction

As a consequence of good fiscal and monetary policies, and unusually high prices for Suriname's exports of gold, alumina and oil, the country's recent growth performance has been good.[1] Improved fiscal and monetary management, which was a problem in the past, has resulted in less volatility in domestic prices and low public debt—recent inflation rates are in single digits, and central government debt is one of the lowest in the region at 36.5% of GDP in 2013.[2] Prices of Suriname's main exports, gold, alumina and oil, were high and triggered investments in the mining sector to accelerate production and exports.[3] Because of solid overall economic performance, GDP per capita increased 50% from 2001 to 2012.[4]

In spite of recent successful performance, the country's economy remains fragile and its prospects uncertain. Fragility is related to the following characteristics of Suriname: the country is small, with a population of about 541,638 according to the 2012 census, which limits the size of the local market and the capacity of the domestic private sector to grow;[5] the economy depends on the mining sector, which represents over 95% of total exports, and exposes the country the volatility of international prices that are transferred to the domestic economy and forces recurrent macroeconomic adjustments;[6] pervasive presence of government in traditional private sector activities, with about 60% of formal employment provided by the central government and public enterprises;[7] and its relative isolation, with weak commercial links to its neighbors in Latin America and the Caribbean, for example total exports to Brazil account for less than 1% of total exports.[8]

In this context, the economic success since 2001 hid the negative consequences of the sources of economic fragility. These weaknesses of the economy precluded the country from reaching its full growth potential: the economy's growth performance would have been even higher than what was recorded since 2001 if the country had lowered some of the barriers to growth. The "*Suriname Private Sector Assessment*" concludes that the country urgently needs to make room for private sector expansion, and the greatest challenge for private sector growth and development is the poor business environment that limits the creation of private sector enterprises.[9]

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[1] 1Suriname's real annual per capita average growth rate, in local constant currency, for the period 2001-2012 was the sixth highest in Latin America and the Caribbean at 3.67%; only lower than Panama (5.18%), Cuba (4.92%), Peru (4.62%), Trinidad and Tobago (4.35%), and the Dominican Republic (3.67%). The average for the region was 1.9%. Source: World Bank World Development Indicators DataBank, series NY.GDP.PCAP.KD.ZG, last updated May 6 2014.

[2] Table 18: Suriname: Government Debt – Disburrsements, Payments and Debt Ratios. Presented in the website of the Central Bank van Suriname. Source: Suriname Debt Management Office.

[3] IMF (2013). Suriname 2013 Article IV Consultation. IMF Country Report No. 13/340, December.

[4] From US$2,999 in 2001 to 4,478 in 2012. Source: GDP per capita (constant 2005 US$). World Development Indicators DataBank, Series NY.GDP.PCAP.KD. Last updated May 6 2014.

[5] Centrale Bank van Suriname, National Summary Data Page. http://www.cbvs.sr/statistics/national-summary-data-page#5

[6] IMF (2013). Suriname 2013 Article IV Consultation. IMF Country Report No. 13/340, December.

[7] Elias, Carlos (2012). "Suriname Private Sector Assessment" Compete Caribbean Report.

[8] Ibid.

[9] Ibid.

Currently Suriname does not compare well with countries in the region as measured by the World Economic Forum's (WEF) Global Competitiveness Index (GCI). Rankings for 2013-2014 show Suriname at 106 out of 148 countries. In Latin America and the Caribbean, Suriname only ranks better than Honduras (111), Paraguay (119), Venezuela (134) and Haiti (143). Other sources confirm WEF findings: the WB/IFC Ease of Doing Business 2013 ranks Suriname 161, only better than Bolivia (162), Haiti (177) and Venezuela (181); and the Heritage Foundation Index of Economic Freedom 2014 ranks Suriname 130, only better than Haiti (156), Bolivia (158), Ecuador (159), Argentina (166), Venezuela (175), and Cuba (177). Suriname could improve its business environment to facilitate private sector expansion.

The Government of Suriname is committed to improving the business environment for private sector investment and facilitating innovation. Government's priority is to modernize the legal framework, creating or improving related institutions, and promoting innovation. Government has developed a comprehensive program of legal and institutional reforms, and has requested IDB support through a PBP instrument.

a. Project description

The objective of the project is to improve the business climate, facilitate private sector investment and innovation, and increase productivity and therefore economic growth in Suriname. The program will be structured as a policy-based loan under the programmatic modality (PBP), consisting of two individual loan operations, the first of which will consist of two interrelated components: (i) a policy-based (PB) component for US$10 million; and (ii) a US$5 million reimbursable technical assistance component. Preliminary estimates indicate that the second operation under the PBP, for about US$10 million, would be approved in 2016. This financing arrangement is considered the most appropriate because it is a flexible and effective mechanism to support complex and long term reforms that require sequenced actions for implementation and broader dialogue. As such, the triggers for the second operation will be refined as progress is made in the adoption of the reforms in 2014 and 2015.

These operations are designed to facilitate private sector development in Suriname by: designing policies to modernize and diversify the economy; modernize the legal framework for private sector development; strengthen the capacity of the Competitiveness Unit Suriname (CUS) to take the lead in future private sector development initiatives in the future, and supporting the development of local firms by strengthening their integration into value chains. The following paragraphs provide a brief description of the main activities that would be financed with this project.

Government recognizes the need to modernize the country and wants to formulate a plan for economic diversification and growth—this plan has been labeled *Suriname Compete*. *Suriname Compete* provides the framework for the definition of major objectives and

approaches.[10] Within the parameters established in *Suriname Compete*, the project would fund the process to prioritize near- and medium-term investments and policies—through the component of strategic planning included in the reimbursable technical cooperation. The process would be informed by a comprehensive consultation process, and builds on the work that the Office of the Vice President and CUS since 2012.

Government also prioritized the modernization of the legal framework for private sector development in Suriname. A thorough review of current legislation resulted in Government's identification of priority laws that need to be revised and rewritten: investment protection; legal certainty; transparency; alternative dispute resolution; industrial property; secured transactions; electronic transactions; licenses; and creation of limited liability companies. For these laws to have an impact on private sector expansion, several institutions need to be created or strengthened, among other: Intellectual Property Board; Center for Alternative Dispute Resolution; Court of Appeals; and Competition and Consumer Protection. All these laws are being prepared, and related institutions are being strengthened with the support of this IDB project.

Importantly, and with significant impact on the business climate, the project would also design and execute actions to improve the current system of business registration and licensing. Widely recognized among the business community as a barrier for investment, the current registration process and licensing procedures takes too long and consumes too many resources. The project would result in new technological innovations to accelerate and simplify the process, and result in new online business registration and licensing mechanisms.

This ambitious modernization program requires that CUS, which reports to the Office of the Vice Presidency and is empowered to facilitate policies and actions for private sector development, be strengthen. In particular, CUS would strengthen its capacity to continue the modernization process of the legal framework; measure productivity; and monitor and evaluate the results of the project. These three functions were identified as priorities by CUS because the modernization of the legal framework, supported by this project, should continue in the future. In addition to the laws selected for modernization in the near term, Suriname still has over 80 laws that are obsolete and need to be revised, rewritten, or modified. CUS also would facilitate the country's capacity to measure productivity, an information gap that currently limits the design of growth policy, and precludes using productivity to inform salary and wage negotiations.[11] Finally, and importantly, CUS would facilitate the country's capacity to monitor and evaluate the implementation of modernization efforts designed to accelerate private sector growth, which would inform the design and execution of future private sector development plans.[12]

[10] Suriname Compete (SU-Compete), is one of the conditions for approval of the first PBL. SU-Compete has been approved by the Vice President and the Cabinet of Ministers.
[11] CUS plan includes reaching out to the Jamaica Productivity Centre and the Barbados National Productivity Council to establish cooperation agreements for training and transferring methodologies and analytical tools.
[12] The project's monitoring and evaluation would be responsibility of CUS through the new Monitoring and Evaluation Unit to be created with funding from this project.

The project would also facilitate the development of local firms by strengthening their integration into value chains and their linkages with firms and buyers and among themselves, in order to improve local firm's productivity and competitiveness. In coordination with local financial and private sector institutions, the project would sponsor small projects that increase suppliers' capability to respond to major sector's requirements by mitigating market failures that result from information asymmetries, appropiability problems, inefficient risk sharing, and coordination failures that typically affect firms.

The rest of this note presents the methodology and assumptions used for the economic analysis of the project, the results of the analysis emphasizing the potentially high net present value of this project and its transformational impact on the current structure of the economy. The note also includes a sensitivity analysis concluding that the main result is robust with respect to changes to the major assumptions necessary for the analysis. The note ends with a positive recommendation for this project based on its high net present value, and includes an annex with recommendations based on this economic analysis of the project for its future monitoring and evaluation.

II. Assumptions and Methodology

a. Methodology

This project would improve the incentive framework for private sector investments in Suriname. The package of laws that would be approved by the National Assembly, accompanied by the creation of complementary institutions, would result in an improved incentive framework for private sector investment in the country. (See the previous section for a description of the laws and complementary institutions that would be created.)

The improved incentive framework would set in motion a process of new investments that would result in higher growth. This process has been thoroughly mapped out in the past: as the conditions for private sector investment improve, existing firms invest and others are created, increasing output. This process was formalized by Robert Solow, who set the foundations for modern economic growth theory.[13] The Solow model of economic growth states that at the macroeconomic level growth is the result of investments in human and physical capital, and the impact of innovation on total output. Better educated people, combined with more specialized capital, increase productivity and therefore growth. Importantly, the Solow model also notes the relevance of innovation to the growth process: the creative process set in motion results in new products and processes with high impact on growth. Over time, the Solow model has been expanded and modernized to take explain endogenous growth, which explains the process of learning by doing, and other relevant issues such as the recognition of increasing returns in some cases and knowledge spillovers.[14]

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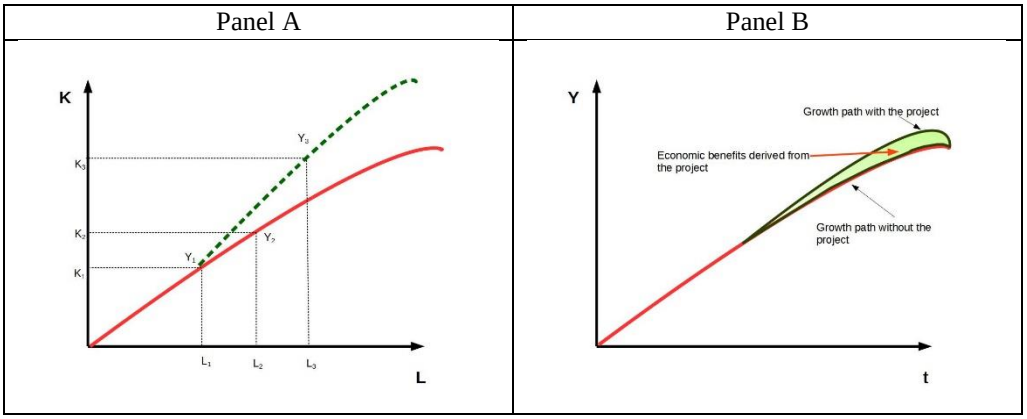
[13] Solow, Robert M. (1956). "A contribution to the Theory of Economic Growth." Quarterly Journal of Economics, 70, February, 65-94.
Solow, Robert M. (1957). "Technical change and the aggregate production function." Review of Economics and Statistics, 39, August, 312-320.

[14] Arrow, Kenneth J. (1962). "The economic implications of learning by doing." Review of Economic Studies, 29, June 155-173.

Within this theoretical construct, the impact of this project may be summarized in the graphs presented in Figure 1. Panel A shows the likely impact of the project related to new investments and shows total output in the economy of Suriname (Y) as a function of capital (K) and labor (L). The red line represents the growth path of the economy without the project. The impact of the project may be decomposed in two: (i) the improved incentive framework would result in increased investments in human and capital assets, which would increase from L_1 to L_2 and from K_1 to K_2 respectively, resulting in increased total output from Y_1 to Y_2, in essence accelerating growth but in the current growth path; and, (ii) the improved incentive framework would increase total factor productivity, resulting in the economy "jumping" to a new higher than before growth path, from Y_2 to Y_3 in the dotted green line. Over time, the project would have an impact on growth, as shown in Panel B of Figure 1—panel B shows the growth path of the economy (Y) over time (t). The red line shows the current growth path of the economy, which may "jump" to the green line as a consequence of this project. The net benefits of this project are the difference between the expected new growth path of the economy and the old one, the green shaded area in Panel B. These are the benefits that would be estimated for this project in this CBA.

Figure 1: Theoretical impact of the project



b. Assumptions

Standing: This project has national reach and would impact the whole country. For this reason the economic analysis is prepared from the point of view of the country, with all institutions within the country, mostly government, hospitals and citizens, counted for all costs and benefits related to this project.[15] This approach has important repercussions with respect to the treatment of transfers: taxes, subsidies and other types of transfers are not counted as costs or benefits as the net effect of a transfer is zero—for example taxes paid

Griliches, Zvi (1979). "Issues in assessing the contribution of research and development to productivity growth." Bell Journal of Economics, 10(1), 92-116.
Romer, Paul M. (1986). "Increasing returns and long-run growth." Journal of Political Economy, 94, October, 1002-1037.
Lucas, Robert E. (1988). "On the mechanics of economic development." Journal of Monetary Economics, 22, July, 3-42.

[15] In Cost-Benefit this is called standing. For more explanation on how to define the standing of project see Jenkins, Harberger, Kuo. 2011 Cost-Benefit Analysis for Investment Decisions.

by citizens to government cancel out because they count as a benefit for government and as a cost for tax payers, with no impact on overall country income. An exception is made for the treatment of the Bank loan, as is customary it is also assumed to be a transfer as if the Bank was a domestic financial institution. This exception is an accepted practice to de-link the results from the cost benefit analysis from the source of funding or the type of financial instrument used.

Measuring benefits: The benefits of the project are estimated over time as presented in Panel B of Illustration 1. The benefits of the project are estimated as the difference between the expected growth path of Suriname in the future, estimated by the IMF at 4.75% per year, and the new higher growth path related to improving the business climate, institutions, and complementary actions.[16] [17] In the recent past, as mentioned in this note, Suriname has benefited from investments that have an impact on growth. However, also as noted, growth could have been higher than recorded. According to modern economic theory, Suriname may have missed on higher growth because the conditions for private sector investment were not in place.

Recent research by Kamau (2014) provides estimates of total factor productivity (TFP) for countries in Latin America and the Caribbean using Using Data Envelopment Analysis (DEA).[18] [19] Table *1* presents the main results for Suriname and for countries in Latin America and the Caribbean that outperformed Suriname—in all cases the estimates of TFP are averages for the period 2001-2007.[20] The benefits of this project are estimated assuming that the activities implemented with the support of the project result in Suriname closing the TFP productivity gap from 2.7% to the average 5.2%.

[16] IMF (2013). Suriname 2013 Article IV Consultation. IMF Country Report 13/340, December 2013.

[17] The IMF World Economic Outlook (WEO), Recovery Strengthens, Remains Uneven, April 2014 projects lower near-term growth rates for Suriname: 4%, 4%, 4.3% for 2014, 2015 and 2016 respectively. This CBA uses the IMF Article IV estimates, which are higher, to conservatively measure the benefits of the project.

[18] Data Envelopment Analysis is a deterministic non-parametric linear programming methodology that estimates the production frontier of the economy and its distance between production data points. The estimates presented in Kamau work were estimated using Stata DEA procedure.
For a detailed description of DEA methodologies see Coelli, Tim. 2008. "A guide to DEAP Version 2.1: A Data Envelopment Analysis (Computer) Program." Centre for Efficiency and Productivity Analisys, CEPA Working Paper 96/08.

[19] Kamau, Musheer. (2014). "Estimation of total factor productivity in Latin America and the Caribbean." Unpublished mimeo.

[20] This period, 2001-2007, was selected because no significant exogenous or endogenous events were recorded that could have biased TFP estimates. Before 2001 Suriname experienced high growth volatility related to policy mistakes and the impact of external events. The international financial crisis impacted countries in Latin America and the Caribbean from 2008 onwards, therefore introducing noise into the data and biasing TFP estimates.

Table 1: TFP selected countries in Latin America and the Caribbean (DEA average 2001-2007)

Country	DEA TFP
Suriname	2.7%
Dominican Republic	3.6%
Guyana	2.8%
Panama	3.8%
Peru	4.8%
Trinidad and Tobago	8.6%
Average excluding Guyana and Suriname	5.2%

Source: Kamau 2014

The focus on TFP to estimate the impact of this project is appropriate, in part explained by overwhelming evidence that points to TFP as the main driver of growth. A recent working paper from the IMF notes that growth in Latin America in the last few years was driven by investments in human and capital related to the exploitation of natural resources, in turn driven by unusually high prices, which is the case for Suriname among other Latin American and Caribbean economies. This IMF working paper also notes that growth driven by human and capital investments is not sustainable as these factors' productivity in some cases are high. Looking forward, and expecting moderation in capital accumulation in the region, countries that aim at continuing growing would do so through increases in TFP.[21]

Measuring costs: Costs of this project are related to drafting new laws, approval and implementation, which would include setting up new institutions and strengthening others. Additional costs are related to preparing an overall growth strategy, and to institutional strengthening. All these activities are "soft" and do not require infrastructure. The cost of implementation of these activities, is therefore small compared to the potential benefits.

Estimating Net Present Value and Economic Rate of Return. Benefits (B) and costs (C) are estimated in 2014 US$.[22] The benefits of this project would extend for decades after the implementation of the program, however, for the purpose of this CBA it only considers benefits and costs for a number of years (N). Finally, this CBA uses a social discount rate (d) to estimate the costs and benefits as of 2014.

The Net Present Value (NPV) and the Economic Rate of Return (ERR) are calculated using the following formulas, where B_t stands for benefits, and C_t for costs on year t, and d is the social discount rate.

[21] Sosa, Sebastian, Evridiki Tsounta and Hye Sun Kim. Is the Growth Momentum in Latin America Sustainable? IFM Working Paper WP/13/109 May 2013.

[22] Economic prices of tradable and non-tradable goods, as well as for skilled and unskilled labor, have not been estimated for Suriname.

$$NPV = \sum_t \left(\frac{B_t - C_t}{(1+d)^t} \right)$$

$$ERR = \frac{\text{Net Present Value of Benefits}}{\text{Net present Value of Costs}} = \frac{\sum_t \frac{B_t}{(1+d)^t}}{\sum_t \frac{Ct}{(1+d)^t}}$$

Table 2 presents the assumptions used in the CBA.

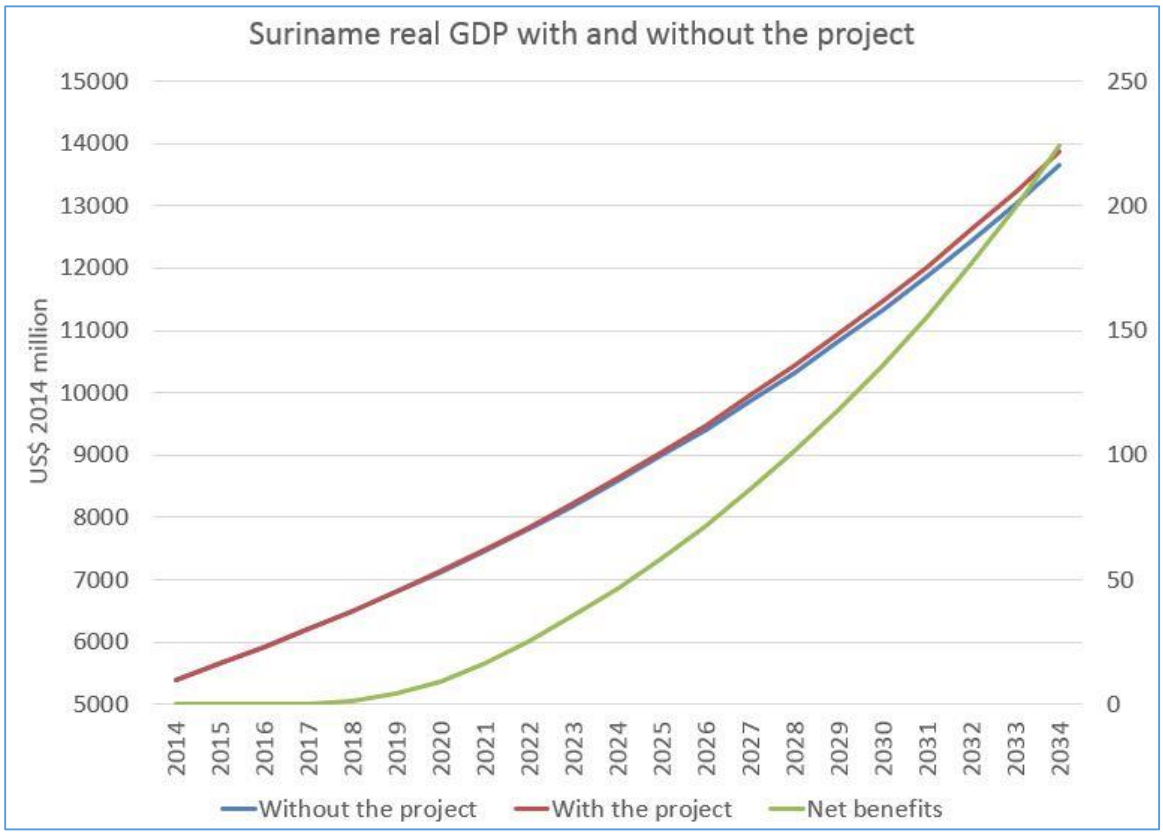
Table 2: CBA assumptions

Indicator	Assumption	Source
Discount rate (social rate of return, d)	12%	IDB most commonly used discount rate based on review of previous CBA
Number of years for the analysis	20	Project team
Number of years for project execution (no impact on benefits, only costs)	First 3 years	Project team
Number of years to reach full benefits/Benefits starting in year 4	5 years increasing 20% each year	Project team
Growth rate without the project	4.75% for all the years	IMF
Growth rate with the project	Year 1: 4.75% Year 2: 4.75% Year 3: 4.75% Year 4: 4.77% Year 5: 4.80 Year 6: 4.82 Year 7: 4.85 from Year 8 to Year 20: 4.86	Project team
Annual costs of the project (US$, 2014)	Year 1: 2 Year 2: 4 Year 3: 4 Year 4: 2	Project team

III. Economic Benefits

The NPV of the project, in US$ of 2014, is US$256.2 million—about 5% of GDP in 2013. Figure *2* presents the growth path of the Surinamese economy with the project, the red line, and without the project, the blue line, both measured on the left axis of the illustration. The figure also shows the annual net benefits of the project, the green line measured on the right axis of the illustration. Total benefits of the project in nominal US$ are US$1,468 million, and total benefits in 2014 US$ are 265.3 million. For the project to have a NPV of zero, total costs would have to be US$350 million. The CBA of this project reveals high potential benefits for Suriname.

Figure 2: Main result of the CBA: Suriname growth path with and without the project (left axis) and net benefits (right axis)



IV. Economic Costs

Total costs of the project in nominal US$ are US$12 million, and total costs in 2014 US$ are US$9.1 million. These costs represent the investment that government would make on drafting and approving the laws included in the project; the costs of setting up the institutions that are necessary for implementation of the new legal framework; institutional strengthening related to acquiring the capacity to measure and monitor productivity, continue with the legal modernization process, monitoring and evaluation, and strategic planning; and supporting the development of local firms by strengthening their integration into value chains. Importantly, the IDB project would only fund US$5 million out of the total, and the IDB sponsored project includes only US$6.7 million out of the total US$12 million that it is expected the project would cost over a period of four years—see Table 2 and Table 3, which also shows total cost estimates of the project. The table shows the budget for the IDB sponsored program, but not the complementary spending that would also be necessary for this program to completely implement. Government estimates that significant additional costs would be necessary, costs that go beyond the program sponsored by the IDB. These costs have been roughly estimated at US$5.3 million and have been included in the CBA. These costs would include, among other, running the new institutions that would be created to implement the new laws, measuring productivity, continuing the process of modernizing the legal framework, and monitoring and evaluation.

Finally, other CBAs of similar projects prepared for the IDB include as costs the full amount of the IDB program, in the case of Suriname this would be US$25 million. This amount is large for Suriname, however, one of the scenarios of the sensitivity analysis considers that government would spend US$25 million.

Table 3: Total costs included in the CBA

IDB sponsored project	I. DIRECT COSTS	5,191,900
	A. Sub - Component 1: Modernizing Institutions in Charge of Legal and Regulatory Reforms	2,166,000
	Formulating and Implementing a Modern Industrial Policy for Diversification and Growth	500,000
	Modernizing Institutions in Charge of Business Climate	1,351,000
	Reducing the Cost of Doing Business Via Technological Innovations	315,000
	B. Sub- Component 2: Strengthening Public Private Dialogue	1,430,900
	Productivity and Competitiveness	765,686
	Legal and Regulatory Analysis on Business Climate	430,200
	Monitoring and Evaluation	235,014
	B. Sub- Component 3: Capacity Building for Value Chains	1,595,000
	Capacity Building and Design	480,000
	Pilot Value Chains for Innovation	990,000
	Awareness and Diffusion	75,000
	Monitoring and Evaluation	50,000
	II. PROGRAM ADMINISTRATION	1,231,400
	III. EXTERNAL AUDITING	100,000
	IV. MONITORING AND EVALUATION	119,474
	V. CONTINGENCIES	52,000
	Total costs considered in the IDB project (of which the IDB loan funds US$5 million)	6,694,774
Additional costs identified by government in addition to the IDB project (to be funded by government)		5,305,226
Total costs of the project		12,000,000

Source: Project Team

V. Economic Return

The ERR of this project is 2,111%. This is high but comparable to similar projects designed to modernize the legal framework for private sector development that may result in large changes in the incentive framework with a transformational impact on economic structures.

VI. Sensitivity Analysis

The CBA presents a sensitivity analysis to test the robustness of the NPV and ERR of the project. The sensitivity analysis includes 4 scenarios:

- S1: assuming that the benefits of the project are half of those assumed in the baseline

- S2: assuming that Suriname closes the TFP gap with the Dominican Republic, see Table 1, which is the worst performer excluding Guyana—Suriname's TFP grows from 2.7% to 3.6%
- S3: assuming that the benefits start accruing in year 7 of the projections—year 2021 if project starts executing in 2015
- S4: assuming that the total costs of the project are US$25 million, the same amount as the IDB loans that would be included in the program—two PBLs for US$10 million and a reimbursable technical cooperation for US$5 million

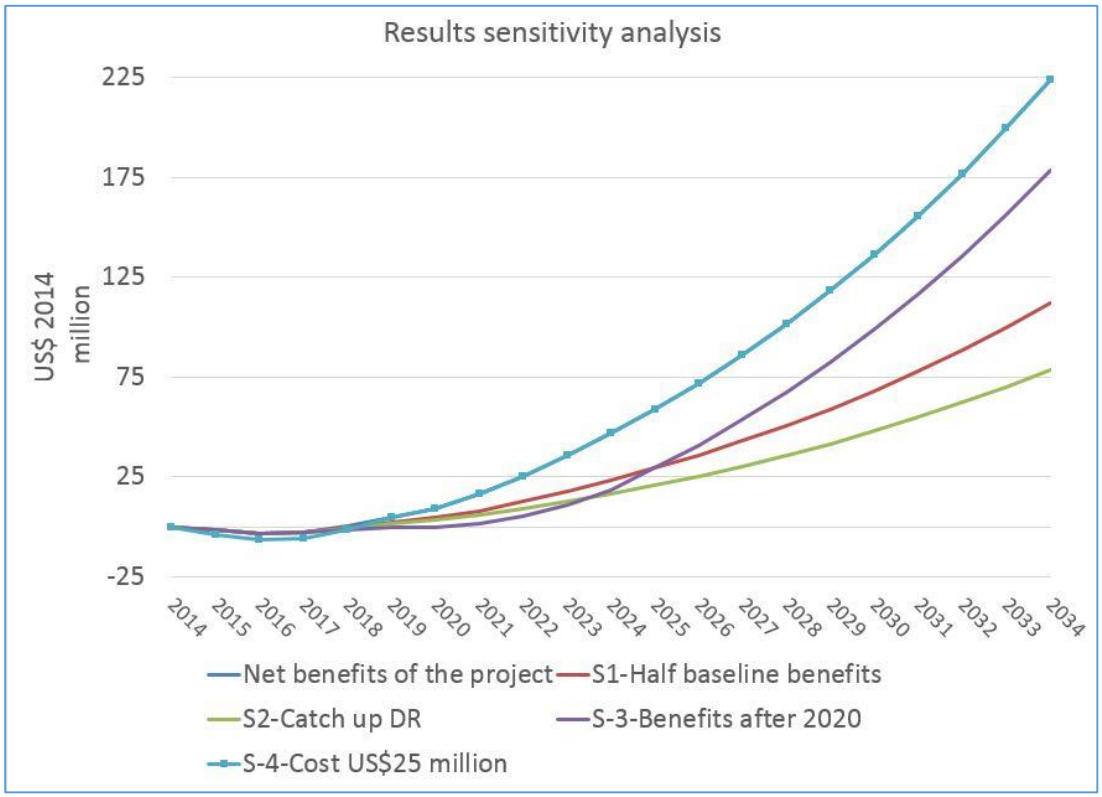
The results of the sensitivity analysis are presented in Table 4 and graphically in Figure 3. As the table shows, in all cases the results are robust: the project results in significant positive benefits to the country.

Table 4: Results of the sensitivity analysis

	CBA results	S1: Half benefits	S2: Catch DR	S3: Benefits kick in 2012	S4: Total costs US$25 million
NPV (US$ 2014 million)	256.2	123.6	84.4	151.2	246.4
ERR (%)	2,111%	1,005%	679%	1,236%	961%

Source: CBA estimates

Figure 3: Net benefits of the project, results from the sensitivity analysis



Source: CBA estimates

VII. Conclusion

This CBA estimated the expected net benefits of the execution of the Suriname Business Climate and Innovation project. The CBA reveals large potential benefits from the execution of this project. Importantly, in addition to the quantitative benefits presented in the CBA, this project would also result in significant qualitative benefits. These benefits would be related to the transformation of the Surinamese economy into a more vibrant economy, one in which the private sector takes the lead in investment and development. The Suriname Competitiveness Strategy summarizes the transformation process in the following table.

Table 5: Suriname Competitiveness Strategy: transformation of the economy

FROM (obsolete)	TO (modern)
Government leads	Private sector leads
Mining sector leads	Greater participation of other sectors
Government employs most formal jobs	Private sector employs most formal jobs
Many public enterprises	Strategic public intervention
PUBLIC-private partnerships	Public-PRIVATE PARTNERSHIPS
For young people: it is really appealing to work for government or to migrate	More opportunities for young people in Suriname, to invest and to work in the country
People are forced/escape by engaging in informal activities	Formal activities result from a better incentive framework, more people become formal entrepreneurs

Source: SU-Compete, Competitive Unit Suriname

To fulfill this transformation, the country would have to embark on a reform path that would include executing the activities of the IDB partially funded project, complemented by significant reforms in other key issues and sectors. This project marks a departure from the past approach to saving and investment, and brings to the forefront the role of the private sector, which was not fully considered in the past. Therefore this project and complementary activities need to be carefully monitored and evaluated to ensure that they meet their goals and continue building support for the modernization process, as presented in Suriname Compete.

Annex I: CBA detailed calculation and sensitivity analysis

CBA

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP wo project	5,650.2	5,918.5	6,199.7	6,494.1	6,802.6	7,125.7	7,464.2	7,818.8	8,190.2	8,579.2
GDP w project	5,650.2	5,918.5	6,199.7	6,495.6	6,807.1	7,135.0	7,480.4	7,844.3	8,225.8	8,625.9
Benefits (present value)	-	-	-	0.9	2.5	4.7	7.3	10.3	12.9	15.0
Costs (present value)	1.8	3.2	2.8	1.3	-	-	-	-	-	-
NPV Benefits	(1.8)	(3.2)	(2.8)	(0.4)	2.5	4.7	7.3	10.3	12.9	15.0
	2025	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
GDP wo project (US$2014)	8,986.7	9,413.6	9,860.7	10,329.1	10,819.7	11,333.7	11,872.0	12,435.9	13,026.6	13,645.4
GDP w project (US$2014)	9,045.4	9,485.4	9,946.7	10,430.5	10,937.9	11,469.9	12,027.7	12,612.7	13,226.2	13,869.5
Benefits	16.9	18.4	19.7	20.8	21.6	22.2	22.7	23.0	23.2	23.2
Costs	-	-	-	-	-	-	-	-	-	-
Net Benefits	16.9	18.4	19.7	20.8	21.6	22.2	22.7	23.0	23.2	23.2

S-1: assuming that the benefits of the project are half of those assumed in the baseline

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP wo project	5,650.2	5,918.5	6,199.7	6,494.1	6,802.6	7,125.7	7,464.2	7,818.8	8,190.2	8,579.2
GDP w project	5,650.2	5,918.5	6,199.7	6,494.9	6,804.8	7,130.4	7,472.3	7,831.5	8,208.0	8,602.5
Benefits (present value)	-	-	-	0.4	1.3	2.4	3.7	5.2	6.4	7.5
Costs (present value)	1.8	3.2	2.8	1.3	-	-	-	-	-	-
NPV Benefits	(1.8)	(3.2)	(2.8)	(0.8)	1.3	2.4	3.7	5.2	6.4	7.5
	2025	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
GDP wo project (US$2014)	8,986.7	9,413.6	9,860.7	10,329.1	10,819.7	11,333.7	11,872.0	12,435.9	13,026.6	13,645.4
GDP w project (US$2014)	9,016.1	9,449.5	9,903.7	10,379.8	10,878.8	11,401.8	11,949.9	12,524.3	13,126.4	13,757.4
Benefits	8.4	9.2	9.9	10.4	10.8	11.1	11.3	11.5	11.6	11.6
Costs	-	-	-	-	-	-	-	-	-	-
Net Benefits	8.4	9.2	9.9	10.4	10.8	11.1	11.3	11.5	11.6	11.6

S2: assuming that Suriname closes the TFP gap with the Dominican Republic, see Table 1, which is the worst performer excluding Guyana—Suriname's TFP grows from 2.7% to 3.6%

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP wo project	5,650.2	5,918.5	6,199.7	6,494.1	6,802.6	7,125.7	7,464.2	7,818.8	8,190.2	8,579.2
GDP w project	5,650.2	5,918.5	6,199.7	6,494.6	6,804.2	7,129.0	7,470.0	7,827.8	8,202.7	8,595.7
Benefits (present value)	-	-	-	0.3	0.9	1.7	2.6	3.6	4.5	5.3
Costs (present value)	1.8	3.2	2.8	1.3	-	-	-	-	-	-
NPV Benefits	(1.8)	(3.2)	(2.8)	(1.0)	0.9	1.7	2.6	3.6	4.5	5.3
	2025	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
GDP wo project (US$2014)	8,986.7	9,413.6	9,860.7	10,329.1	10,819.7	11,333.7	11,872.0	12,435.9	13,026.6	13,645.4
GDP w project (US$2014)	9,007.4	9,438.9	9,891.1	10,364.9	10,861.4	11,381.6	11,926.8	12,498.2	13,096.9	13,724.2
Benefits	6.0	6.5	7.0	7.3	7.6	7.8	8.0	8.1	8.2	8.2
Costs	-	-	-	-	-	-	-	-	-	-
Net Benefits	6.0	6.5	7.0	7.3	7.6	7.8	8.0	8.1	8.2	8.2

S3: assuming that the benefits start accruing in year 7 of the projections—year 2021 if project starts executing in 2015

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP wo project	5,650.2	5,918.5	6,199.7	6,494.1	6,802.6	7,125.7	7,464.2	7,818.8	8,190.2	8,579.2
GDP w project	5,650.2	5,918.5	6,199.7	6,494.1	6,802.6	7,125.7	7,465.8	7,823.9	8,200.8	8,597.8
Benefits (present value)	-	-	-	-	-	-	0.7	2.1	3.9	6.0
Costs (present value)	1.8	3.2	2.8	1.3	-	-	-	-	-	-
NPV Benefits	(1.8)	(3.2)	(2.8)	(1.3)	-	-	0.7	2.1	3.9	6.0
	2025	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
GDP wo project (US$2014)	8,986.7	9,413.6	9,860.7	10,329.1	10,819.7	11,333.7	11,872.0	12,435.9	13,026.6	13,645.4
GDP w project (US$2014)	9,016.0	9,454.5	9,914.4	10,396.6	10,902.3	11,432.6	11,988.6	12,571.7	13,183.2	13,824.4
Benefits	8.4	10.5	12.3	13.8	15.1	16.1	17.0	17.7	18.2	18.6
Costs	-	-	-	-	-	-	-	-	-	-
Net Benefits	8.4	10.5	12.3	13.8	15.1	16.1	17.0	17.7	18.2	18.6

S4: assuming total cost of US$25 million

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GDP wo project	5,650.2	5,918.5	6,199.7	6,494.1	6,802.6	7,125.7	7,464.2	7,818.8	8,190.2	8,579.2
GDP w project	5,650.2	5,918.5	6,199.7	6,495.6	6,807.1	7,135.0	7,480.4	7,844.3	8,225.8	8,625.9
Benefits (present value)	-	-	-	0.9	2.5	4.7	7.3	10.3	12.9	15.0
Costs (present value)	3.7	6.6	5.9	2.6	-	-	-	-	-	-
NPV Benefits	(3.7)	(6.6)	(5.9)	(1.8)	2.5	4.7	7.3	10.3	12.9	15.0
	2025	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
GDP wo project (US$2014)	8,986.7	9,413.6	9,860.7	10,329.1	10,819.7	11,333.7	11,872.0	12,435.9	13,026.6	13,645.4
GDP w project (US$2014)	9,045.4	9,485.4	9,946.7	10,430.5	10,937.9	11,469.9	12,027.7	12,612.7	13,226.2	13,869.5
Benefits	16.9	18.4	19.7	20.8	21.6	22.2	22.7	23.0	23.2	23.2
Costs	-	-	-	-	-	-	-	-	-	-
Net Benefits	16.9	18.4	19.7	20.8	21.6	22.2	22.7	23.0	23.2	23.2