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IMPLEMENTATION COMPLETION AND RESULTS REPORT

ON A GRANT

IN THE AMOUNT OF SDR 72.9 MILLION (US$110 MILLION EQUIVALENT)

TO THE

DEMOCRATIC REPUBLIC OF CONGO

FOR A

WESTERN GROWTH POLES PROJECT

June 30, 2021

Agriculture And Food Global Practice
Africa East Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective {April 30, 2021})

Currency Unit =	Congolese Franc
CDF 1.986 =	US$1
US$1.44 =	SDR 1

FISCAL YEAR
July 1 - June 30

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ABBREVIATIONS AND ACRONYMS

ADM	Accountability Decision Making
AIP	Agro-industrial Platform
ANAPI	Agence Nationale de Promotion des Investissements (National Agency for Investment Promotion)
APL	Adaptable Program Lending
AZES	Autorité des Zones Economiques Spéciales (Special Economic Zones Agency)
BCR	Benefit Cost Ratio
BP	Bank Procedure
CAADP	Comprehensive Africa Agriculture Development Programme
CBA	Cost Benefit Analysis
CAS	Country Assistance Strategy
CASA	Conflict-Affected States in Africa
CDF	Congolese Franc
CFEF	Cellule d'Exécution des Financements en faveur des Etats Fragiles (Funding Execution Unit for Fragile States)
CLER	Comité Local d'Entretien Routier (Local Committee for Road Maintenance)
CPCAI	Comité de Pilotage pour l'Amélioration du Climat des Affaires et des. Investissements
CTR	Comité Technique de Recrutement
DB	Doing Business
DPs	Development Partners
DTIS	Diagnostic Trade Integrated Study
DVDA	Direction des Voies de Desserte Agricole (Directorate for Agricultural Access Roads)
EA	Environmental Assessment
EFA	Economic and Financial Analysis
EMP	Environmental Management Plan
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FCV	Fragility, Conflict and Violence
FEC	Fédération Economique du Congo (Congo Business Federation)
FOPAKO	Forces Paysannes du Kongo (Farmers' Force in Kongo-Central)
GDP	Gross Domestic Product
GP	Global Practice
HR	Human Resource
IDA	International Development Association
IE	Impact Evaluation
IFC	International Finance Corporation
IITA	International Institute for Tropical Agriculture
INERA	Institut National pour l'Etude et la Recherche Agronomique (National Institute for Agricultural Studies and Research
IP	Implementation Progress
IR	Intermediate Results
IRI	Intermediate Results Indicator
IRR	Internal Rate of Return

ISM	Implementation Support Mission
M&E	Monitoring and Evaluation
MPA	Multiphase Programmatic Approach
MSME	Micro, Small and Medium Enterprises
MTR	Mid Term Review
NADP	National Agricultural Development Program
NGO	Non-Governmental Organization
NPV	Net Present Value
OCC	Opportunity Cost of Capital
OHS	Occupational Health and Safety
OP	Operational Policy
PAD	Project Appraisal Document
PAP	People Affected by Project
PCU	Project Coordination Unit
PDF	Project Development Fund
PDO	Project Development Objective
PDPC	Projet de Développement des Pôles de Croissance Ouest (Western Growth Poles Project)
PIM	Project Implementation Manual
PMP	Pest Mangement Plan
PPA	Project Preparation Advance
PPP	Private Public partnership
PRSP	Poverty Reduction Strategy Paper
RAP	Resettlement Action Plan
RF	Results Framework
RP	Restructuring Paper
RPF	Resettlement Policy Framework
SCD	Systematic Country Diagnostics
SCF	Standard Conversion Factor
SENASEM	Service National de Semences (National Seed Service)
SEZ	Special Economic Zone
SME	Small and Medium Enterprise
SNV	Stichting Nederlandse Vrijwilligers (Netherlands Development Organization – NGO)
SOFIDE	Société Financière de Développement
SOP	Series of Projects
SPVAC	Strategic Partnership Along Value Chains
TA	Technical Assistance
ToC	Theory of Change
ToR	Terms of Reference
TTL	Task Team Leader
UNIDO	United Nations Industrial Development Association
VBV	Variable By Variable
WB	World Bank

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P124720	Dem Rep Congo - Western Growth Poles
Country	**Financing Instrument**
Congo, Democratic Republic of	Investment Project Financing
Original EA Category	**Revised EA Category**
Full Assessment (A)	Full Assessment (A)

Organizations

Borrower	Implementing Agency
Democratic Republic of Congo	CFEF

Project Development Objective (PDO)

Original PDO

The proposed Project Development Objective (PDO) is to increase productivity and employment in selected value chains in target zones.

PDO as stated in the legal agreement

to increase productivity and employment in selected value chains in target zones of the Recipient's territory.

FINANCING

	Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing			
IDA-H8600	110,000,000	109,644,887	101,498,675
Total	**110,000,000**	**109,644,887**	**101,498,675**
Non-World Bank Financing			
Borrower/Recipient	4,700,000	4,422,055	4,422,055
Total	**4,700,000**	**4,422,055**	**4,422,055**
Total Project Cost	**114,700,000**	**114,066,942**	**105,920,730**

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
11-Jun-2013	16-Oct-2013	15-May-2017	30-Aug-2019	30-Oct-2020

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
09-Sep-2015	9.06	Change in Results Framework Change in Components and Cost Reallocation between Disbursement Categories
29-Jan-2018	43.87	Change in Results Framework Change in Components and Cost Reallocation between Disbursement Categories
30-Jul-2019	80.92	Change in Results Framework Change in Components and Cost Change in Loan Closing Date(s) Reallocation between Disbursement Categories
27-Apr-2020	99.65	Change in Loan Closing Date(s) Reallocation between Disbursement Categories

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Moderately Satisfactory	Modest

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	18-Dec-2013	Satisfactory	Satisfactory	.53
02	29-Jun-2014	Satisfactory	Satisfactory	4.43
03	31-Dec-2014	Moderately Satisfactory	Moderately Satisfactory	6.06
04	29-Jun-2015	Moderately Satisfactory	Moderately Satisfactory	8.50
05	05-Aug-2015	Moderately Unsatisfactory	Moderately Unsatisfactory	9.06
06	10-Apr-2016	Moderately Unsatisfactory	Moderately Unsatisfactory	12.90
07	25-Dec-2016	Moderately Unsatisfactory	Moderately Satisfactory	22.15
08	18-May-2017	Moderately Satisfactory	Moderately Satisfactory	30.65
09	27-Dec-2017	Moderately Satisfactory	Moderately Satisfactory	41.70
10	29-Jun-2018	Moderately Satisfactory	Moderately Satisfactory	52.01
11	08-Jan-2019	Moderately Satisfactory	Moderately Satisfactory	65.44
12	18-Jul-2019	Moderately Satisfactory	Moderately Satisfactory	80.92
13	11-Dec-2019	Moderately Satisfactory	Moderately Satisfactory	93.47
14	14-May-2020	Moderately Satisfactory	Moderately Satisfactory	100.09
15	30-Oct-2020	Moderately Satisfactory	Moderately Satisfactory	99.86

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Agriculture, Fishing and Forestry	**28**
Other Agriculture, Fishing and Forestry	28

Public Administration	**14**
Other Public Administration	14
Information and Communications Technologies	**4**
ICT Infrastructure	4
Transportation	**24**
Rural and Inter-Urban Roads	24
Industry, Trade and Services	**30**
Agricultural markets, commercialization and agri-business	30

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Economic Policy	**6**
Trade	6
Trade Facilitation	6
Private Sector Development	**41**
Jobs	19
Job Creation	19
Public Private Partnerships	10
Enterprise Development	9
MSME Development	9
Regional Integration	3

Finance	**18**
Financial Infrastructure and Access	9
MSME Finance	9
Finance for Development	9
Agriculture Finance	9
Urban and Rural Development	**47**
Urban Development	19
Urban Infrastructure and Service Delivery	19
Rural Development	28
Rural Markets	9
Rural Infrastructure and service delivery	19

ADM STAFF

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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

1. The Democratic Republic of Congo (DRC) is a resource rich country, with considerable potential for development. Despite its rich endowment, it is one of the world's poorest countries with a per capita income of US$190 in 2011. At the time of project preparation in 2013, it was emerging from a long period of conflicts, which had had a devastating impact on the population and the economy. Two civil wars had claimed more than three million lives. In 2006 and 2011, the country managed to hold two legislative and presidential elections and the security situation improved greatly. The signing of a peace, security, and cooperation treaty for DRC by 11 countries on February 24, 2013 was an important step toward a sustainable and peaceful solution to the conflict in the eastern part of the country.

2. However, DRC continues to face acute development challenges. Among these are: (i) huge infrastructure deficit; (ii) limited economic diversification; (iii) limited public sector capacity to provide public goods and/or support to private sector-led inclusive growth; (iv) weak governance systems and institutions; (v) predatory culture of rent seeking; and (vi) limited judicial protection of investments. The combination of these factors makes resource-based inclusive economic growth and sustainable jobs creation difficult. Beyond economic aspects, these factors pose significant risks to social cohesion and political stability.

3. At the time of project preparation, the Government was keenly aware of these challenges and outlined its vision for socio-economic development in the second Poverty Reduction Strategy Paper (PRSP-2), adopted in 2011. PRSP-2 rested on four pillars: (i) strengthening governance and consolidating peace; (ii) diversifying the economy to accelerate growth and create employment; (iii) improving access to basic social services and enhancing human capital; and (iv) protecting the environment and combating climate change. The focus of the Government's 2012-2016 Action Plan, which operationalized the PRSP-2, was on governance, public finance management, modernization of the public administration, private-sector led growth, human development, closing the infrastructure gap and improving security.

Sectoral and Institutional Context

4. Agriculture accounts for about 20 percent of Gross Domestic Product (GDP), employs some 70-75 percent of the economically active population, and plays a key role in reducing food insecurity, malnutrition and rural poverty. Related agro-industries employ another 10 percent of the population. Jobs in agriculture tend to be informal, with low value added per worker, often providing only for subsistence. Out of a total population of 81.3 million, DRC has approximately 13 million farmers in rural areas, with an average landholding of 1.6 ha. Rural households derive more than 80 percent of their income from agriculture, making agricultural productivity growth a necessary condition for rural poverty and food insecurity reduction in DRC. Agricultural land productivity is low and declining. Yields of neighboring Central African countries of the top three staple crops grown in DRC – maize, cassava and rice – are higher by a factor of 1.8 to 3.5. DRC's declining agricultural productivity relative to neighboring countries is mainly due to under-investments at farm-level and in agriculture public goods and services, especially for market access. An indicator of the level of on-farm underinvestment is that only 5 percent of food producing households use improved seeds and only 4 percent use fertilizers. An indication of the level of underinvestment in agriculture public goods and market access is that 23 out of 26 Provinces in DRC have a median travel time to a settlement above 8 hours.

5. To deal with this situation, and to promote resource-based inclusive growth by unleashing growth potential of key productive sectors, especially agriculture and agri-business, the Government envisioned eight growth poles corridors based on carefully selected criteria. The Western Growth Pole Project (PDPC) emanated from this broader Growth Poles Program and was intended to pilot this approach in the Bas Congo (now known as the Kongo Central province) Kinshasa corridor, which has some of the greatest potentials in agriculture (cassava, maize, rice, palm oil, fruits and vegetables, coffee, and cocoa, etc.) with potential access to the big Kinshasa urban and suburban market (more than 10 million inhabitants). As part of its 2012-2016 Action Plan, the Government also included among its priorities the development of Special Economic Zones (SEZs). Building on the analysis and recommendations of the Diagnostic Trade Integrated Study (DTIS, 2010); and the World Bank Country Economic Memorandum[1], the Master Plan prepared as part of the Project Preparation Advance (PPA) secured for PDPC lead to the decision that the project's initial focus would be to support the development of three agribusiness value chains (cassava, rice, and palm oil).

6. The Bas-Congo, the geographic area of PDPC, was selected for its proximity to Kinshasa and large population. Maluku was chosen as the site for the construction of a pilot SEZ because access to secured industrial and commercial land could be ensured. It holds a strategic position on a multimodal transportation node providing access to a large river network with good road connections and a direct power connection to a hydroelectric facility. The Bas-Congo has a population of about 3 million and is the province of the country with a direct access to sea. It is one of the most agriculturally productive provinces in the DRC, though only 30 percent of agricultural lands are exploited. Ecological and climatic conditions allow the cultivation of a wide variety of tropical crops and yields are low even by Central African standards.

7. The Project Appraisal Document (PAD) recognized that reviving the agricultural sector needed addressing several issues at the same time: (i) low yields of crops; (ii) need for increased private sector participation to support the development of value chains and commercial agriculture in partnership with small holder farmers; (iii) lack of infrastructure (reliable power supply, degraded transport network); (iv) low productivity level of the labor force and shortage of professional skills; (v) an embryonic financial sector; and (vi) access to secured land for agro-industrial enterprises.

8. The PDPC was designed through a joint Agriculture – Private Sector Development – PSD effort. Its multisectoral approach and transformational ambition was necessary and a key element to secure full commitment of the Government, notably its important focus on job creation. The idea was that the Maluku SEZ would help attract private sector investments and companies to settle in and generate employment. In addition, the importance of the investment climate/Doing Business – DB work was significant, and the reason behind DB related indicators were included in the Results Framework – RF. Following official request from the Ministry of Industry to develop SEZs in DRC, the International Finance Corporation (IFC) designed an advisory project supported and funded by the Conflict Affected States in Africa – CASA initiative, for that matter. This project, implemented from 2008-till 2012, was key in PDPC design thanks to its noteworthy achievements: (i) selection of the location for the SEZ at Maluku ; (ii) associated studies ; (iii) institutional legal and regulatory framework and entity for a SEZ agency ; and (iv) obtaining Government initial sign off on its proposal for the SEZ Law to be endorsed by Parliament, a cornerstone to improve DRC's investment climate. This important groundwork proved essential in the design of activities for the SEZ in PDPC.

Theory of Change (Results Chain)

9. **To address the challenges outlined above, PDPC focused on some of the key drivers of change** to increase productivity and employment in selected value chains in target zones. The key drivers for change considered were:

[1] "Resilience of an African Giant: Boosting Growth and Development in the Democratic Republic of Congo", 2011, Report No. 64821

a) **Agriculture Value Chains Development in Bas-Congo.** This was to be achieved through: (i) Enhancing Agricultural Supply Capabilities; and (ii) Support to Rural Infrastructures.
b) **Special Economic Zone of Maluku** via: (i) Facilitation of PPPs; (ii) Strengthen the capacity of relevant Ministries in SEZ development and (iii) Physical infrastructure.
c) **Proactive Business Development**. This was to be done through: (i) Project Development Fund – PDF for Investment Promotion; (ii) Targeted Regulatory Reforms; and (iii) Trade Facilitation at the Port of Matadi in the Bas Congo**.**

10. **Problem Statement:** (i) low yields of crops; (ii) need for increased private sector participation to support the development of value chains and commercial agriculture in partnership with small holder farmers; (iii) lack of infrastructure (reliable power supply, degraded transport network); (iv) low productivity level of the labor force and shortage of professional skills; (v) an embryonic financial sector; and (vi) access to secured land for agro-industrial enterprises.

PDO: To increase productivity and employment in selected value chains in target zones.

Figure 1: Theory of Change – ToC Diagram for PDPC (derived from PAD since a ToC was not required at the time of project preparation).

Source: PDPC Project Appraisal Document.

Project Development Objectives (PDOs)

11. **The development objective of PDPC is to increase productivity and employment in selected value chains in target zones.**

Key Expected Outcomes and Outcome Indicators

12. The PDO consists of two distinct objectives:

- To increase productivity in selected value chains in target zones
- To increase employment in selected value chains in target zones

13. **The expected outcomes at the end of the 6-year project were:** (i) Number of jobs created in select value chains, of which female (percent); (ii) Direct Project Beneficiaries, of which female (percent); and (iii) Productivity of food crops in select value chains supported by the project.

Table 1: Project outcome indicators

Indicator	Original Target	Revised targets
Number of jobs created in select value chains - of which female (%)	11,000 50	5,000 50
Direct project beneficiaries of which female (%)	50,000 40	50,000 40
Productivity (ton/ha) of food crops in select value chains inter-alia: - Cassava - Rice - Palm oil	 20 3.0 15	 20 3.0 10

Source :PDPC documents

Components

14. As specified in the PAD, the Project had four components:

Component 1: Agriculture Value Chains Development in Bas-Congo (US$ 48 million). This component aimed at increasing the agricultural supply capabilities of farmers' organizations and provide basic rural infrastructure to strengthen the targeted value chains and better supply markets, including Kinshasa. Component 1 had two sub-components with specific activities:

Sub-component 1.1 : Enhancing Agricultural Supply Capabilities (US$ 30 million). This sub-component will: (i) strengthen producers' organizations and provide them with certified planting materials (except for palm oil trees), other relevant inputs, and agricultural extension services; (ii) support the development of partnerships between agro-industrial partners and farmers' cooperatives; and (iii) establish technical centers for agro-processing. It had the following major activities:

- Capacity building of producers' organizations;
- Development of partnerships between strategic agro-industrial investors and producers' organization;
- Construction of primary palm oil processing and extraction facilities;
- Establishing technical platforms for agro-processing and training.

Sub-component 1.2 : Support to Rural Infrastructures (US$ 18 million). This sub-component aimed at building a minimum integrated infrastructure network linking areas of production to collection platforms, technical food processing centers and markets and providing energy and water supplies to these centers. It included the following major activities:

- Rehabilitation and maintenance of rural road networks;
- Sustainable management of rural maintenance along the corridor;
- Delivering electricity and water for agro-processing;
- Strengthening collection centers.

Component 2: **Special Economic Zone of Maluku (US$27 million).** This component aimed at developing the Maluku SEZ (Special Economic Zone) by providing access to needed industrial land equipped with critical infrastructure and a more friendly business environment for investors and private sector operators. The Maluku site had been designated by Government as an SEZ and demarcated to maximize economic impact with minimum disruptions on existing settlement. A Resettlement Action Plan (RAP) was developed for the zone in 2012. This component had three sub-components:

Sub-component 2.1: Facilitation of Public-Private Partnership - PPP (US$1.5 million). This entailed the hiring of a transaction advisor to select a SEZ developer.

Sub-component 2.2: Strengthening the Capacity of relevant Ministries in SEZ development (US$3.5 million). This was aimed especially for the agency charged with regulating SEZs.

Sub-component 2.3: Physical infrastructure (US$22 million). Based on the prepared land use and infrastructure master plan, the project was to contribute to the financing of basic infrastructure for an initial area of 50 ha. Subsequent infrastructure development was to be financed by private developers.

Component 3: Proactive Business Development (US$16 million). This component aimed at improving the business environment with a view to promoting investments and support productive activities in the targeted value chains and poles. This component had three sub-components:

Sub-component 3.1: Project Development Fund (PDF) for Investment Promotion (US$10 million). The PDF was meant to support the preparation of business plans to bring projects development to levels (of risk perception and mitigation) acceptable to private investors.

Sub-component 3.2: Targeted Regulatory Reforms (US$2 million). This sub-component was aimed to strengthen Public Private Dialogue for demand-driven regulatory reforms at both national and provincial level to improve the value chains supported by the project.

Sub-component 3.3: Trade Facilitation at the Port of Matadi in the Bas Congo (US$4 million). This sub-component aimed to support the streamlining and simplification of customs procedures at the Port of Matadi, which was expected to contribute to the development of value chains and productive activities by reducing the cost and time required to import critical equipment and inputs.

Component 4: Coordination, Monitoring, Communication & Impact (US$8 million). This component aimed to strengthen the ability of Government to implement the project in a coordinated and integrated manner based on

existing structures, strengthened through TA.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

Revised PDOs and Outcome Targets

15. The PDO was not changed during project execution but outcome targets were revised during two project restructurings in June 2015 and January 2018[2].

Revised PDO Indicators

16. The PDO level results indicators were changed with regards to their target values during the course of the project as shown in paragraph 13 and under Table 1: the PDO indicator on the number of jobs created was reduced from 11,000 to 5,000[3] and the PDO indicator related to Productivity of food crops in selected value chains (ton/ha) for palm oil was reduced from 15 to 10. Also, significant changes were made to the intermediate results indicators (IRI): several of them were modified or deleted during the first project restructuring in June 2015 and the second restructuring in January 2018. Detailed changes made to IRIs are found in paragraph 25 and under Table 2 and its associated footnotes.

Revised Components

17. The project components during the various Restructurings were revised as follows:

First Restructuring in June 2015. Sub-component 3.1 was revised. The PDF originally intended to promote investments and support productive activities in the targeted value chains, and to operationalize the Government's approach to Strategic Partnerships Along Value Chains (SPAVC), was canceled. This was required due to Government shifting priorities and the inability to set up and anchor the PDF the Société Financière de Développement – SOFIDE[4] as initially conceived. Further, an audit by the International Monetary Fund (IMF) of financial sector institutions during 2013/2014 determined that SOFIDE was not eligible for WB financing.(cf. infra paragraph 35). Per Government's request, the sub-component was restructured and renamed "Technical assistance and capacity building" with a view to develop an overall national agro-industrial parks strategy in DRC ; finance technical assistance – TA to improve food safety in DRC ; provide TA to support the development of Micro, Small and Medium Enterprises (MSMEs) along the value chains developed in the Kongo Central, to support the setting up of an Executive Secretariat within the Prime Ministry's office and provide additional capacity building to key ministries involved in the implementation of project activities. There were no changes to the existing RF indicators. Component 4 was modified to allow the financing of an Executive Secretariat and to provide additional capacity building to key ministries involved in the implementation of project activities.

Second Restructuring in January 2018. The purpose of this restructuring was to assess feasibility of activities during the remaining timeframe as well as to include important changes to the RF (indicators were dropped, some introduced ,others split and finally some adjustments in target values as well). Component 1 was modified by reducing the number of agro-industrial platforms - AIPs from three platforms to one, due to insufficient funding as costs were largely underestimated. Due to implementation delays in the effective launch of activities in Maluku SEZ and limited project duration time remaining, sub-component 2.3 was limited to support the development of a fence for the cleared area inside the SEZ for an area of approximately 210 ha. For the same reasons, investments for the financing of basic

[2] In first restructuring, Targets values of all PDO indicators were adjusted for the remaining years without change to end targets. Second restructuring changed end targets of PDO#1 and PDO#3.
[3] While jobs created were originally described in the PAD as: "jobs that are expected to be created in mainly from the agriculture and agribusiness sectors in the Special Economic Zone (SEZ) and in agro-industries outside the zone," there was no clear definition of job for M&E. After MTR though not clearly included in RP, "jobs" were defined in a much wider way to also include temporary jobs created in agriculture and labor employed in rural road rehabilitation and maintenance.
[4] SOFIDE is a national development agency that receives financial resources from the Government to finance private investments.

infrastructures for an initial area of 50 ha was eliminated.

Third Restructuring in July 2019. During this restructuring, the following changes were made: (i) funds were reallocated between categories of eligible expenditures and components so ensure sufficient funding for certain project activities , and (ii) an extension of the closing date of the Project by eight months, from August 30, 2019 to April 30, 2020. This restructuring increased the resources of components 1 and 2 in order to finalize the physical infrastructure in support of the agricultural value chains (i.e. Sub-component 1.2 – Support to Rural Infrastructures - and Sub-Component 2.3 – Physical Infrastructure), for which the expenditures had been underestimated. To cover this shortfall, financing for components 3 and 4 was reduced.

Fourth Restructuring in April 2020. The purpose of this last restructuring was to : (i) extend the closing date by six months, from April 30, 2020 to October 30,2020 with the aim of completing the construction of the AIP slowed down by the COVID-19 pandemic; and (ii) to reallocate funds between categories of eligible expenditures and components to ensure sufficient funding for selected project activities, which are necessary to achieve PDO.

Table 2: Reallocation of funds per category after each Restructuring (in Million SDR)

Component Name	Original Cost (SDR)	Reallocation after 1st Restructuring	Reallocation after 2nd Restructuring	Reallocation after 3rd Restructuring	Reallocation after 4th Restructuring
(1) Goods, Works, non-consulting services, consultants' services, training and Operating Costs under Parts 1, 2.1, 2.2, 3.2, 3.3, 4.1 and 4.2 of the Project	43.1	31.8	66.3	68.8	68.6
(2) Works under Part 2.3 of the Project	14.6	17.9	2.0	2.4	2.5
(3) PDF Grants for Goods, Works, non-consulting services, Operating Costs, consultants' services and Training under Part 3.1 of the Project	6.6	9.6	2.7	1.4	1.5
(4) Refund of Preparation Advance	1.3	6.3	0.3	0.3	0.3
(5) Unallocated	7.3	7.3	1.6	-	-
TOTAL	**72.9**	**72.9**	**72.9**	**72.9**	**72.9**

Source: PDPC documents

Other Changes

N/A

Rationale for Changes and Their Implication on the Original Theory of Change

18. The first restructuring was to accommodate shifting priorities in policies by the Government at the time. Subsequent changes during the various restructurings, namely the increased allocation for infrastructure under Component 1, were primarily due to substantial cost overruns. The costs of the electricity line of the National Electricity Company went from US$5 million to US$11 million because the initial layout of the power line had to be modified following the environmental and social impact assessment (ESIA). Actual costs for the rehabilitation of the rural roads network also were higher than

originally estimated. The costs of developing AIPs could not be evaluated at appraisal because the identification of sites had been delayed. The fact that the contract with the Netherlands Development Agency (SNV), a non-governmental organization (NGO) that was the key agency to (i) build the capacity of producer organizations to increase their productivity and (ii) support the development of partnerships between agro-industrial partners and farmers' cooperatives was only signed in February 2016 was a major reason for the slow project start and the subsequent necessity to modify project components and reduce project targets along the value chain.

19. Other important events include: (i) delays in getting SEZ legal framework in place, particularly adoption of SEZ law (only completed in 2014) ; (ii) launch of procurement to component 2 activities was affected by Government official request to restructure PDPC to accommodate a retroactive financing of a US$36 million electricity line to connect the new Bukanga Lonzo AIP[5]. This request was ultimately reject but the WB had to suspend ongoing activities for 10 months to carry out a post-procurement review, which turned out non-compliant. This created major disruptions to PDPC, including changes of TTLship, change of Global Practice – GP (from Trade & Competitiveness to Agriculture), strong opposition to the suspension from the Ministry of industry and Prime Minister office, which was leading the Agro-Industrial Park initiative ; (iii) The 14.5 months suspension of disbursements for the Maluku SEZ (January 2016 – March 2017) because of non-adherence to WB safeguard standards with regard to resettlements and compensation of owners being displaced because of the establishment of the SEZ plus absence of an Environment and Social Management Plan - ESMP linked to the construction by the Government of a wholesale market, also was responsible for delays in project execution.

20. This overall context with numerous negative events described above had a major impact on implementation and how PDPC's initial vision unfolded (paragraph 8). This is critical to consider and keep in mind when looking at how PDPC was implemented and the results that it obtained in its components. As mentioned earlier, the governance of the PDPC suffered of many interferences (various Ministries involved, including Prime Minister office with different and conflicting objectives) and this is also very important to take into account in understanding the implementation delays that occurred.

21. Consequently, during its implementation, the PDPC moved towards a project that primarily focused on the first chain links of the value chains, namely agricultural production and rural infrastructure. The development of the AIP at Lukula and the SEZ in Maluku only came into being at the very end of the project and only a limited number of partnerships between strategic agro-industrial investors and producers' Associations were developed. The PDF, sub-component 3.1, was eliminated. Despite the above, the PDO was not changed. This appears justified since the focus on both productivity and employment in selected value chains remained at the core of PDPC activities and RF indicators.

22. All these changes were formally approved through restructuring and did not modify the above ToC.

II. OUTCOME

A. RELEVANCE OF PDOs

23. **Project Development Objective**. PDPC's PDO was to increase productivity and employment in Selected Value Chains in target zones. This was and remains a key objective to: (i) diversify the economy, (ii) accelerate growth, and (iii) create employment.

Assessment of Relevance of PDOs and Rating

24. PDPC with its PDO is aligned with the April 2013 Country Assistance Strategy (CAS) for DRC aimed at contributing significantly to the Government's efforts to alleviate extreme poverty and malnutrition. It was also fully aligned with

[5] This AIP was independently developed and implemented by the Government.

the fourth outcome of the CAS FY13-16, addressing state fragility though "increased agricultural productivity and production and access to markets". The project also fitted well into the newly published (March 2018) DRC Systematic Country Diagnostics (SCD). The SCD identifies agriculture as one of the five priority areas (SCD Priority Area 3) where policy actions could provide quick wins and build cumulative and virtuous cycles to sustain inclusive growth and foster resilience and shared prosperity in the coming years. PDPC's actions aimed at strengthening the capacity of state actors to effectively plan, manage, and supervise regional programs helped to strengthen governance and build stronger and more inclusive institutions (SCD Priority Area 2). The project was also consistent with the major strategic initiatives for DRC, and sub-Saharan Africa, including the second pillar (vulnerability and resilience) of the World Bank's Africa Strategy and Africa Climate Business Plan. By supporting the development of agricultural value chains with strong economic potential, PDPC was also in line with the national strategy of DRC and the Comprehensive Africa Agriculture Development Programme (CAADP).

25. Given the above considerations, the relevance of PDO at project approval and project closing is rated **Substantial**.

B. ACHIEVEMENT OF PDOs (EFFICACY)

26. Achievements of PDO and intermediate results indicators are summarized in Table 3 below. The three PDO indicators agreed upon initially remained the same, except that at Mid-Term Review - MTR (as seen in paragraph 13 Table 1 and also paragraphs 15 and 16), two of them saw their end targets adjusted, which were formally approved during second Restructuring (January 2018).

Table 3: Status of PDO and intermediate results indicators for PDPC

	Unit of Measure	Target	Actual	Status % achieved
PDO Indicators				
PDO 1: Number of jobs created in select value chains	Number	5,000	5,026	101%
- Of which female (%)	(%)	50%	19%	38%
PDO 2: Direct project beneficiaries	Number	50,000	97,757	196%
- Of which female (%)	(%)	40%	44%	110%
PDO 3: Productivity of food crops in select value chains inter-alia:	Ton/ha			
(i) Cassava		20	18.4	92%
(ii) Rice		3	3.1	103%
(iii) Oil palm		10	10	100%
Intermediate Result Indicators[6]				
IRI 4: Volume of food crops produced by the supported farmers' associations and agro-industrial farms, inter-alia[7]:	1,000 tons			
(i) Cassava		2,500	1,325.8	53%
(ii) Rice		25	35,4	142%
(iii) Palm oil		450	113,656	25,257%
IRI 5: Volume of processed food by project beneficiaries	Tons	1,000	163,861[8]	16,386%
IRI 6: Rural roads rehabilitated to link production centers to markets	Km	500	542	108%
IRI 7: AZES put in place	Value	Yes	Yes	100%
IRI 8: A private developer is recruited for the development of SEZ of Maluku	Value	Yes	Yes	100%
IRI 9: Time to export (Doing Business)	Hour	900	488	184%
IRI 10 Time to import (Doing Business)	Hour	550	510	108%

Source :ICR Team

Assessment of Achievement of Each Objective/Outcome

27. The PDO statement of PDPC included two parts, namely: (a) to increase productivity in selected value chains in target zones ; and (b) to increase employment in selected value chains in target zones. The first part of the PDO ("to

[6] During second restructuring (January 2018), IRI #5 "value of private investment flows in the targeted value chains facilitated by the project" and IRI #9 "number of feasibility studies supported by the project which resulted in investments" were dropped. Also, IRI #6 "volume of food processed at technical food processing centers" saw its description changed to read "volume of processed food by project beneficiaries" its end target adjusted (from 5,000 to 1,000 tons) and raking below (from #6 to #5). IRI #8 for the "number of enterprises in the SEZ", was changed to read: "a private developer is recruited for the development of SEZ of Maluku". A new indicator: "AZES put in place" was added. The indicator: "Time to import and export" was split into two "Time to export" and "Time to import " (Doing Business).

[7] The targets for the IRI #4 for volume of food crops produced by the supported farmers' organizations and agro-industrial farms were reduced: cassava from 3,900,000 to 2,500,000 tons; rice: 37,000 to 25,000 tons; and oil palm from 750,000 to 450,000 tons. These three adjustments in target values were planned and included in MTR revised RF as found in Aide-Memoire from MTR (May-June 2017) but due to Portal issue, this was not captured in second Restructuring done to reflect MTR changes in January 2018. After Operations Policy and Country Services' - OPCS intervention, the situation was rectified in July 2019 and the changes in target values for concerned IRIs appeared in ISR#12 dated on July 18, 2019.

[8] Breakdown is as follows: 14,162 tons of rice, 66,292 tons of cassava and 83,406 tons of palm oil. This indicator was assumed to record only the volume of production processed of products by the 3 AIPs to be set up (Tshela, Kimpese, Lukula with the latter being the only one established at the end of the Project). However, the indicator was largely underestimated since it was also to take into account the production processed in the workshops of farmers' organizations, translating in the end target of 1,000 tons (originally 5,000 tons before MTR) quickly and significantly exceeded by the fact that farmers organized their own workshops for processing rice, palm oil and cassava. Some even received support for matching grants to improve their production tools.

increase productivity in selected value chains in target zones") was measured via two PDO indicators - Direct Project Beneficiaries (number) of which female (%) and Productivity of food crops in select value chains inter-alia: (i) cassava (metric ton); (ii) rice (metric ton); and (iii) palm oil (metric ton). The second part of the PDO ("to increase employment in selected value chains in targeted zones") was measured by one PDO indicator - Number of jobs created in select value chains, of which female (%).

To increase productivity in selected value chains in target zones.

28. The PDO indicator "Number of direct project beneficiaries" was to focus on farmers through associations or other mechanisms, as well as enterprises in the SEZ and other agro-industrial firms. This indicator largely exceeded its target with 97,757 beneficiaries (196 percent, outside of an end target set to 50,000). Also, the end target for women beneficiaries of 40% was surpassed with 44% as final figure (110% target achieved).The direct project beneficiaries are producers, investors, agro-industrial MSMEs and households located in the PDPC project zones. Indirect beneficiaries included the families of workers directly employed by the project. Finally, local institutions in the targeted zones benefited from the increase in taxes driven by the development of economic activities.

Table 4: Beneficiary Breakdown

Category	Number
Seed Production	14,383
Professionalization and Structuring	35,470
Feeder Roads	47,904
TOTAL	97,757

Source: ICR Team

29. The number of 97,757 direct beneficiaries includes the non-permanent jobs created by road construction. Beneficiaries of seed production include farmer households that benefitted from a significant increase in the availability, distribution, and uptake of improved planting materials (cassava, rice, oil palm seedlings). Improved seed was provided by the national research institute (INERA), certified by the national seed certification agency (SENASEM) and produced by project sponsored seed growers. The foundations for a regional seed market have been put in place. Beneficiaries of seed production were customers of seed producers (agricultural multipliers) and had access to seed via purchase as well as via credit. Beneficiaries of professionalization and structuring are households or agricultural firms linked to cooperatives or those who have received training provided by SNV. These beneficiaries were also supported by local providers with various services such as extension, training, oil palm processing.

30. The PDO indicator "Productivity of food crops in select value chains" was used to monitor the increase in the productivity per hectare of food crops produced in the targeted value chain poles. During implementation, the PDPC produced: (i) nearly 46,956 tons of basic rice seeds and 79.49 tons of R1 seeds made available to farmers' organizations and seed operators; (ii) 2,845,817 linear meters of base cassava cuttings by INERA and 8,391,328.91 linear meters of primary cuttings made available to agricultural households by seed operators; (iii) more than 882,148 oil palm plants made available to farmers. With this efficient plant material, yields have been improved and this translated into results obtained in this indicator.

- **rice:** the yield reached at project end was 3.1 tons/ha, which is above the target value of 3 tons/ha (a status of achievement of 142%) and the baseline value of 1.8 tons/ha. Direct project beneficiaries produced at least 6,309 tons of paddy rice ;
- **cassava:** the value obtained at project closing was 18.4 tons/ha, against a target value of 20 tons/ha (a status of achievement of 92%) and the baseline value of 5 tons/ha. Direct project beneficiaries produced at least of 208,719 tons of cassava roots ;

- **Palm oil:** the value obtained at the end of project is 10 tons/ha, exactly in line with end target (10 tons/ha) Yield increases for oil palm will only be achieved after project closing as the trees are not yet in production. In fact, given the delays in setting up of oil palm plantations, the first harvests will only take place after the project has closed. Hence, first harvests will only take place in approximately five years (depending on the varieties supplied and specific characteristics in terms of arriving at peak production levels).

31. **Impact evaluation findings.** According to impact evaluation (see paragraph 66 and Annex 7), the PDPC had a positive and significant impact on total farm household productivity (all crops combined) living in a growth pole village compared to other households living in villages outside project intervention. However, when looking at the three crops targeted by the PDPC (cassava, rice, palm oil), the effects of the project on yields of these three crops are mixed. Cassava appears to have benefited from the project, with a significant increase in yields, largely due to improved yields among cassava-producing households, rather than an increase in the proportion of households producing cassava. In contrast, no significant impact of the project on rice and palm oil yields is detected. The project also improved household farm income and had a positive impact on the processing of agricultural products. However, there was no significant impact of the project on rice and palm oil yields among households growing these crops, and little or no effect on other non-agricultural sources of income.

To increase employment in selected value chains in target zones.

32. The PDO indicator related to "Number of jobs created in select value chains" reached 5,026 (101% achievement of the 5,000 end target). However, the number of jobs for women was behind target. The final figure of jobs created for women was 19% compared to a 50% end target. A higher number of jobs for women were expected in the processing sector but that did not materialize. The main reason is that implementation delays translated in the late financing of the most promising activities in that sector (matching grants, AIP of Lukula), explaining why the end target of 50% could not be reached. Further, and according to some women and seed operators, the sectors of activity that provided the most jobs in the PDPC were mainly those typically deemed "male" because of the level of hardship of the work: feeder roads and construction of the electric line.

33. Activities in the project area show very limited diversification outside of agriculture. Employees generally have short-term contracts of up to one month's work in a year[9]. However, project interventions generated 5,026 jobs (100.5% of the target) made up of 1,195 permanent jobs (22% women) and 3,831 seasonal jobs (17% women). A significant number of permanent jobs will be created with the start of the activities of the Lukula AIP. In addition to these permanent jobs, the production of improved seeds and the rehabilitation of rural roads resulted in the injection of more than US$4,810,832 in wages into the local economy.

Table 5: Job Breakdown by type and gender

	Permanent Jobs			Seasonal Jobs			TOTAL		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
Seed Production	60	255	315	179	355	534	239	610	849
Professionalization and Structuring	55	288	343	91	266	357	146	554	700
Feeder Roads	153	356	509	398	2,138	2,536	551	2,494	3,045
Electricity Line	0	28	28	1	403	404	1	431	432
TOTAL	268	927	1,195	669	3,162	3,831	937	4,089	5,026

Source: ICR Team

[9] Impact assessment study of Development project west growth poles development project (PDPC), 2020.

34. **Component 1 related achievements[10].** Organisation of the cooperative movement: SNV, with its local service providers in the six nodal points of the Project, has been able to organize farmers through professionalization and structuring activities into a cooperative movement with 304 cooperatives with over 49,000 members. These cooperatives received capacity building and are able to aggregate the purchase of agricultural inputs and the sale of their marketable production. Cooperatives received matching grants for production, transportation and processing purposes and were able to develop partnerships with private agro-industries in the area. The Producer Organization called Farmers' Coalition of Kongo (FOPAKO) has been enabled to play a more active role in the defense of the interests of its members. Organization of the AIP: For the establishment of the AIP in Lukula, the site (5.3 ha) was developed and a significant processing capacity for value addition to the key crops supported by the project has been created. The installed processing equipment will allow to treat 9,000 tons of fresh cassava, 300 tons of cassava leaves, 9,000 tons of palm oil, and 750 tons of paddy rice. The machinery was delivered early 2020 by five selected equipment manufacturers from Italy and China and were assembled and tested during the month of October 2020. This platform will directly benefit nearly 21,000 households in the Lukula and Tshela area with access to industrial processing infrastructure and better prices for their products. A private operator to manage this platform still needs to be selected. Economic activity and improved travel times: Roads rehabilitated by PDPC have greatly stimulated economic activities in the area. The rural population and businesses are benefiting from reduced travel times to urban consumption centers (Boma, Tshela, Lukula) and with regards to the market in Kinshasa, travel time went from 129 hours before rehabilitation to 15 hours currently. This also allowed decreases in the prices of transport of people and in goods. Thanks to PDPC's support, the definition of a rural roads' maintenance and an action plan, together with the creation of local maintenance committees, is expected to enhance sustainability of the rural roads network. Access to electricity: to supply the AIP in Lukula with the required power, 35.6 km of electricity lines were built. These lines do not only provide electricity to the platform but also to some 670,000 inhabitants living in the surrounding areas. . In total, and from its original allocation of US$48 Mn, the final allocation for this Component is US$75.6 Mn.

35. **Component 2 related achievements.** Activities related to SEZ Maluku: An area of 211 ha of land targeted and secured by the Government was developed for industrial use to provide a friendly business environment for investors and private sector operators. The land was acquired following strict WB policies concerning social and environmental standards. A RAP was fully implemented, and some 300 land concession holders were compensated. An international consulting consortium (IOS Partners – CPCS) was hired by the project to elaborate implementation regulations of the 2015 SEZ law, update the demand study and assist the Government in selecting a zone developer and concluding a PPP. An international selection process was launched in 2018 with TA from a transaction adviser specifically hired by the project to assist in the selection of a well-reputed zone developer, with seven international/national companies responding to the Call for Expression of Interest. A developer was selected following this process and the PPP signed at the end of January 2020. The agency in charge of SEZ regulations and operations within the Ministry of Industry (AZES) has been set up and made operational through hands-on capacity building and virtual training, targeted on the capacity building of SEZ key staff on monitoring and follow up of commitments of contractual arrangements, steering mechanisms, management of costs and risks, follow up of business plan. Post MTR, the scope of infrastructure financing was reduced and the provision of basic infrastructure for an initial area of 59 ha eliminated. To secure the SEZ, a 6,155 meter long protective wall around the 211 ha of the Maluku SEZ land was constructed with project funds. The Government, together with the private developer of the SEZ Maluku, will now have to finance the works of the necessary physical infrastructure, set up mechanisms and structure necessary to attract private investors to make the SEZ of Maluku a success. In total, and from its original allocation of US$27 Mn, the final allocation for this Component is US$6 Mn.

[10] Collection centers such as parking and warehouses planned under this component could not be built following reassessment during project implementation. The decision was made based on costs, land access issues and feasibility of infrastructure works during the remaining timeframe.

36. **Component 3 related achievements**. In view of the inability to set up and use the PDF[11], the needs of other components and implementation delays, a decision was made at MTR to transfer the majority of component funding to agriculture infrastructure (i.e. US$16 Mn to bridge funding gaps for electricity line costs (US$6Mn) and increased road rehabilitation works (US$10Mn)). Despite this major change, this did not impact the ability of the Project to implement activities towards its development objectives. Further, sub-component 3.2 and 3.3 were implemented as planned and the following activities undertaken: (i) Support to key reforms were approved in the 2017[12], 2018[13], 2019[14] and 2020[15] Doing Business reports ; (ii) Purchase of equipment needed for the deployment of construction permit software and its adaptation in pilot zones; (iii) The customization of the construction permit software by hiring a local IT firm and by financing various working sessions and workshops to advance the digitalization of the construction's permit agenda; (iv) Technical assistance and capacity building to ANAPI and relevant stakeholders on business climate reforms and cross-border trade ; (v) Thematic studies including: a) feasibility study for the establishment of an agro-industrial park in N'kundi, in Kongo-Central[16]; b) a Strategy to support the development of small and medium-size enterprises (SME) along the agricultural value chain, in Kongo-Central; and c) implementation of strategic guidelines for the promotion of investments in agro-industries in DRC. In total, and from its original allocation of US$16 Mn, the final allocation for this Component is US$4.60 Mn.

37. **The success story of the SEZ Maluku:** The Maluku SEZ was first framed through the IFC's SEZ program established at the request of DRC's Ministry of Industry in 2008, which ended in 2012. The Maluku SEZ showcases a strong, sustained, and effective collaboration over more than a decade, not only between the World Bank and IFC, but also between two WB GPs. The collaboration stuck through piloting this intervention in a highly complex Fragility, Conflict and Violence - FCV and political environment, through multiple changes in Task Team Leaders - TTLs, several Government changes, including two presidential elections, and multiple attempts to divert the project. Following signing of the PPP with Strategos (SEZ authority or AZES established as part of PDPC activity), IFC got reengaged in the program and is now structuring upstream TA (advisory aimed at co-financing studies, a program which helps to prepare a project for an IFC investment) to provide practical support to pursue SEZ development, including strengthening of viability; reinforcement of legal and regulatory framework to support domestic investment and promote market linkages and adapted infrastructure. The SEZ Maluku presents a good example of a strong and long term support through collaborative work of the WB and IFC in DRC (see Annex 8 for further details).

38. **Component 4 related achievements.** Given the multisectoral nature of this project with many public and private executing agencies and its high degree of complexity, the project coordination unit inside CFEF (Fragile States Unit within the Ministry of Finance) performed remarkably well. It concluded over 180 procurement contracts for works, goods and consulting services and managed all financial and fiduciary as well as coordination aspects well with some early shortcomings (see below IV. B.). The two areas where the PCU was initially weak were M&E and communication. As time went on, both aspects were satisfactorily dealt with. This component also proved essential in the considerable

[11] PDF anchoring within the "Société Financière de Développement" (SOFIDE), a national development agency under the Ministry of Finance could not take place. SOFIDE was expected to work closely with the "*Agence Nationale de Promotion des Investissements"* – (ANAPI), the national agency for investment promotion. An audit by the International Monetary Fund (IMF) of financial sector institutions during 2013/2014 determined that SOFIDE was not eligible for WB financing.

[12] Dealing with Construction Permits: The Democratic Republic of Congo made dealing with construction permits easier by improving building quality control and reducing the time it takes to obtain the building permit.

[13] Starting a Business: The Democratic Republic of Congo made starting a business easier by eliminating the requirement that a woman obtain her husband's permission to start a business and by combining multiple business registration procedures.

[14] Trading across Borders: The Democratic Republic of Congo reduced the time needed to export and import by implementing the national trade single window.

[15] (i) Starting a Business: DRC made starting a business less expensive by reducing fees for business incorporation; (ii) Dealing with Construction Permits: DRC made dealing with construction permits safer by requiring that professionals in charge of plan revisions and National Order of Engineers, and inspections be members of the newly-created National Order of Architects and National Order of Engineers; and (iii) Paying Taxes: DRC made paying taxes less costly by lowering the corporate income tax rate from 35% to 30%.

[16] Funding was kept to finance the feasibility study for the Nkundi agro-industrial park at the request of the Government after the WB rejected the request for retroactive funding of the electricity line and the reforms work.

efforts made to strengthen institutional capacities at the national and provincial level (for the authorities such as for statistical capacity, for producer organizations with strong professionalization and structuring efforts to revitalize and facilitate the set-up of associations and professional cooperatives), plus the organization of key trainings. In total, and from its original allocation of US$8 Mn, the final allocation for this Component is US$15.30 Mn.

Justification of Overall Efficacy Rating

39. Based on these results and considering the reengineering of PDPC components and the RF that were officially approved during the various project restructurings[17], overall achievement of the PDO and IRIs is rated **Substantial**.

40. The targets for all three PDO indicators have been met except for one sub-indicator for productivity related to cassava. Concerning the seven (7) IRIs for the four project components, all have been met except for the IRI#4 related to volume of food crops produced specific to cassava[18]. See also Annex 1: Results Framework and Key Outputs for further details.

41. The project succeeded in strengthening selected agricultural value chains in the targeted poles. It strengthened critical agricultural inputs (seeds) and improved access to markets. Production and productivity of the selected commodities increased, and farmers are better organized to engage in commercial transactions with agro-industrial enterprises. Physical, regulatory, and organizational bottlenecks for private sector investments have been reduced and the business climate has improved. The experience gained with the SEZ in Maluku and the AIP in Lukula will have to be closely monitored by Government so that valuable lessons for similar undertakings in DRC can be drawn. Since the institutional achievements are fragile and several of the major investments only came to fruition shortly before project closing, there is an urgent need for follow up investments.

42. The original design of PDPC was that agricultural production in bas congo for the three selected VCs (Component 1) would be processed at agro-processing centers installed/constructed in SEZ (Component 2) and processed food would be dispatched in the country and benefit from major consumption center of Kinshasa less than 100km away. However, due to implementation delays as basic infrastructure was built in SEZ only at project closing and cost overruns, the PDPC had to adapt its design and revamp itself. Component 1 was modified by reducing the number of agro-industrial platforms from three platforms to one, due to insufficient funding as costs were largely underestimated. Component 2 also needed resources to TA for operationalization the AZES. Consequently, and as said earlier (see paragraph 20), PDPC moved towards a project that primarily focused on the first chain links of the value chains, namely agricultural production and rural infrastructure. The development of the AIP at Lukula and the SEZ in Maluku only became a reality at the very end of the project and only a limited number of partnerships between strategic agro-industrial investors and producers' Associations were developed. Building on the PDPC achievements with the PPP signed with private developer, the basic capacity built at SEZ as well as basic infrastructure, developing the SEZ to attract companies to set up there will probably involve Development Partners - DPs support and IFC's assistance on upstreaming intervention (see paragraph 36) and of course the Government full commitment as well.

C. EFFICIENCY

Assessment of Efficiency and Rating

43. The ex-post Economic and Financial Analysis - EFA of PDPC is based on the development of nine production models: five for the production of improved seeds, three production models for consumption, and one model for the

[17] See previous footnotes regarding changes on IRIs as well as achievement on indicators on cassava.

[18] It is worth noting that both PDO and Intermediate result indicators related to cassava did not reach end targets. Among the three food crops, cassava is the one that has benefited the most from programs for new improved varieties that are resistant to the African cassava mosaic. which probably already allowed an improvement in performance before the PDPC. Also, another explanation could be considered is the fact that growers Still have a habit of keeping their old varieties even if they adopt the better performing improved varieties. This can explain why targets were not reached.

development of Micro, Small and Medium-Sized Enterprises - MSMEs. The productivity of the three value chains (rice, cassava, and palm oil) has been the subject of notable improvements thanks to the actions of PDPC. The increases in margins, although cautious, are relatively high. The financial profitability indicators of the different production models such as the net present value (NPV) and / or the financial internal rate of return (IRR) indicate that these models are very profitable. The target groups of PDPC are populations living in vulnerable areas in terms of access to markets and handicapped by high levels of transaction costs.

44. The economic analysis is based on a number of assumptions, the main ones being: an economic lifespan of 20 years, a standard conversion factor of 1.07 to convert financial prices into economic prices, the renewal of annual recurring costs on the economic lifespan, an Opportunity Cost of Capital – OCC of 12 percent.

45. The Project's ex-post economic rate of return (ERR) is 21.9 percent. The NPV is positive (US$33.7 million), the Benefit Cost Ratio - BCR is 1.55 and the financial rate of return is 21.3 percent. All these indicators show the economic profitability of PDPC. The benefits not counted in the ERR calculation consolidate the economic profitability of PDPC.

46. The ERR of 21.9 percent is lower than the one calculated at appraisal, 32.4 percent for the following reasons: (i) the optimistic assumptions made at appraisal that a large number of SMEs were supposed to start generating cash flows earlier while in the ex-post EFA, the cash flow of these SMEs started only in year six (2019) where the additional cash flow is about US$4 million[19]; the discounting of the cash flow of SMEs contributed to a lower ERR; (ii) difficulties encountered during the early three years of implementation with delays in some Component 1 activities related to cassava tubers, oil palm, paddy rice, and SMEs had a negative effect on the discounted efficiency indicators (ERR, NPV and BCR); (iii) the production models (crop and activity) used in the ex-post EFA differ from those used at appraisal mainly because of the difficulties to gather data on these models (an alternate aggregate analysis was done to overcome these difficulties); (iv) the large difference in exchange rates between appraisal and ex-post EFA, translating to large exchange loss; (v) assumption on annual recurring costs at the end of the project were different from those at appraisal (25 percent of these total costs from the last year of implementation (2020) to year 20 of the project (2033); and (vi) economic prices used in the design of the project were much higher than the average economic prices used for ex-post EFA for the three targeted crops.

47. The ex-post ERR is still greater than the OCC (12 percent), the largely positive NPV (US33.7 million) found in the ex-post EFA, and the BCR of 1.55 being largely above 1, is evidence of the project's value. Furthermore, the project was robust with respect to changes in aggregate variables (reduction of benefits, increase of costs, delays in the benefits, changes in the standard coefficient factors used to yield economic prices, and changes in the OCC).

48. The sensitivity of the Project shows that a simultaneous increase in costs between 10 and 30 percent combined with a decrease in benefits of 10 percent gives an ERR greater than the OCC. Likewise, a decrease in benefits of 20 percent and a simultaneous increase in costs between 10 and 20 percent would give an ERR higher than OCC (16.6 percent and 12.1 percent respectively). However, the values of ERR where the Project is unprofitable, are those with a cost increase of 30 percent associated with a decrease in benefits of 20 percent (ERR of 10.5 percent) as well as a decrease in benefits of 30 percent associated with an increase in costs of 10 percent or more.

49. A delay in achieving benefits of one year results in an ERR superior to OCC (13.7 percent), but a delay of two years gives an ERR lower than the OCC (ERR of 11 percent). The basic standard conversion factor adopted was 1.07. A simulation of this factor of 0.93 and 0.85 gives an almost identical ERR, 20.7 percent and 20.0 percent respectively, a rate lower than the financial IRR (21.3 percent) and the ERR estimated at PDPC design (32.4 percent).

[19] that is 20% of total net additional production, which is the second largest item in the project benefit after Cassava tubers (with 51%). This ranking is kept the same when adding total net production for the 20-year economic lifespan of the PDPC.

50. Overall, and despite major changes implied with implementation delays (reduction of AIP from 3 to 1, decrease in the number of jobs created from 11,000 to 5,000, reallocation of funds from components 2 and 3 to component 1 for the reasons mentioned in paragraph 20 and 41, implying that PDPC moved towards a project that primarily focused on the first links of the value chains, namely agricultural production and rural infrastructure with only basic infrastructure built at Maluku SEZ), PDPC is not sensitive to variations in the aggregate costs and benefits of the Project (10 percent to 30 percent). The ERR remains at an acceptable level since it does not take into account certain direct and indirect benefits and the issues mentioned above. Calculated over a relatively long economic lifespan, the sensitivity analysis makes it possible to assess the risk weighing on the execution of the Project following an unfavorable development in the economic and financial environment, in particular an increase in prices.

51. **Administrative efficiency**. The start-up of the PDPC was difficult, which did not allow large contracts to be signed on time. There was also a need that more resources be allocated to Component 4 (Coordination, Monitoring, Communication & Impact) from US$ 8 Mn (about 7.2% of Project funds) to around US$ 15.3 Mn (around 14%.of Project funds). Though this represents an important increase, it can be argued that the original allocation was too low to begin with in a large and complex country such as DRC. Further, the Project did suffer from significant cost overruns and a large foreign exchange loss of around US$7 Mn. These issues, though not rare in in FCV environment with unstable business climate, were not foreseen and clearly represented a major constraint for PDPC implementation. However, the project was able to deal with these constraints: almost all project objectives were achieved with the financial resources available, within the timeframe set by the project. Operational adaptation materialized by the conclusion of contracts at competitive costs compared to the same activities carried out in sub-Saharan Africa with similar conditions: e.g. unit cost of agricultural advisory support was US$80.84/agricultural producer/year compared to US$200 in sub-Saharan Africa; rehabilitation of rural roads and construction of engineering structures of US$ 21,095.7/km vs. US$ 25,000 in Central Africa having the same pedo-climatic conditions as the PDPC target zones.

52. Coordination between different Ministries was a determining factor in achieving the PDO of the PDPC. However, low institutional capacity of producers organizations impaired their capacity to make the strategic business choices needed. To overcome these risks, the project called for the participation of government entities and DPs, through the adoption of a value chain approach that contributed to the increase of disbursement rate. However, links to markets, financial institutions and advice are challenging factors in the future.

53. The efforts made by the management team allowed to : (i) reduce the range of some activities; (ii) overcome the delays and difficulties encountered during the first years of implementation; and (iii) reallocate certain activities and project funds. Overall, the project had appropriate, qualified staff in charge of financial management. Staff turnover in the sectoral ministries and the project did not affect the performance of the PDPC.

54. Based on these results, overall project efficiency is rated **Substantial.**

D. JUSTIFICATION OF OVERALL OUTCOME RATING

55. To assess overall outcome rating, and considering important changes made to the end target values of two PDO indicators as found in Table 1, a split evaluation is required per ICR guidelines (March 2020). Table 5 below provides the detailed application of split rating methodology.

Table 6: Split rating

		Original objectives and targets without restructuring	Revised objectives and/or targets with restructuring
Relevance of PDO		Substantial	
Efficacy (PDO)		Modest	Substantial
Objective/Outcome 1: Increase Productivity in selected value chains in target zones		Substantial	
Objective/Outcome 2: Increase employment in selected value chains in target zones		Substantial	
Efficiency		Substantial	
1	Outcome ratings	Moderately Unsatisfactory	Satisfactory
2	Numerical value of the outcome ratings	2	5
3	Disbursement	US$43.9 million[20]	US$ 57.6 million
4	Share of disbursement	0.43 (43%)	0.57 (57%)
5	Weighted value of the outcome rating (row 2 x row 4)	0.9	2.8
6	Final outcome rating	Moderately Satisfactory (0.9 +2.8 = 3.7 rounding it to 4.0)	

Source :ICR Team

56. As seen in the above, the split evaluation methodology gives a weighted average score for the final outcome rating of **Moderately Satisfactory (MS)**. This rating is seen as accurate considering that PDPC contributed to increase productivity and employment in selected value chains in target zones through its achievements and results obtained as described earlier. However, the PDPC suffered from significant issues including: (i) slow start of activities due to procurement delays with low disbursements[21] ; (ii) attempts to restructure project retroactively to finance an electricity line connecting the Bukanga-Lonzo agro-industrial park putting project on hold for 10 months ; (iii) non-compliance to safeguards in the implementation of the SEZ Maluku RAP leading to a 14.5 month long partial suspension of component 2 ; (iv) reductions in target values of PDO as well as IRIs and other changes in activities (one AIP set up instead of three as originally planned, limited number of farmer workshops held) ; (v) multiple Government changes and shifting priorities, (vi) numerous changes of TTLs (including a change in GP) ; (vii) perceived lack of transparency in the hiring of key personnel for the SEZ Agency leading to multiple procurement complaints ; and (viii) procurement issues at Project closing for two contracts (SIM and SNV), which were resolved at closing.

.E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

57. The NGO in charge of capacity building of producers' organization, specifically cooperatives, the Netherlands Development Organization (SNV), did a good job in putting forward activities for the structuring and professionalization of Producer Organizations, promoting women within the cooperative movement and tried to ensured that 40 percent of women were elected into leadership positions in their cooperatives. Their training modules focused: (i) to integrate women in the value chains; (ii) to prepare women to assume leadership roles within cooperatives and along the value chains, and (iii) to increase the degree of the autonomy of women in economic matters. In terms of job creations for women, the PDPC had planned for a 50% end target. At Project closing, this target could not be reached and the final figure recorded is 19%. The main reason behind it is delays in implementation with late financing of matching grants and of the AIP of Lukula. This had a major impact in the processing sector, which

[20] Amount recorded in RP prepared and approved in January 2018 where changes done to final target values of the PDO indicators 1 and 3 took place.
[21] The Project also suffered important foreign exchange loss, i.e. around US$ 7 million. See Efficiency analysis in Annex 4 for details.

was considered to be the most promising for women for job creation. This means that few of the planned activities could be implemented with a limited number of jobs created, including for women. Another explanation is that most of the jobs created during the project were infrastructure works, which mainly use men than women due to level of hard work involved. Despite the issues faced by the PDPC and especially implementation delays, the end target remained unchanged at MTR, which implies that the PIU was reasonably confident in overcoming the difficulties to meet the objective. This proved overly ambitious as the end result shows it, which proves that planned activities directed for women must be addressed appropriately with the closest attention and necessary follow up.

Institutional Strengthening

58. The PDPC contributed in strengthening the institutional capacity of various stakeholders, civil servants and staff working at the Ministry of Finance (including other units that were established to work on component 1 of the Project), the Ministry of Agriculture, the Ministry of Industry, the ANAPI as well as in the Bas Congo Province. This strong capacity building effort contributed to very strong ownership of beneficiaries on the ground with PDPC coverage of six different cities in the Bas Congo Province and at very high level leadership: indeed, capacity building efforts were carried on across sectors by two different governors (including one who was a former Minister at Provincial level). This is important to highlight in terms of improving of investment climate since DRC is slowly recovering from many crises (conflicts, politics, etc.) and building capacity is essential and the objective of Component 4[22] of PDPC. This achievement could be leveraged in the future for agriculture projects and others. The PDPC benefited from the recently set up implementation unit called CFEF at the Ministry of Finance where the Project was anchored. CFEF had just been established at the beginning of PDPC, gained experience in implementation of the Project and is now fully operational and in capacity to manage many operations from the WB and other DPs as it does now. Going back to PDPC, and despite overload issues at CFEF where the PDPC coordinator (also head of CFEF) was put in charge of three other WB-financed operations to coordinate within the first three years of implementation, the issue was dealt with appropriately as activity management shows with over 180 procurement contracts implemented.

59. Three key institutions that lie at the basis for agricultural productivity increases, namely (i) the agricultural research institute, INERA for the production of improved seeds and planting material, (ii) the Seed Certification Agency (SENASEM) and (iii) a network of private seed multipliers were greatly strengthened through financial support and TA from International Institute of Tropical Agriculture (IITA).

60. The institutions for rural roads maintenance, namely the provincial and local road maintenance committees, were strengthened by the elaboration of a rural roads maintenance manual and action plan that were repeatedly discussed with provincial government officials. At the same time, the agencies in charge of SEZ and the ANAPI were greatly assisted in the selection and training of their personnel, as well as with the definition of their respective roles and the elaboration of an appropriate policy framework.

61. The basis for a cooperative movement was laid and at least 300 cooperatives were created and received material (improved planting material), technical (management training) and financial (matching grant) support. At the same time, the Farmers' Force in Kongo Central (FOPAKO) that represents farmers in the project area has been dynamized to be able to play its role at the provincial and national level.

Mobilizing Private Sector Financing

62. The main activities undertaken to mobilize the private sector focused on TA and capacity building for ANAPI as well as on business climate reforms and cross-border trade. The PDPC thus produced seven thematic studies within the framework of improving the business environment, the investment climate and support for ANAPI.

[22] Component 4 was focused on strengthening the Government's ability to implement the Project in a coordinated and integrated manner based on existing structures.

Communication activities made it possible to sensitize economic operators and public services concerned by the reforms, which made it possible to improve, among other things, the time to import and export. In fact, the export time fell from 1,213 hours in 2017 to 488 hours (compared to the 900 hours targeted), a reduction in the time of 725 hours. The implementation of the Matching Grant encouraged the beneficiaries to mobilize their financial counterpart which represented 50% of the budget of the sub-project for MSMEs. The matching grant made it possible to set up 31 agro-industrial MSMEs, which annually process 9,000 tons of fresh cassava, 300 tons of cassava leaves, 9,000 tons of palm nut bunch and 750 tons of paddy rice. The operationalization of the SEZ will help mobilize more financing from the private sector with the best working conditions for companies that will settle in the area.

63. *Proactive Business Development*. Beyond the targets met and/or surpassed for the indicators that served to measure PDPC's impact regarding the Sub-component 3.2 (Targeted Regulatory Reforms), the Project strongly contributed to lay the foundations for substantial work aimed at improving DRC's investment climate. As such, three studies were carried out related to the following themes : 1- The state of the public private dialogue, 2- Cross-border trade in the Western corridor, 3- Streamlining the tax and the parafiscal system at the central and provincial levels. Those studies provided a thorough diagnostic of the issues faced by the private sector when doing business and put together a list of recommendations of reforms to be implemented in order to fix the issues identified. This important work could be instrumental in attracting new investments: any new project willing to improve the business climate in DRC could leverage on these studies and speed up its implementation. In addition to the studies, the PDPC organized trainings or financed the participants of representatives from DRC to several Regional Peer to Peer Learning events that helped building the capacity of DRC stakeholders to learn more about Doing Business and Investment climate reforms, how to draft an action plan and how to monitor/follow up and evaluate it. The stakeholders mostly comprised of the implementing agencies and the National Agency for Investment Promotion - ANAPI. By doing so, the PDPC contributed to the sustainability of the investment climate reforms processes in DRC.

64. *IFC and Doing Business*. The involvement of IFC proved essential in the design of PDPC (as mentioned previously in paragraph 8) and through the design advisory (2008-12)[23]. During implementation, the development of SEZ Maluku suffered from interference in 2015 when decision was made by the Government to build a wholesale market (warehouse) within the zone with a South African company (and no compliance with safeguards re-RAP and ESMP). This required that the design of the master plan of the SEZ be redone. Further discussions took place with the company that helped develop the PPP. In 2019, colleagues in the upstream department worked with the developer selected as AZES to help with TA requirements in the SEZ. The IFC's current involvement takes place via an upstream advisory, which will provide a possible line of investment (Concept Review Meeting shall take place in July 2021). A potential next step could lead to preparation of an investment of a lifetime, which will take time to be developed (2-3 year horizon). However, with the AZES hired, the SEZ in place and IFC assistance, there are good reasons to believe that a new investment will materialize at some point.

Poverty Reduction and Shared Prosperity

65. The project had a positive impact on job and income generation. According to information from the Government's implementation completion report (October 2020), and the beneficiary satisfaction assessment carried out in September 2020, the 50,000 agricultural households that participated in the project, more than doubled their productivity and their annual incomes increased nearly 7-fold. Annual incomes increased from less than US$150 to US$1,000.

[23] The project was evaluated internally in 2013-14 and was considered mostly unsuccessful, as targets were not reached. The main issue was linked to timeline since in retrospect and if one was to look at it eight years later, one could argue that it was at least partially successful. This is an important caveat for all evaluations to keep in mind as the timelines set may not be realistic for a project to become successful.

66. The project support to the rehabilitation and maintenance of the rural roads network, opened the local economy to increased trade and created several thousand part-time jobs in road maintenance. 279 villages in the project area benefitted from better access to health and education services, and especially from access to electricity.

Other Unintended Outcomes and Impacts

67. **Impact evaluation**. An impact evaluation - IE[24] was conducted by the Africa Gender Innovation Lab (AGIL) as an integral part of the PDPC (clearly stated in PAD). Through the results of the follow-up survey[25] of PDPC beneficiaries, and the short term final results of the impact evaluation of PDPC intervention on the economic indicators of beneficiaries (using a rigorous methodology for impact evaluation, i.e. a matched control differences-in-differences method), the study aimed to identify and measure the impacts attributable to PDPC on beneficiaries in project area. See Annex 7 for the full report.

- Based on the analysis of data collected during the baseline survey in December 2015 and that collected at the end of the project in July 2019 with the same households, the main findings can be summarized as follows:
- The households benefiting from the project are generally smallholder farmers with total field plots of about 2.38 ha.
- Activities of household members show very little diversification outside the agricultural sector. Few household members are engaged in non-agricultural or wage sectors. Those who are wage earners generally have short-term contracts that do not exceed one month of work a year.
- The results of the impact analysis suggest that the PDPC has resulted in a significant increase in the productivity of cassava-growing households. The project has also improved household farm income and had a positive impact on the processing of agricultural products. On the other hand, there is no significant impact of the project on rice and palm oil yields among households cultivating these crops, and there is little or no effect on other non-agricultural sources of income. Sales of unprocessed agricultural products and total household income appear to have stagnated or decreased. These results suggest that the PDPC has led to an adjustment in household activity, as households have shifted from marketing their crops to processing. These effects may represent adjustment costs associated with the adaptation of their economic activity.
- Compared to the yield targets set in the RF for cassava, rice and palm oil crops, estimates at the end of the project are lower than expected for cassava and palm oil, and higher for rice. Indeed, the yield targets in the RF were 20 tons/ha compared to an estimated 6.06 tons/ha for cassava, 3 tons/ha compared to 5.08 tons/ha for rice, and 10 tons/ha compared to 1.71 tons/ha for palm oil. Median productivity shows low values for cassava (1.66 t/ha), rice (1.33 t/ha), and palm oil (0.93 t/ha).

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

68. The PDPC was prepared in the context of the Arab Spring (2010-12) with considerable pressure from all governments in Middle East and African countries to prepare large, transformational projects that would create jobs. Despite the capacity issues in DRC, the initial design of PDPC evolved with an IDA envelope of US$250Mn around two main Growth Poles/corridors in mind. The initial thinking was to also include land reforms around the abandoned

[24] It is important to note that the impact evaluation did not target PDPC project beneficiaries per se (since it was not possible to identify them ex-ante) but rather a representative subsample of households in the PDPC project area, which may or may not have benefitted from its interventions. Hence, one must keep this in mind when looking at findings. However, restricting the analysis to villages that benefitted from the project does not substantially change results.
[25] The follow up survey done in July 2019 was conducted by the CARDE-LEADD Consortium.

industrial farms from the 1970s. The two corridors initially considered covered a large area from Boma to Kinshasa and to Kikwit and proved overly ambitious. The decision was made to focus on the Bas Congo portion due to its high potential and the value added of a recent WB operation achievement in the form of a quality road for trucks that connect Kinshasa to Matadi harbor. All this affected the preparation time and scope of necessary safeguards studies. The project was prepared as part of the Government's Growth Poles Program that sought to accelerate economic and growth, and generate employment in eight growth poles corridors. The Bas Congo-Kinshasa corridor – the geographic area of the project – was selected to pilot this approach given that it has some of the greatest potentials in agriculture with access to the big Kinshasa consumer market. A PPA for US$2 million was requested by DRC and granted on February 27, 2012. Overall, the project should have been ready for implementation as: (i) all necessary environmental and social studies had been conducted; (ii) a Project Implementation Manual (PIM) was being finalized; (iii) Terms of Reference - ToRs for the PCU and a draft procurement plan had been prepared; (iv) a draft Master Plan for all major infrastructure works was available; and (v) draft contracts and memoranda of understanding with key participating agencies (INERA, SENASEM, DVDA, UNIDO and SNV) were in the process of negotiation. In case of SNV, the finalization of the contract took two years. However, considering that (i) the precise location of some of the infrastructure sites were not yet determined and (ii) memoranda of understandings – MoU with detailed ToRs with key participating agencies had not been finalized, project cost estimates were tentative, and the project implementation timetable was overly optimistic.

B. KEY FACTORS DURING IMPLEMENTATION

69. As said earlier, the project experienced significant delays during implementation due to multiple reasons, including: (i) a slow start in getting the project management operational at the national level and setting up of provincial implementation units; (ii) lengthy recruitment processes for key implementing partners (UNIDO, SNV, ANAPI, and transaction advisor for the Maluku SEZ); (iii) attempts to restructure the project retroactively to finance at the request of Government an electricity line to connect an agro-industrial park outside of the project area that put the project on hold for 10 months; (iv) around 14.5 months of partial project suspension (Component 2) due to non-compliance with WB environmental and social safeguards policies; (v) multiple Government changes and shifting priorities; (vi) multiple changes in TTLs on the WB side (including a change in GP mapping of the project); (vii) perceived lack of transparency in the recruitment of key personnel for the AZES that led to multiple complaints which needed to be attended to before proceeding. The election period and its aftermath from November 2018 to January 2019 also disrupted some of the project activities and delayed critical decision-making, such as the recruitment of the AZES personnel charged with regulating SEZs. Due to the above, the project was restructured four times with changes to project components, adjustments to the RF (indicators were changed: some were split, others saw their description modified, some have seen their target values moved or modified and some indicators were dropped), reallocation of funds and extension of the closing date (twice).

70. The COVID 19 pandemic affected implementation of the project during the last year of execution. The installation and testing of machinery for the AIP in Lukula was delayed by several months. The technicians from Italy and China could not visit the sites of the agro-processing units and the equipment was only installed and tested during October 2020.

71. Also, the last WB field implementation support mission -ISM took place in November 2019. Thereafter, physical results between January-October 2020 were reported by the CFEF (PCU) from counterparts on the ground. The final ISM was held from September 30, 2020 to October 9, 2020 and was done by teleconferencing due to COVID-19 pandemic.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

72. The M&E system as described in the PAD is very perfunctory. It stated that a baseline survey would be carried out to ensure that productivity and production improvements can be measured. Two rigorous impact evaluations were to be undertaken during the MTR. Before project closing and independent external consultants were to be contracted to conduct a review of progress made. Some of the PDO level results and intermediate results indicators were not clearly defined (beneficiaries, jobs created, volume of food processed at technical processing centers, value of private investment flows in the targeted value chains, and percentage of women participation) and the M&E operational manual describing date sources and methodology for their collection and who would be responsible for data collection was not elaborated until February 2015. Indicators to judge qualitative improvements in social mobilization (strength and cohesion of cooperatives) and improvements in business climate were not developed.

M&E Implementation

Rating: Moderately Satisfactory.

73. For the first three years of project execution, and despite the fact that an M&E specialist was hired at onset and an international consultant hired on the ground by the IE team to work on data collection and capacity building of PIU staff, M&E was not given the needed attention and the operational set-up with appropriate staffing for this activity was insufficient. A baseline study was only undertaken at the end of 2015. The responsibility was centralized in the Fragile States Unit (CFEF), i.e. the PCU inside the Ministry of Finance. During the MTR in May/June of 2017, this situation was addressed and rectified. A detailed M&E manual was prepared by an international consultant and in view of the delays in project execution, targets for several indicators were reduced or indicators dropped altogether. The institutional set-up for M&E was revamped and decentralized. Collection of data for Component 1 (Agriculture Value Chain Development) became the responsibility of SNV and the staff of the Ministry of Agriculture at the provincial level and a Project Executing Unit (UEP-1) within the Ministry of Agriculture at the national level was put in charge of M&E for this component. In addition, to improve M&E, a technical committee was put in place at the provincial level. During June 2017, a survey of private companies was carried out by ANAPI to obtain their assessment of the impact of the reform measures adopted to improve the business climate. In September 2020, a comprehensive beneficiary assessment under Component 1 was carried out covering the opinion of farmers, seed multipliers, small entrepreneurs, and representatives of the various public and private entities involved in project execution. However, the Government has prepared a comprehensive implementation completion report.

M&E Utilization

Rating: Moderately Satisfactory.

74. Both the PCU and subsequent Bank ISMs utilized the data generated by the M&E system to periodically make adjustments to the scope of the project. The main indicator used to judge project progress were the lagging disbursement figures. During MTR, the M&E data were used within a results-oriented approach to re-engineer remaining project activities so that they could be achieved within the existing timeframe of the project. But key qualitative aspects regarding social mobilization (strength of the cooperatives being created) and the investment climate (foreign investment flows) were not followed due to weak M&E design.

Justification of Overall Rating of Quality of M&E

Rating: Modest.

75. At project start, the costs of major infrastructure investments were only tentative and M&E arrangements were weak and did not include mechanisms to obtain direct feedback from beneficiaries. The institutional set-up was not appropriate for a multi-sectoral project with major field activities far from the capital city. Also, the multisectoral nature of the project with several executing agencies, both public and private and at the national and provincial level would have required an institutional audit for the PCU and its M&E Unit. The M&E unit was understaffed, and M&E indicators and procedures for obtaining the necessary data were not clearly defined. Starting with the MTR, the situation improved considerably as the whole system was revamped with additional technical staff and decentralized.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

76. This was a category A project and triggered the following safeguard policies: (i) OP/BP 4.01 for Environmental Assessment (EA); (ii) OP/BP 4.04 for Natural Habitats; (iii) OP/BP 4.09 for Pest Management; (iv) OP/BP 4.11 for Physical Cultural Resources; (v) OP/BP 4.12 for Involuntary Resettlement; (vi) OP/BP 4.36 for Forests; and (vii) OP/BP 7.50 for Projects on International Waterways. For the riparian notification requirement under OP/BP 7.50, an exception was received on May 1, 2013. To deal with these issues, the Borrower prepared an Environmental and Social Management Framework (ESMF); a Resettlement Policy Framework (RPF); as well as several Environmental and Social Impact Assessments - ESIAs and RAPs, in particular for the works of (i) rehabilitation of agricultural feeder roads in six hubs of Kongo Central ; (ii) construction of the Lunga vasa – Moenge power line ; (iii) development of physical infrastructure and commercial activities in the SEZ of Maluku ; and (iv) development of the rice growing areas of Boma and Lukula. More than 35 safeguard instruments have been prepared in order to establish the principles and mechanisms for mitigating negative environmental and social risks and impacts of project activities. These instruments were implemented in the project area and regular monitoring of their implementation on the sites was ensured by the Borrower. A quarterly environmental and social monitoring report was sent to the WB on a regular basis.

77. The instruments prepared for environmental and social safeguards included an ESMF, an RPF, ESIAs, RAPs and Pest Management Plan (PMP) were all disclosed through the World Bank InfoShop between 2012 and 2013. Successive WB ISMs regularly checked on the observation of the measures prescribed under these policies and concluded that they were being adhered to. Site visits were carried out along the rural road network being rehabilitated and the sites selected for the AIP in Lukula and the SEZ in Maluku. Non-observance by the Borrower of the Bank's environmental and social safeguards policies led to the suspension of disbursements under Category 2.3 (Physical Infrastructure for SEZ in Maluku) as explained below in paragraph 80. The PDPC, with funds from the Government, executed the payment of 622 people listed in the project area for a total amount of US$ 4,422,055.68.

78. **Occupational Health and Safety – OHS Aspects**. The Borrower reported around ten incidents at the various project sites. Most were minor injuries to the fingers or feet caused by the lack of attention of workers on job sites. These incidents were regularly recorded, monitored and resolved at the project level. No deaths were reported by the PCU during the entire duration of the project.

79. **Grievance Redress Mechanism**. A GRM was in place at PCU as well as the CFEF. Beneficiaries also had the option of sending their complaint by courier or in person. For complaint management itself, the project received complaints directly linked to PDPC activities via various channels: (i) Grievance books available in Kinshasa in the communal house of Maluku and in Kongo-Central in the offices of urban areas, sector and territorial administrations ; (ii) Forms available of firms in charge of works ; and (iii) Form available on the CFEF website. All complaints related to the Project have been documented, and most related to access restriction to resources or loss of revenue, resettlement

of populations and compensations as well as conflicts on the ownership of a particular asset (e.g .two individuals claiming to be the owners of a same asset). A few examples of complaints included the following: 1- In October 2018, a complaint was filed by family X using the form found on the CFEF website. This complaint was closed on December 12, 2018 after negotiations between parties. This was a case of fraud of another individual with an accomplice, both of whom had been compensated through a RAP linked to electricity line to the detriment of family X, rightful owner of the neighboring concession of SNEL substation of Lunga vasa ; 2- In November 2019, two members of family Y, a person affected by the Project and already compensated earlier, sued to claim compensation of the family land, which was used to the building of a substation of the Moenge electric plant. Alerted on the matter, the provincial government did hold mediation talks and after confrontation between the parties, the fraud attempt of family Y was revealed. This forced them to withdraw their complaint at the Court of Tshela; and 3- In September 2018, 49 complaints of vegetable growers that had activities in the pilot SEZ of Maluku were submitted to the Project and after handling of the cases, 37 persons affected by the Project were declared eligible for compensation and received it.

80. **Gender Based Violence – GBV,** the Project worked with specialized structures on GBV to raise awareness of workers and neighboring communities of sites concerned by works. It is worth noting that no case of GBV was reported.

81. Overall, the rating of environmental and social safeguards is considered **moderately satisfactory** due to non-compliance mentioned above under component 2. In light of poor implementation of the RAP for the SEZ of Maluku and the absence of an ESMP linked to the construction by the government of a wholesale market within the zone resulted in the WB's management decision to partially suspend disbursements of activities under Component 2. This suspension was approved by IDA and notified to the Government of DRC on January 13, 2016. The company MIK (joint venture between the Government of DRC and the South-African operator Africom) had already launched physical works in the SEZ for the construction of ancillary infrastructure (access road, power supply and port), although safeguards requirements had not been adhered to, particularly the RAP that was being implemented and the requirement for MIK to conduct an environmental and social screening of the site, followed by a PGES. It is important to highlight that the physical works were launched under the leadership of the Prime Minister's office in charge of agro-industrial development. The Ministry of Finance, responsible for PDPC, took rectifying measures, which lead to the lifting of project suspension and completion RAP execution. On March 29, 2017, since required measures were finally met to the satisfaction of the WB (i.e. compensation of owner of MIK land and ESMP prepared, later cleared by the WB), partial suspension was officially lifted on March 2017.

82. Overall, fiduciary compliance is considered **moderately satisfactory**, since both procurement and Financial Management were consistently rated that way almost the entire time of Project duration.

83. **Procurement.** It was rated unsatisfactory early on due to long delays in getting key PCU staff hired (coming from another PCU of a project being closed plus temporary diversion to address emergent priorities of the Government) as well as for major contracts to get finalized and signed (e.g. the contract for SNV took 18 months to be completed). This translated in very low disbursement in the first three years of implementation (around 20% by the end of 2016). Also, the hiring of SEZ agency suffered from perceived lack of transparency in the recruitment of its key personnel, which led to multiple procurement complaints that had to be addressed before proceeding. Finally, a MoU signed with CPCAI in September 2015 had to be suspended in November 2015 with the elimination of this agency decided by the Government in November 2015. A solution was found with the ANAPI that took over activities that were under the responsibility of CPCAI. As noted earlier, some contract issues with SNV and SIM were only resolved at closing[26].

[26] (i) SNV contract: After careful review of expenses incurred by SNV in agreement with its contract with the CFEF, total expenses above budget amount to US$438,602.30 were considered ineligible and will be covered by SNV. Other expenses totaling US$1,296,345 were within agreed ceiling of contract, considered eligible and paid to SNV at the end of December 2020 ; (ii) - Industrial platform contract : the issue between the service provider SIM and CFEF came up when

84. **Financial Management.** *Report submission and quality*. The first contract for the external auditor was signed with a six-month delay, in May 2014. Audit reports for 2014 and 2015 were qualified but all subsequent reports were submitted without qualification. The Audit report for 2020 is expected by the Borrower no later than June 30, 2021. Concerning Interim Financial Reports - IFRs, a few were submitted late. *Eligibility of expenditures.* In September 2014, the government did ask the WB to change the project scope to retroactively finance an electricity line connecting the Bukanga Lonzo agro-industrial park. This was rejected but put the project on hold for 10 months, negatively affecting financial management. At the end of 2014, component 3 suffered from difficulties with hosting the US$10 million Project Development Fund (PDF), which was initially to be with SOFIDE, a national development agency that was to receive financial resources from the Government to finance private investments. This agency was audited as part of the 2013 FSAP and considered non-compliant with WB standards. The Project had to work with ANAPI instead. *Key issues.* The project suffered a foreign exchange loss estimated at US$6,987,197. This foreign exchange loss is due to the appreciation of the US Dollar against the Congolese Franc (CDF), which went from US$ 1 equals CDF 900 before 2016 to CDF 1,500 at the end of 2017 (a depreciation of 66% in a year). Since 80% of the budget was disbursed after 2017, the exchange rate has had a significant impact on the PDPC. At project closing, disbursement rate was around 92%. In 2020, disagreements related to contracts with SNV and SIM mobilized both the PIU and the WB for several months until the situation was resolved. For SNV, the issue was linked to eligibility of invoices above agreed contract ceiling. After several discussions, a tentative of external review and signature of a transactional agreement, the CFEF finally agreed with the payment of SNV pending invoice. This took place in December 2020 in the amount of US$1,296,345. For SIM, the issue was linked to additional fees that CFEF refused to pay since the contract was lump sum. However, after further exchanges and review, the issue was solved through the signing of a transactional agreement for financial closing of contract and payment of US$168,529.09 in early January 2021. *Government funds*. With regards to compensation, the Government paid a total amount of US$4,422,055.68 to compensate PAPs as part of the Project (US$3,906,544.01 for RAP of Maluku SEZ as part of component 2 and US$515,511,67 for component 1 activities). *Project staffing.* The Project accountant left the project in 2019 (second quarter), which meant that other accountants of other projects under CFEF did provide support on PDPC. *Designated Account*. The remaining balance of US$132,533.82 is pending justification with necessary documents just received. *Governance*. The Inter-Ministerial Steering Committee chaired by Ministry of Finance met regularly, was key in reaching project objectives while addressing issues at hand with necessary info provided by CFEF, notably issues related to suspension on component 2. At provincial level, the provincial committee for coordination and monitoring of agricultural and rural sector programs and projects served as the PDPC provincial technical committee to monitor activities on component 1 and sub-component 3.1. This served to check on services provided by suppliers in respect with contractual arrangements, monitoring and verification of results on the ground on the agreed upon deliverables.

C. BANK PERFORMANCE

Quality at Entry

Rating: Moderately Satisfactory.

85. The WB team was conscious of the challenges faced by a multi-sectoral, extremely complex project as part of a "growth poles approach" which had not been tested in DRC before. All of this in a country which had only recently emerged from a long period of conflicts and with limited public sector capacity to provide public goods and/or support to private sector-led inclusive growth. It was keenly aware that success of the project would depend on development of a strategic partnership with an organized private sector and a continuous private-public dialogue. It considered alternatives, especially in terms of geographic location and opted for investment project financing (IPF)

SIM requested payment of additional fees, despite the fact that contract was lump sum. The issue was resolved via signature of a transactional agreement for financial closing of the contract, leading to the payment of US$168,529.09 at the end of December 2020 and payment released in early January 2021.

instead of an adaptable program lending (APL). In view of the above, it rated the overall implementation risk of the project as high and included in its design several mitigation measures. Also, attention was given to a series of measures that were meant to ensure the overall readiness of the project for implementation thanks to PPA, but they were not pursued to their logical conclusion and some were only finalized months later. M&E did not receive the necessary attention in the early years but this was rectified notably at MTR with RF changed via restructuring.

Quality of Supervision

Rating: Moderately Satisfactory.

86. During the first three years of the project, TTLs changed four times. It is important to note that right after Board approval, the Accountability and Decision Making - ADM TTL as well as GP changed, possibly contributing to slow start and significant delays in the first three years of implementation. Although the project was downgraded and rated moderately satisfactory (MS) for progress towards achievement of PDO and overall implementation progress (IP), successive ISMs did not elaborate an action plan to comprehensively address the project problems[27]. The time between ISMs during this critical time (June 2015 to December 2016) was eight months and the MTR mission took place in May 2017 and not in November 2016 as originally planned. During the MTR, the project was re-engineered and officially restructured. The restructuring itself took several months., On the positive side, the project had two TTLs (from the Agriculture Division, Agriculture GP -GFA07 and Finance Competitiveness and Innovation - FCI-GP GTC13) and staff of IFC participated in ISMs. Furthermore, WB staff based in the DRC Country office in Kinshasa routinely participated in ISMs and followed-up on project developments. During the last year of the project, due to COVID 19, ISMs were carried out only remotely as field visits were not possible.

Justification of Overall Rating of Bank Performance

Overall Bank performance: Moderately Satisfactory.

87. During project preparation, the complexity of this operation with its implications for project management (especially the large volume of technical assistance contracts, feasibility studies and difficult environmental and social issues that had to be dealt with for a category A project) was underestimated and the organizational set-up and capacity of the PCU to handle such a heavy workload was not adequately assessed. The PDPC was anchored at the CFEF, a brand new implementation unit at the time at the Ministry of Finance. Within three years of CFEF existence, the WB added three projects to CFEF, which clearly overloaded it. The PDPC Coordinator, also head of CFEF, ended up being responsible of three other WB projects (though they each had a separate manager). M&E did not receive the necessary attention and operational aspects were not developed in sufficient detail. Early ISMs did not address these issues and it was only during the MTR that the situation was rectified, and the project re-engineered and restructured.

D. RISK TO DEVELOPMENT OUTCOME

Rating: High

88. Physical investments under this project (rural roads, AIP at Lukula, SEZ of Maluku) all depend for their maintenance and further development on the good functioning of institutions (provincial and regional rural roads maintenance committees, management agency for Lukula and the Agency for SEZs at Maluku). The recurring costs of these institutions need to be adequately funded. Also, the social mobilization that was achieved with the creation of some 300 cooperatives needs further technical support to remain viable and to prosper. At the same time, increased private sector participation and financing for agricultural development along the value chains of rice, cassava and palm oil depend on continued sound government policies regarding private sector involvement. Since most of the physical

[27] However, there are many reports and notes explaining the issues PDPC had to deal with, most being external and politically driven.

investments were only completed towards the end of the last year of project implementation, there was little time to test the solidity of these institutions and policies. In the case of the SEZ at Maluku, sizable investments in physical infrastructure will have to be made before private sector investments can be attracted. It was always understood that PDPC would build a minimum infrastructure inside the SEZ that would be further developed by the private developer based on their business needs and development plans. It is also worth noting that the Government has separately invested about US$25 million for public infrastructure inside the SEZ beyond PDPC. In the case of the AIP at Lukula, decisions will have to be taken regarding ownership and management of the facility and connections between agricultural producers and the processing facilities will have to be developed. There is therefore a risk, that some of the achievements of the project will be lost in a short time span, unless these issues are addressed by Government and there is adequate financing and/or a follow-up project.

V. LESSONS AND RECOMMENDATIONS

89. **The need for careful project design in an FCV context combined with a multiple-scenario cost evaluation to ensure flexibility is critical to benefit from the maximum potential of a growth pole approach.** The importance to take stock of and include FCV aspects in project design in a post-conflict country is essential. This will allow critical flexibility to adapt to a business environment that can change rapidly (project management, switching priorities, political interferences, etc.) and deal with issues that can arise during implementation to still deliver tangible results. It is crucial that project cost evaluation be done in the most accurate way and refined as necessary to the extent possible with newest data to avoid or mitigate the risks of cost overruns that can happen during implementation. This means that multiple scenarios should be considered (at least low and upper cases of total costs) to avoid issues later on. This is even more critical in FCV context were cost variations often occur as well as high risk of foreign exchange loss. The growth pole approach in an FCV context can be instrumental for maximum results due to its large area of intervention (corridor, region, zone), which does permit some flexibility during implementation. The approach implies that the project be driven by strategic private sector investments to be successful because if those do not materialize as planned (or late in implementation), synergies and complementarities between components that were supposed to work together may not happen and led to “two separate projects” within one as was the case of PDPC.

90. **A growth pole approach demands a careful and sequenced approach to bringing in the private sector and the critical importance of establishing close linkages with the International Finance Corporation (IFC) right from the outset.** In the case of PDPC, the work done by IFC via its DRC SEZ program (2008-2012) proved critical for the agreement obtained on SEZ localization (Maluku) but also in legal terms (SEZ Law), allowing a defined path for PDPC to use and develop its activities. Operations planning for an SEZ should closely consider private development, ownership and management considerations. In this way, and depending on decisions made, it will ensure that the location, type, size, and level of service provided respond to the demand and guarantee that they are economically viable. This means that projects planning for an SEZ should ensure very close sequencing of activities at all levels (safeguards, procurement, etc.) to make sure that they are implemented as early as possible to obtain maximum results. Regarding key investments such as AIPs, it is also essential that the sequencing of preparation and implementation be planned very carefully to address all key pre-requisites (environment and social aspects, procurement matters, etc.) so that it can be delivered on time and as early as possible in order not to jeopardize activities and results plus sustainability concerns.

91. **In large countries like DRC, a phased nation-wide approach can foster the integration of intervention strategies by the Government and DPs across DRC, making scaling-up and replication easier.** The recently-approved NADP is the ideal instrument to build on PDPC’s achievements in the Kongo Central and to enhance the sustainability of the investments.

92. **The importance of SMEs in fragile states should not be underestimated which combined with a spatial approach can be a powerful tool for delivering key services.** SMEs are key players in the economic and social recovery of fragile states, often due to their smaller size and adaptability. They continue to operate amid war and insecurity, providing employment, delivering key services and products, and offering the hope of social cohesion. Thus, there is a crucial need to support the growth of, and access to, soft and hard infrastructure for existing SMEs in FCV countries. This support should focus on: (i) establishing well-functioning markets and institutions, providing a temporary supply of benefits to a small group of firms being a good start; (ii) the need for flexible design and (iii) the importance of engaging the local private sector and including business development services (BDS). Spatial solutions to promote SME creation and growth—such as industrial estates, SEZ, incubators, and accelerators— have been popular in FCV countries because they help create a protective environment and isolate some external constraints. Due to the agglomeration of SMEs, spatial solutions also better allow for economies of scale, collaboration and peer learning, and the mitigation of dysfunctional SME ecosystems. Spatial solutions are pre-conditions for positive spillovers through market creation, value chain integration, and transfer of knowledge and technologies. However, most spatial projects worldwide have not attained their original vision and promise for several reasons, including often poor site selection, a poor policy framework, or lack of demand. It is vital to incorporate international lessons learned into any spatial solution pursued in support of SMEs to avoid the pitfalls that FCV countries have so often encountered.

93. **Projects that finance activities involving jobs and include indicators in their RF disaggregated by gender as applicable should be followed on very closely to facilitate their measurement.** The PDPC suffered from a lack of definition of its indicators (at PDO and IR level), translating to a lack of precision on jobs for women, which could also be due to the way the data was collected, not allowing better measurement of results achieved. In the future, it will be important to not only collect these types of information in a much more systematic way but also ensure that during implementation, everything is done so that job creation for women is effective and measurable. Activities leading to the creation of jobs should be clearly defined as well as the associated indicators closely monitored allowing to measure the achievement or not of this result.

94. **Implementation arrangements must be carefully designed at preparation, with the needs of involved entities (full participation of civil society) taken into consideration with appropriate Technical Assistance (TA) and feasibility studies.** Several project management units at the national and regional level are necessary, and their capacity, functioning and coordination should be closely followed during the first year of project implementation so that necessary adjustments can be made to avoid implementation delays. Ideally, there should be an institutional audit of all intervening project management units including M&E capabilities to ensure that they can perform their assigned roles. Baseline studies should actually be carried out at project start and not much later and it should be ensured that the necessary agricultural statistics can be reliably collected. As regards to TA and feasibility studies, they should be originated by and count on the full involvement of the concerned entities. Whenever feasible, they should include a clear training strategy. Also, physical infrastructure investments should only be done concomitantly or after all institutional questions such as ownership and management have been settled. Finally, feasibility studies should only be commissioned when there is a very high likelihood that their findings will actually be implemented. Otherwise, they lose their value and eventually must be redone.

95. **The involvement of public entities in charge of certain public goods is essential as it can help build capacity while serving as a vehicle for sustainability.** Whenever there is a public entity responsible for providing certain public goods, such as the national agricultural extension service, even if it is weak, it should be associated to the maximum extent possible in implementation. This will help to increase limited public sector capacity to provide public goods and/or to support private sector led growth. Using a reputable and competent NGO (SNV, Dutch based) is expeditious but not sufficient as it does not foster durability / sustainability in the longer run.

96. **Major contracts of key implementation agencies should be prepared early and finalized as quickly as possible.** For an investment operation type PDPC, which has more the character of a program rather than a clearly defined project, and where the outcome of one component (enhancing agricultural supply capabilities, especially capacity building of producer organizations) conditions the success of other components (seed market, and transformation of agricultural products in agro-processing centers and SEZs), it is imperative to not only have at the time of project effectiveness draft contracts and memoranda of understandings (MOUs) with key implementation agencies but to insist on their finalization before project start or within clearly defined deadlines.

97. **Strong Government and WB Implementation Support with necessary human and financial resources is a must in a limited capacity environment.** As stated in the CAS of 2013, projects like PDPC that are set in a low-capacity environment, WB teams must be prepared to operate in a more supportive, even hand-holding basis. Supervision budgets should include adequate amounts to finance longer periods in the field working directly with Government counterparts. Provision for higher overhead and administrative costs within project budgets should be made to ensure that Government units have the capacity to ensure smooth project implementation. Consideration should be given to have Bank staff decentralized and not located exclusively in Kinshasa. The issue of numerous TTL changes and especially right after Board approval clearly penalized project in its early years. Having more frequent missions and of shorter duration run from the field would allow to take corrective measures much earlier and avoid significant delays in project execution.

98. **Setting up appropriate mechanisms to foster beneficiary participation is critical as well as favoring the development of Partnerships with clearly defined roles.** Under this project where success depended so much on social mobilization and the creation of cooperatives, to put in place mechanisms to allow for active beneficiary participation would have been especially useful. This would have allowed to judge and react to beneficiary attitudes towards use of improved agricultural inputs and practices, becoming members in cooperatives, participating in commercial agriculture, and using industrial agro-processing facilities. The PDPC was an opportunity for several partnerships, within the WB, between the WB and the government through the PIU, between the PIU and the public services, but also between the PIU and the implementing entities. Although these partnerships have to be strengthened, in the context of FCV countries, there is still a need for clarification of roles, a very clear definition of the missions of each partner and above all continual consultations. The Maluku SEZ component was an example of collaboration within the Bank between GPs but also between the World Bank and IFC. This should be encouraged as the projects are increasingly multi-sectoral. The partnership with the employers' organization (Congo Business Federation- FEC) should also be strengthened. Collaborating with the FEC has made it possible to slightly improve the business climate in the DRC thanks to some reform activities initiated with the support of the project through ANAPI. It therefore appears important to use quality expertise that certain partners can provide more effectively. From this perspective, the PDPC was a collaborative experience between various partners who all contributed to the achievement of the project objective.

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Increased employment

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of jobs created in select value chains	Number	0.00 11-Jun-2013	11000.00 11-Jun-2013	5,000.00 29-Jan-2018	5,026.00 21-Oct-2020
Of which female	Percentage	0.00	50.00		19.00

Comments (achievements against targets):

This indicator is considered achieved with a final figure of 5,026 compared to a formally revised target of 5,000. The end target of this indicator was revised from 11,000 to 5,000 during second Restructuring in 2018.

The sub-indicator related to the number of jobs for women is only partially achieved, as final figure reached only 19% at completion, versus an end target of 50%.

Objective/Outcome: Increased productivity in selected value chains

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Direct project beneficiaries	Number	0.00 11-Jun-2013	50000.00 11-Jun-2013		97,757.00 21-Oct-2020
Female beneficiaries	Percentage	0.00	40.00		44.00

Comments (achievements against targets):
The indicator is considered achieved, with a final figure of 97,757 that is almost double (196% completion rate) original end target of 50,000. The sub-indicator related to women was also achieved, with a final figure of 44%, against an original end target of 40%.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Productivity of food crops in select value chains inter-alia:	Metric ton	0.00 11-Jun-2013	0.00 11-Jun-2013		0.00 21-Oct-2020
(iii) Palm oil	Metric ton	3.00 11-Jun-2013	15.00 11-Jun-2013	10.00 29-Jan-2018	10.00 21-Oct-2020
(ii) Rice	Metric ton	1.80 11-Jun-2013	3.00 11-Jun-2013		3.10 21-Oct-2020

(i) Cassava	Metric ton	8.00 11-Jun-2013	20.00 11-Jun-2013		18.40 21-Oct-2020

Comments (achievements against targets):
The sub-indicator for palm oil is considered achieved, with a final figure of 10.00 tons per hectare, against formally revised target of 10.00 tons/ha. The original end target changed from 15.00 tons/ha to 10.00 tons/ha at second Restructuring in 2018.

The sub-indicator for rice is considered achieved, with a final figure of 3.10 tons per hectare, versus original end target of 3.00 tons/ha.

The sub-indicator for cassava is considered partially achieved, with a final figure of 18.40 tons per hectare, against original end target of 20.00 tons/ha.

A.2 Intermediate Results Indicators

Component: Agriculture Value Chains Development in Bas-Congo

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Volume of food crops produced by the supported farmers organizations and agro-industrial farms, inter-alia:	Metric ton	0.00 11-Jun-2013	0.00 11-Jun-2013		0.00 21-Oct-2020
(i) Cassava	Metric ton	0.00 11-Jun-2013	3900.00 11-Jun-2013	2,500.00 18-Jul-2019	1,325.86 21-Oct-2020

(ii) Rice	Metric ton	0.00 11-Jun-2013	37.00 11-Jun-2013	25.00 18-Jul-2019	35.40 21-Oct-2020
(iii) Palm oil	Metric ton	0.00 11-Jun-2013	750.00 11-Jun-2013	450.00 18-Jul-2019	113,656.00 21-Oct-2020

Comments (achievements against targets):

The sub-indicator on cassava is considered not achieved: the final figure reached is 1,325,860 tons (53% completion rate) versus a revised target of 2,500,000 tons. The original end target was 3,900,000 tons.

The sub-indicator on rice is considered achieved: the final figure reached is 35,400 tons (142% completion rate) versus a revised target of 25,000 tons. The original end target was 37,000 tons.

The sub-indicator on palm oil is considered achieved: the final figure reached is 113,656,000 tons (25,257% completion rate) versus a revised target of 450,000 tons. The original end target was 750,000 tons.

These three adjustments in target values were planned and included in MTR revised Results Framework but due to Portal issue, this was not captured in second Restructuring done to reflect MTR changes in January 2018. After OPCS intervention, the situation was rectified in July 2019.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Rural roads rehabilitated to link production centers to markets	Kilometers	0.00 11-Jun-2013	500.00 11-Jun-2013		542.00 21-Oct-2020

Comments (achievements against targets):
The indicator is considered achieved with a final figure reached of 542 km (original target was 500 km), translating to a completion rate of 108%.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Volume of processed food by project beneficiaries	Metric ton	0.00 11-Jun-2013	5000.00 11-Jun-2013	1,000.00 29-Jan-2018	163,861.53 21-Oct-2020

Comments (achievements against targets):
This indicator is considered achieved, with 163,861.53 tons as final figure (16,386% completion rate), against a formally revised target of 1,000 tons (original end target was 5,000 tons). This indicator was revised as part of second Restructuring approved in January 2018.

Component: Special Economic Zone of Maluku

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
AZES put in place	Yes/No	No 29-Jan-2018	N 29-Jan-2018		Yes 21-Oct-2020

Comments (achievements against targets):
This indicator is considered achieved.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
A private developer is recruited for the development of SEZ of Maluku	Yes/No	No 29-Jan-2018	N 29-Jan-2018		Yes 21-Oct-2020

Comments (achievements against targets):
This indicator is considered achieved.

Component: Proactive Business Development

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Time to export (Doing Business)	Hours	1,213.00 02-Jan-2017	900.00 29-Jan-2018		488.00 21-Oct-2020

Comments (achievements against targets):
This indicator is considered achieved.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

Time to import (Doing Business)	Hours	804.00 25-May-2016	550.00 29-Jan-2018		510.00 21-Oct-2020

Comments (achievements against targets):
This indicator is considered achieved.

B. KEY OUTPUTS BY COMPONENT

Objective/Outcome 1: to increase productivity in selected value chains in target zones	
Outcome Indicators	1. Direct Project Beneficiaries (number) of which female (%) 2. Productivity of food crops in select value chains inter-alia: (i) cassava (metric ton); (ii) rice (metric ton); and (iii) palm oil (metric ton)
Intermediate Results Indicators	1. Volume of food crops produced by the supported farmers organizations and agro-industrial farms, inter-alia: (i) cassava (metric ton); (ii) rice (metric ton); and (iii) palm oil (metric ton) 2. Rural roads rehabilitated to link production centers (kilometers) 3. Volume of processed food by project beneficiaries (metric ton)
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	1. 97,757 direct project beneficiaries versus a target of 50,000 beneficiaries 2a. productivity of cassava: 18.4 tons/ha versus a target of 20 tons/ha 2b. productivity of rice: 3.1 tons/ha versus a target of 3 tons/ha 2c. productivity of palm oil: 10 tons/ha versus a target of 10 tons/ha 3a. volume of cassava produced: 1,325,860 tons versus a target of 2,500,000 tons 3b. volume of rice produced: 35,400 tons versus a target of 25,000 tons 3c. volume of palm oil produced: 113,656,000 tons versus a target of 450,000 tons 4. 542 km of rural roads rehabilitated to link production centers to markets versus a target of 500 km 5. 163,861 tons as volume of processed food by project beneficiaries versus a target of 1,000 tons

Objective/Outcome 2: increase employment in selected value chains in target zones	
Outcome Indicators	1. Number of jobs created in select value chains of which female (%)
Intermediate Results Indicators	1. Time to export (doing business) (hours) 2. Time to import (doing business) (hours) 3. AZES put in place (Yes/No) 4. A private developer is recruited for the development of SEZ Maluku (Yes/No)
Key Outputs by Component (linked to the achievement of the Objective/Outcome 2)	1. 5,026 jobs created in select value chains versus a target of 5,000 jobs 2. 488 hours for time to export (doing business) versus a target of 900 hours 3. 510 hours for time to import (doing business) versus a target of 550 hours 4. AZES was put in place 5. A private developer was recruited for the development of SEZ Maluku

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Amadou Dem/Amadou Oumar Ba	Task Team Leader(s)
Philippe Mahele Liwoke	Procurement Specialist(s)
Bella Diallo	Financial Management Specialist
Paul Jonathan Martin	Social Specialist
Alexandra C. Bezeredi	Social Specialist
Antoine V. Lema	Social Specialist
Jacqueline Beatriz Veloz Lockward	Team Member
Milaine Rossanaly	Team Member
Nicole Kasongo Kazadi	Team Member
Balume Alpha Abonabo	Team Member
Jeremy Robert Strauss	Team Member
Supervision/ICR	
Milaine Rossanaly	Task Team Leader(s)
Clement Tukeba Lessa Kimpuni, Cheick Traore, Guy Kiaku Kindoki	Procurement Specialist(s)
Bertille Gerardine Ngameni Wepanjue	Financial Management Specialist
Cheikh Amadou Tidiane Dia	Team Member
Luc Masumbuko Kakumba	Team Member
Patience Balomba Mpanzu	Team Member
Christophe Ngongo Muzyumba	Environmental Specialist
Cyrille Valence Ngouana Kengne	Environmental Specialist
Joelle Nkombela Mukungu	Environmental Specialist

Jean-Pierre Lungenyi Ntombolo	Social Specialist
Christelle Tandundu Epuza	Procurement Team
Ingrid Cesarine Meka	Team Member
Alain Tienmfoltien Traore	Team Member
Benjamin Billard	Team Member
Markus Scheuermaier	Team Member
Marie Lolo Sow	Team Member
Nora Kaoues	Team Member

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY11	12.588	159,821.89
FY12	43.795	314,220.92
FY13	75.920	430,057.29
FY14	1.050	1,117.57
FY15	.260	1,529.28
Total	**133.61**	**906,746.95**
Supervision/ICR		
FY14	41.113	202,940.22
FY15	78.287	390,503.19
FY16	44.343	212,810.11
FY17	52.444	309,144.85
FY18	34.416	214,902.64
FY19	36.488	187,980.52
FY20	31.189	135,172.35
Total	**318.28**	**1,653,453.88**

ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US$M)	Actual at Project Closing (US$M)	Percentage of Approval (US$M)
Agriculture Value Chains Development in Bas-Congo	48.00	75.60	157.5
Special Economic Zone of Maluku	27.00	6.00	22.2
Proactive Business Development	16.00	4.60	28.7
Coordination, Monitoring, Communication and Impact Assessment	8.00	15.30	191.2
Contingencies	11.00	0.00	0.00
Total	**110.00**	**101.50**[28]	**92.3**

[28] The project suffered from an important foreign exchange loss estimated at US$6,987,197. Also, at project closing, there was an undisbursed amount of around US$351,712.93.

ANNEX 4. EFFICIENCY ANALYSIS

Overall Project Cost Analysis

Executive Summary

1. The ex-post Economic and Financial Analysis - EFA of PDPC is based on the development of nine production models: five for the production of improved seeds, three production models for consumption, and one model for the development of small and medium-sized enterprises. The productivity of the three value chains (rice, cassava, and palm oil) has been the subject of notable improvements thanks to the actions of PDPC. The increases in margins, although cautious, are relatively high. The financial profitability indicators of the different production models such as the net present value (NPV) and / or the financial internal rate of return (IRR) indicate that these models are very profitable. The target groups of PDPC are populations living in vulnerable areas in terms of access to markets and handicapped by high levels of transaction costs.

2. The economic analysis is based on a number of assumptions, the main ones being: an economic lifespan of 20 years, a standard conversion factor of 1.07 to convert financial prices into economic prices, the renewal of annual recurring costs on the economic lifespan, an Opportunity Cost of Capital – OCC of 12 percent.

3. The Project's economic rate of return (ERR) is 21.9 percent. The NPV is positive (US$33.7 million), the Benefit-Cost Ratio (BCR) is 1.55 and the financial rate of return is 21.3 percent. All these indicators show the economic profitability of PDPC. The benefits not counted in the ERR calculation consolidate the economic profitability of PDPC.

4. The ERR of 21.9 percent is lower than the one found at appraisal, 32.4 percent. This is due to : (i) the assumptions made in appraisal that a large number of SMEs were supposed to start generating cash flows earlier while in the ex-post EFA, the cash flow of these SMEs started only in year six (2019). The discounting of the cash flow of SMEs contributed to a lower ERR; (ii) delays encountered during the early three years in activities related to cassava tubers, oil palm, paddy rice, and SMEs. This had a negative effect on the discounted efficiency indicators; (iii) the production models used in the ex-post EFA differ from EFA done at appraisal mainly because of the difficulties to gather data on these models; (iv) the large difference in exchange rates between appraisal and ex-post EFA; and (v) assumption on annual recurring costs at the end of the implementation period were different from those at appraisal, and economic prices used in the design of the project were different for the three targeted crops.

5. Nevertheless, the ex-post ERR is still greater than the OCC (12 percent), the largely positive NPV (US33.7 million) found in the analysis, and the BCR of 1.55 being largely above 1, is evidence of the project’s value. Furthermore, the project was robust with respect to changes in aggregate variables (reduction of benefits, increase of costs, delays in the benefits, changes in the standard coefficient factors used to yield economic prices, and changes in the OCC.

6. The sensitivity of the Project shows that a simultaneous increase in costs between 10 and 30 percent combined with a decrease in benefits of 10 percent gives an ERR greater than the OCC. Likewise, a decrease in benefits of 20 percent and a simultaneous increase in costs between 10 and 20 percent would give an ERR higher than OCC (16.6 percent and 12.1 percent respectively). However, a decrease in benefits of 20 percent combined with a cost increase of 30 percent would give an ERR lower than the OCC (10.5 percent) as well as a decrease in benefits of 30 percent associated with an increase in costs of 10 percent or more.

7. A delay in achieving benefits from one year results in a profitable project with a ERR superior to OCC (13.7 percent), but a delay of two years gives an ERR lower than the OCC (ERR of 11 percent). The

basic standard conversion factor adopted was 1.07. A simulation of this factor of 0.93 and 0.85 gives an ERR of 20.7 percent and 20.0 percent respectively, a rate lower than the financial IRR (21.3 percent) and the ERR estimated during the design of PDPC. (32.4 percent).

8. Overall, and despite major changes implied with implementation delays (reduction of AIP from 3 to 1, decrease in the number of jobs created from 11,000 to 5,000, reallocation of funds from components 2 and 3 to component 1 for the reasons mentioned in paragraph 20 and 41, implying that PDPC moved towards a project that primarily focused on the first chain links of the value chains, namely agricultural production and rural infrastructure with only basic infrastructure built at Maluku SEZ), PDPC is not sensitive to variations in the aggregate costs and benefits of the Project (10 percent to 30 percent). The ERR remains at an acceptable level since it does not take into account certain direct and indirect benefits and the issues mentioned above. Calculated over a relatively long economic lifespan, the sensitivity analysis makes it possible to assess the risk weighing on the execution of the Project following an unfavorable development in the economic and financial environment, in particular an increase in prices.

9. **Administrative efficiency**. The start-up of the PDPC was difficult, which did not allow large contracts to be signed on time. There was also a need that more resources be allocated to Component 4 (Coordination, Monitoring, Communication & Impact) from US$ 8 Mn (about 7.2% of Project funds) to around US$ 15.3 Mn (around 14%.of Project funds). Though this represents an important increase, it can be argued that the original allocation was too low to begin with in a large and complex country such as DRC. Further, the Project did suffer from significant cost overruns and a large foreign exchange loss of around US$7 Mn. These issues, though not rare in in FCV environment with unstable business climate, were not foreseen and clearly represented a major constraint for PDPC implementation. However, the project was able to deal with these constraints: almost all project objectives were achieved with the financial resources available, within the timeframe set by the project. Operational adaptation materialized by the conclusion of contracts at competitive costs compared to the same activities carried out in sub-Saharan Africa with similar conditions: e.g. unit cost of agricultural advisory support was US$80.84/agricultural producer/year compared to US$200 in sub-Saharan Africa; rehabilitation of rural roads and construction of engineering structures of US$ 21,095.7/km vs. US$ 25,000 in Central Africa having the same pedo-climatic conditions as the PDPC target zones.

10. Coordination between different Ministries was a determining factor in achieving the PDO of the PDPC. However, low institutional capacity of producers organizations impaired their capacity to make the strategic business choices needed. To overcome these risks, the project called for the participation of government entities and technical and financial partners, through the adoption of a value chain approach that contributed to the increase of disbursement rate. The challenges of giving farmers long-term support links to markets, financial institutions and expert advice persisted throughout the life of the project.

11. The efforts made by the management team allowed to : (i) reduce the range of some activities; (ii) overcome the delays and difficulties encountered during the first years of implementation; and (iii) reallocate certain activities and project funds. Overall, the project had appropriate, qualified staff in charge of financial management. Staff turnover in the sectoral ministries and the project did not affect the performance of the PDPC.

12. The cost of the Western Growth Poles Project (PDPC) was estimated at US$110 million at the design phase. The Grant Agreement was signed jointly by the Government and the World Bank on 22 July 2013 and became effective on October 22, 2013 with an expected closing date of August 30, 2019. Closing date was extended twice, first until April 30, 2020 and then later until October 30, 2020. Table 1 below provides an overview of PDPC disbursements during implementation until closing, culminating into a 93% disbursement rate.

Table 1: Statement of expenditures (in US$)

	2014	2015	2016	2017	2018	2019	2020
Disbursement	2,733,955	6,426,925	12,139,292	19 106 400	22,921,413	31,684,847	6,904,498
Cumulative Disbursement	2,733,955	9,160,880	21,300,172	40,406,572	63,327,985	95,012,833	101,917,331
Disbursement Rate	2%	8%	19%	37%	58%	86%	93%

13. The project suffered a foreign exchange loss estimated at US$6,987,197 (July 10, 2020). This foreign exchange loss (Table 2) is due to the appreciation of the US Dollar against the Congolese Franc (CDF), passing US$ 1 equals CDF 900 before 2016 to CDF 1,500 at the end of 2017 (a depreciation of 66% during one year). Since 80% of the budget was disbursed after 2017, the exchange rate has had a significant impact on the PDPC.

Table 2: PDPC Financial Position at End of July 2020 (in US$)

N°	Components and sub-components	Executed Amount (US$)
1	**Agri value chain development in Kongo Central**	**75,585,189.72**
1.1	Agriculture and Agri-Business Supply Capacity Building	27,881,984.67
1.2	Support for rural infrastructure development	47,703 205.05
2	**Maluku Special Economic Zone**	**5,845,487.62**
2.1	Facilitation Public-Private Partnership for the SEZ	1,391,425.63
2.2	Support for the authority of the SEZ	1,086,719.05
2.3	Physical infrastructure	3,367,342.94
3	**Proactive business development**	**7,136,546.51**
3.1	Project Development Fund for Investment Promotion	2,079,887.03
3.2	Targeted regulatory reforms	5,056,659.48
4	**Coordination, control, communication & impact assessment**	**14,445,579.15**
4.1	Implementation	11,580,645.79
4.2	Monitoring & Evaluation	1,162,568.63
4.3	Back on WP Q 805	1,702,364.73
	Foreign exchange loss	*6,987,197.00*
	GRAND TOTAL	**110,000,000.00**

Source: PCU/PDPC, 2020.

PDPC Ex-post Economic and Financial Analysis

14. **Production models**. The EFA of the project covers the overall increase in crop production at the project level of the PDPC, which will be compared with the increase of their economic costs. The prices used for EFA correspond to those paid to producers for farmgate price. Based on the PDPC design study, the mission developed eight crop models for EFA: five models for improved seed production (certified basic rice seeds, certified basic cassava cuttings, certified oil palm seedlings, certified rice R1 improved

seeds, and certified R1 healthy cassava cuttings) three production models for consumption (paddy rice, cassava tubers, and palm oil) and one model for development of Micro, Small and Medium-sized Enterprises – MSMEs in agro-processing.

15. Productivity increases are expected through improved agricultural practices, increased use of inputs, improved crop intensity and cost-effectiveness of infrastructure such as roads. Productivity of the various speculations was low without project, mainly because of the low use of inputs (phytosanitary treatment, mineral manure, size). They have been significantly improved through the PDPC.

16. The project has produced:

i) nearly 46,956 tons of basic rice seed and 79.49 tons of R1 seed available to farmers' organizations and seed operators;

ii) 2,845,817 linear meters of basic cassava cuttings by INERA and 8,391,329 linear meters of primary cuttings made available to agricultural households by seed operators; and

iii) more than 882,148 oil palm plants made available to farmers.

17. With this high-quality plant material, productivity has been improved: 3.1 t/ha for rice against a baseline value of 1.6 t/ha and the project target of 3 t/ha. For cassava, yield was 18.4 t/ha against a target of 20 t/ha (baseline value is 5 tons/ha). As for the oil palm, the renewal of the palm groves whose entry into production will take place from year 3 of planting (2020), will increase the average productivity of palm groves from 2 to 6 tons of regimes per hectare.

18. With the direct beneficiaries of the project, at least 6,309 tons of paddy rice, 208,719 tons of cassava roots and 11,722 tons of palm oil were produced by structured households.

Table 3: Yield Assumptions – Crop Models (tons/ha)

Crop	Unit	Reference 2012	Target value	Achievement
Cassava (Tons/ha)	Tons/ha	5	20	18.4
Rice (Tons/ha)	Tons/ha	1.6	3	3.1
Palm oil (Tons/ha)	Tons/ha	3.5	10	10

19. The increases in production costs relate to the production developed by the PDPC as they relate to investments made, which include the purchase of rice seeds, cassava cuttings, and the use of fertilizers.

20. Increases in gross margins, albeit cautious, are relatively high. These increases are significantly larger for Project-targeted productions in terms of intensification. The ultimate objective is to sustainably improve farm incomes of the small and micro-farm, which represents the quasi majority of farms in the PDPC area as indicated by the impact study (October 2020)[29]. The gross margins of the three value chains (rice, oil palm and cassava) analyzed show that their contribution to income generation is significant for small producers in the PDPC area.

21. The financial profitability indicators of the different production models such as net present value (NPV) and/or financial internal rate of return (IRR) indicate that these models are highly profitable. The profitability of crops and activities remains subject to the risk of price changes in the market. Similarly, producers' profit margins are affected by the selling prices of their products, which vary widely. Prices can range from simple to quintuple due to the defective and disorganized marketing channels, to the multitude of operators and intermediaries present in the different production areas and to the antiquated upgrading units.

[29] Impact assessment study of Development project west growth poles (PDPC), 2020.

22. **Road, irrigation and agro-industrial infrastructure.** The project rehabilitated 542 km of rural roads, while the forecasts were based on 500 km. This infrastructure improves the quality of life of rural populations, including vulnerable populations (women, youth) by :

i) the opening up of 279 communities and villages with one million residents who are farmers and traders, significantly improving the movement of people and goods, and improved access to advisory services, increased productivity and agricultural products and livestock and fisheries;

ii) the reduction of post-harvest losses through improved transport conditions;

iii) increased producer prices due to improved market access in the province and Kinshasa;

iv) improving means of transportation (vehicles, motorcycles, bicycles, tricycles, etc.) and access to rural services as well as the reduction of maintenance costs and of transport prices of people and goods.

23. MSMEs are located in both the production zones and the electrified AIP in Lukula , which was set up by the PDPC. Matching grants (cost-sharing financing) allowed the installation of the AIP and/or the MSME development around Lukula thanks to the electricity line financed by the PDPC but also in the other localities already connected to the electrical network.

24. The number of MSMEs taken into account in the EFA of the PDPC (and for which plausible information exists) is 31, distributed among the three value chains, namely rice, cassava, and palm oil. The technical and economic characteristics of these companies are set out in appendix 1 of this annex.

Table 4: Additional Project Production (2014-2033)

Production model	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023-2033
Certified basic rice seed (tons)		3	11	5	14	15	15	15	15	15
Certified basic healthy cassava cuttings (kml)		704	1,382	-	-	760	760	760	760	760
Certified oil palm seedlings (number)		-	-	49,768		832,380	832,380	832,380	832,380	832,380
Improved R1 certified rice seed		-	41	15	21	2	2	2	2	2
Healthy R1 certified cassava cuttings (kml)		-	2,514	3,363	1,437	1,077	1,077	1,077	1,077	1,077
Rice (t of paddy)		-	500	500	2,655	2,655	2,655	2,761	2,871	2,986
Cassava tubers (tons)		-	-	50,000	58,719	100,000	100,000	104,000	108,160	112,486
Palm oil (tons)		-	-	3,000	3,000	5,722	5,722	5,951	6,189	6,436

25. **Beneficiaries of the project.** The PDPC target groups are producers, investors, agro-industrial MSMEs and households located in the project area. Almost 50,000 farmers were expected to benefit directly from the project, including 40% of women, but this figure has risen to 97,757 beneficiaries, or 195.5%. In addition at least 10 large companies and 30 SMEs will take advantage of secure and maintained industrial land in the Maluku SEZ. Indirect beneficiaries will include the families of workers directly employed by the project. Finally, local institutions in the targeted poles will also benefit from the increase in taxes driven by the development of economic activities.

26. **Assumptions of economic analysis.** The PDPC economic analysis is based on a number of assumptions about the production levels of rice, cassava and palm oil value chains. These assumptions are conservative; shortfalls and profits made by downstream upgrading units were not taken into

account. Similarly, the reduction in transaction costs - due in particular to easier access to certain technical services, information and technology - was not included. The main assumptions are as follows:

- The 20-year economic lifespan (2014 to 2033) was selected to reflect the useful life of the major investments made, including the 20-year lifespan of hydro-agricultural developments. The actual costs of implementing the PDPC were considered. The year without a project is 2013.
- Economic prices were introduced in order to correct the distortions of prices/financial costs due to government intervention (taxation, subsidies, financial unforeseen events, and other transfers) and imperfect labor markets, capital, and goods & services affected by the Project. For products not traded internationally, financial prices were used for economic analysis. A standard conversion factor (SCF) of 1.07 was used to reflect existing distortions and to convert financial prices into economic prices.
- An aggregation of benefits was made from the production models into economic benefits and a zero residual value was assumed for Project investments;
- Several exchange rates were used depending on the period concerned. Thus, the exchange rate used was CDF 920/US$ between 2011-2013; CDF 1,100/US$ between 2014-2016; CDF 1,500/US$ between 2017-2019; and CDF 2,000/US$ since March 2020.
- Recurrent expenditure on the Government budget will continue to be implemented with the PDPC, in particular to cover the operation of the State Technical Services dedicated to agriculture in the PDPC area. The costs of periodic infrastructure maintenance would be supported by the Government, professional organizations, and the private sector. Also, the annual recurring costs were extended over the economic lifespan of the Project, with 25% of these costs from the last year of project implementation (2020) to year 20 of the Project (2033).
- The opportunity cost of capital (OCC) is 12%, reflecting the landlocked nature of the PDPC area and its partial integration into the markets for capital, goods and services.
- The cost-benefit analysis (CBA) indicators used at the project level are the NPV (net present value), the ERR (economic rate of return), and the benefit-cost ratio (BCR).
- The volumes of certified improved seed production (basic and improved R1 seed) and the production for consumption of the three products (rice, cassava and oil palm) are fully absorbed by sales and partially by self-consumption; post-harvest losses are negligible;
- The average Free on Board prices used at project design were: US$600/ton for cassava, US$670/ton for oil palm and US$462/ton for rice. During implementation, average economic prices used in the analysis are US$289/ton of paddy rice, US$100/ton of cassava tubers, US$428/ton of palm oil. On the other hand, the average economic prices of basic and improved R1 certified seeds are as follows: rice seeds: US$2.14/kg; cassava cuttings US$4.28/100 ml), oil palm seedlings US$0.4/seedling.

27. **Economic and financial profitability of the project**. Based on the above assumptions, the Project's economic rate of return (ERR) is 21,9%. The ERR is satisfactory as some of the benefits could not be quantified. The NPV is positive (US$33,7 million) and the BCR is 1,55. All of these indicators show the economic profitability of the PDPC and are relatively high for a project structured around developing selected value chains with land and infrastructure protection issues and a relatively large area. The ERR is much lower than estimated at PDPC design (32.4%) due to the relative increase in some costs, the delay and decrease in the realization of some benefits and the inability to take into account the impact of road infrastructure.

28. It is important to add to this the improvement of access to basic social services with roads (feeder roads, road schemes), improvement in revenues; enhanced nutrition and children education. These benefits, which are not included in the calculation of the ERR, consolidate the economic profitability of the PDPC and contribute to the justification of the investments made. The financial internal rate of return (IRR) is estimated at 21.3%.

29. The ERR of 21.9% ERR is lower than the one calculated at appraisal (32.4%) for the following reasons :

i) the optimistic assumptions made at appraisal that a large number of SMEs were supposed to start generating cash flows since the early implementation while in the ex-post EFA, the cash flow of these SMEs started in year six (2019) where the additional cash flow is about US$4 million[30]; the discounting of the cash flow of SMEs contributed to a lower ERR;

ii) difficulties encountered during the early three years of implementation with delays in some activities related to cassava tubers, oil palm, paddy rice, and SMEs had a negative effect on the discounted efficiency indicators (ERR, NPV and BCR);

iii) the production models (crop and activity) used in the ex-post EFA differs from those used at appraisal mainly because of the difficulties to gather data on these models (an alternate aggregate analysis was done to overcome these difficulties);

iv) the large difference in exchange rates between appraisal and ex-post EFA translating to a large exchange loss;

v) assumption on annual recurring costs at the end of the project were different from the appraisal (25% of these total costs from the last year of project implementation (2020) to year 20 of the project (2033);

vi) economic prices used in the design of the project were US$600/ton of cassava; US$670/per ton of palm oil and US$462/per ton of rice. The average economic prices used in the ex-post were reduced (US$ 100/per ton of cassava tubers, US$428/per ton of palm oil, and US$289/per ton of paddy rice).

30. The ex-post ERR is still greater than the OCC (12%), the largely positive NPV (US$33.7 million) found in the ex-post EFA , and the BCR of 1.55, being largely above 1, is evidence of the project's value. Furthermore, the project was robust with respect to changes in aggregate variables (reduction of benefits, increase of costs, delays in the benefits, changes in the standard coefficient factors used to yield economic prices, and changes in the OCC).

31. It is also important to note that the PDPC has targeted population groups with precarious and relatively disadvantaged conditions, living in areas that are vulnerable from a market access perspective, and who are handicapped by high levels of transaction costs.

[30] that is 20% of total net additional production, which is the second largest item in the project benefit after Cassava tubers (with 51%). This ranking is kept the same when adding total net production for the 20-year economic lifespan of the PDPC.

Table 5: Additional net benefits of the PDPC project (in US$)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023-2033
Rice seed		5.562	111.323	42.479	74.401	31.715	31.715	31.715	31.715	31.715
Cassava cuttings		30.119	166.745	134.531	61.510	78.629	78.629	78.629	78.629	78.629
Oil palm seedlings				149.304	-	2.497.140	2.497.140	2.497.140	2.497.140	2.497.140
Paddy rice	-	-	144.450	144.450	766.885	766.885	766.885	797.560	829.463	862.641
Cassava tubers				5.000.000	5.871.900	10.000.000	10.000.000	10.400.000	10.816.000	11.248.640
Palm oil				1.284.000	1.284.000	2.449.016	2.449.016	2.546.977	2.648.856	2.754.810
SMEs	**-**	**-**	**-**	**-**	**-**	**3.999.720**	**3.999.720**	**3.999.720**	**3.999.720**	**3.999.720**
Total economic benefits of the project	-	-	144.450	6.577.754	7.922.785	19.712.761	19.712.761	20.241.397	20.791.179	21.362.951
total economic cost of the project	2.542.578	5.977.040	11.289.542	17.768.952	21.316.914	29.466.908	6.421.183	1.605.296	1.605.296	1.605.296
Total Net Benefit	- 2.542.578	- 5.977.040	- 11.145.092	- 11.191.198	- 13.394.129	- 9.754.147	13.291.578	18.636.101	19.185.883	19.757.656
ERR: 21.9%										
NPV @ 12%: US$ 33.7 Mn										
BCR: 1.55 (NPV costs: US$ 61 Mn ; NPV Benefits: US$ 94.6 Mn)										

32. **Sensitivity analysis.** In order to test the profitability of the PDPC under different scenarios, a sensitivity analysis was carried out compared to the base case. The sensitivity of the Project relates to increases in costs, and decreases in benefits, and delays in achieving benefits.

33. The sensitivity analysis tests the robustness of the results of the economic profitability study with respect to the parameters that are used in the EFA model. The idea is to classify the input data according to its ability to influence the final results of the ERR. This also makes it possible to deepen the quality of the hypotheses and to identify those generating high variability.

34. The estimation is made variable by variable (VBV) and in terms of scenarios. VBV analysis indicates the sensitivity of ERR to increasing/decreasing costs, assuming constant benefits, or increasing/decreasing benefits while costs are constant (Ceteris paribus). On the other hand, the analysis in terms of scenarios tells us about the simultaneous increase/ decrease in costs and benefits of the PDPC.

35. In terms of VBV analysis, ERR calculations show that an increase in benefits, or a decrease in costs, results in a higher ERR. A decrease in profits from 10% to 30% results in an economically profitable Project: this rate drops to 18.9% to 13.1% respectively since the OCC is around 12%. An increase in costs, while having constant benefits, from 10% to 30% would leave the ERR higher than the OCC.

Table 6: Sensitivity of the ERR to the change in the additional costs and benefits of the Project (%)

Cost-benefit	Decrease of 30%	Decrease of 20%	Decrease of 10%	Base Benefits
Base costs	13.1%	16.1%	18.9%	21.9%
Increase of 10%	11.2%	13.9%	16.6%	19.1%
Increase of 20%	9.5%	12.1%	14.6%	17.0%
Increase of 30%	7.9%	10.5%	12.9%	15.2%

36. A simultaneous increase in costs between 10% and 30% combined with a decrease in benefits of 10% gives an ERR greater than or equal to the OCC. Likewise, a decrease in benefits of 20% and a simultaneous increase in costs between 10% to 20% would give a higher ERR than OCC (16.6% and 12.1 respectively). However, the values of ERR where the Project is unprofitable, are those with a cost increase by 30% associated with a decrease in benefits of 20% (ERR of 10.5%) as well as a decrease in benefits of 30% associated to an increase of costs of 10% or more.

37. A delay in achieving benefits of one year results in an ERR greater than the OCC (13.7%) but a delay of two years results in an unprofitable project: the ERR would be 11%. The basic standard conversion factor adopted was 1.07. A simulation of this factor of 0.93 and 0.85 gives an almost identical ERR, 20.7% and 20.0% respectively, lower than the ERR estimated during the design of the PDPC (32.4%) but greater than the OCC and lower than the financial IRR (21.3%).

Table 7: Sensitivity of NPV to change in costs and additional benefits of the Project (US$ millions)

Cost-Benefit	Decrease of 30%	Decrease of 20%	Decrease of 10%	Base Benefits
Base Costs	3,4	12,5	21,7	33,7
Increase of 10%	(7,3)	15,6	15,6	24,8
Increase of 20%	(13,4)	0,4	9,6	18,7
Increase of 30%	(34,6)	(20,9)	3,5	12,6

38. A simulation carried out for shorter economic lifespans (10 years, and 15 years) resulted in the same profitability trends for the Project. Likewise, a change in the SCF always yields to higher ERR than OCC (12%) as seen in table 8. A simulation of the net benefits of the project without the net benefits yield by MSMEs yields to lower results : an ERR of 17.9%, a positive NPV (US$19 million), and a benefit-cost ratio (1.31) which indicates the profitability of the project.

Table 8: Variation of ERR according to three SCF (%)

SCF	0.93	0.85	1	1.07
ERR:	20.7%	20.0%	21.3%	21.9%

39. The variation of the OCC from 10%, 12%, and 15% it produces a profitable project since the NPV is positive and the BCR is greater or equal to 1 in all cases (table 9).

Table 9: sensitivity of NPV and BCR to the OCC (US$ Millions)

NPV /OCC	12%	15%	10%
NPV at 12%	33.7	49.0	48.4
NPV Costs	61.0	53.4	66.9
NPV benefits	94.7	71.6	66.9
Benefit Cost Ratios	1.55	1.34	1.00

40. Overall, and despite major changes implied with implementation delays (reduction of AIP from 3 to 1, decrease in the number of jobs created from 11,000 to 5,000, reallocation of funds from components 2 and 3 to component 1 for the reasons mentioned in paragraph 20 and 41, implying that PDPC moved towards a project that primarily focused on the first chain links of the value chains, namely agricultural production and rural infrastructure with only basic infrastructure built at Maluku SEZ), the PDPC is not sensitive to variations in costs and aggregate benefits of the Project (10% and 30%). However, the Project becomes sensitive to costs/ benefit variations beyond 35% in benefit decrease and 55% in cost increase. The economic internal rate of return remains at an acceptable level as it does not take into account certain direct and indirect benefits. Also, environmental benefits such as improving soil fertility, reducing erosion, improving groundwater recharge and better management of the natural resource base, in particular through soft and transversal actions of the Project have not been estimated. Calculated over a relatively long economic lifespan, the sensitivity analysis makes it possible to assess the risk weighing on the execution of the Project following an unfavorable development in the economic and financial situation, in particular the degradation of the local socio-political situation, an inflationary trend, and the poor governance or even the dismantling of cooperatives and the degradation of infrastructure (rural roads, hydro-agricultural schemes, etc.) resulting from the lack of their regular maintenance. In the case of favorable conditions for the Project, in particular an increase in benefits or a decrease in costs, the ERR would be higher than the OCC.

41. **Administrative Efficacy and efficiency**. The budget and time management were cost-effective and in accordance with the design despite the difficulties encountered during start-up and early implementation. The master plan related to infrastructure investments (rural roads, electricity, rice perimeters and AIPs) to remove major constraints to the development of agricultural value chains (component 1) was provided in the design but the planned investment costs for such infrastructure have been under-estimated and overwhelmed in the implementation.

42. The start-up of the PDPC was difficult, which did not allow large contracts to be signed on time. The cost overruns and significant foreign exchange loss were also a major constraint. However, the project was able to deal with these constraints thanks to the recommendations of the implementation support missions. Thus, almost all project objectives were achieved with the financial resources available, within the timeframe set by the project as evidenced by the reports of the external auditors (compliance with the directives of the World Bank and the provisions of the Financing Agreement).

43. Operational adaptation materialized by the conclusion of contracts at competitive costs compared to the same activities carried out in sub-Saharan Africa with similar conditions: e.g. unit cost of agricultural advisory support was US$80.84/agricultural producer/year compared to USD 200 in sub-Saharan Africa; rehabilitation of rural roads and construction of engineering structures of US$21,095.7/km vs. US$25,000 in Central Africa having the same pedo-climatic conditions as the project target zones.

44. Coordination between the different Ministries was a determining factor in achieving the PDO of the PDPC, due to its multisectoral nature. In this context, the steering committee set up under the chairmanship of the Ministry of Finance, worked in close collaboration with all the structures provided for by the institutional arrangements of the Financing Agreement. This allowed the overall coordination

of activities provided by the Funding Execution Unit in favor of Fragile States[31]. The Provincial Technical Monitoring Committee, the Local Technical Monitoring Committees made it possible to manage the services provided by service providers in the provinces, the compliance of activities with the provisions of the contracts / memoranda of understanding signed between the project and the various service providers. This made it possible to have an ownership of the project.

45. Thus, several technical services of different Ministries were involved in the project implementation. Agricultural activities were carried out and managed by the technical services of the Ministry of Agriculture (IPAPEL[32], INERA[33], SENASEM[34]…) as well as NGOs (Dutch SNV), and the private sector. Development industrial activities were supervised by UNIDO. DVDA[35]- from the Ministry of rural Development- supervised the rehabilitation of rural roads and the National Electricity Company (SNEL[36]) for the supply of electrical energy. Component 2 related to the development component of Special Economic Zones is supervised by the Special Economic Zones Agency (Ministry of Industry). The implementation of the "Proactive business development" sub-component (3.1) was carried out by the ANPI[37] of the Ministry of Planning, which supervised the studies. The involvement of all these structures contributed to the achievement of the development objectives of the PDPC.

46. However, the low institutional capacity to appraise and support productive investments of producers organizations impaired their capacity to make the strategic business choices needed to maximize profits and react to shocks. To mitigate the risks associated with this limited capacity of local entities and groups, the project called for the participation of technical local and central entities in sectoral Ministries, technical and financial partners, through the adoption of a value chain approach to subproject implementation. This approach proved to be successful, as reflected in an increased rate of disbursement. The challenges of giving farmers long-term support links to markets, financial institutions and expert advice persisted throughout the life of the project.

47. Overall, the project had appropriately qualified and experienced staff in charge of financial management. The internal controls were spelt out in a Procedures Manual, amendments to which were made on a periodic basis to take into account changes in the project's operations. The project had adequate financial management arrangements over the course of the implementation period. In most cases, the financial reports and annual audit reports were submitted to the Bank on a timely basis, and recommendations made subsequent to implementation support missions were appropriately implemented. Staff turnover in the ministry and the project did not affect the performance of the PDPC.

48. There are many factors that have affected the effectiveness and efficiency of the PDPC. These factors include: (i) the difficulties encountered during start-up so that sizeable contracts were not signed on time and the suspension of disbursements by the Bank following some government interventions .; (ii) the difficulties faced at the early implementation of the PDPC; (iii) the under-estimation of the investment costs for infrastructure (rural roads, electricity, rice perimeters and AIPs); and (iv) cost overruns and significant foreign exchange loss.

49. There was also a need that more resources be allocated to Component 4 (Coordination, Monitoring, Communication & Impact) from US$ 8 Mn (about 7.2% of Project funds) to around US$ 15.3 Mn (around 14%.of Project funds). Though this represents an important increase, it can be argued that the original allocation was too low to begin with in a large and complex country such as DRC. Further, the Project did suffer from significant cost overruns and a large foreign exchange loss of around US$7

[31] Cellule d'exécution des Financements en faveur des États Fragiles
[32] Inspection Provinciale de l'Agriculture, Pêche et Élevage
[33] Institut National pour l'Étude et la Recherche Agronomique
[34] Services National des Semences
[35] Direction des Voies de Desserte Agricole
[36] Société Nationale d'Électricité
[37] Agence nationale de la promotion des investissements

Mn. These issues, though not rare in in FCV environment with unstable business climate, were not foreseen and clearly represented a major constraint for PDPC implementation.

50. Nonetheless, as substantiated by the independent auditors, the efforts made by the management team-including the implementation and supervision missions- allowed to reduce the range of some project activities, overcome the delays and difficulties encountered; reallocate certain activities and project funds within the framework of the directives of the Bank and the framework of the Financing Agreement.

51. **Project impacts.** In addition to the benefits considered in the computation of project financial and economic profitability, numerous other economic benefits were not valued, in particular because of the difficulty of quantifying them and the timing of impact evaluation of the Project within its cycle. These include the impact on jobs, household and business incomes, and the investment climate.

52. **Impact on jobs creation.** Activities in the project area show very limited diversification outside of agriculture. Employees generally have short-term contracts of up to one month's work in a year[38]. However, project interventions generated 5,026 jobs (100.5% of the target) made up of 1,195 permanent jobs (22% women) and 3,831 seasonal jobs (17% women). A significant number of permanent jobs will be created with the start of the activities of the AIP in Lukula. In addition to these permanent jobs, the production of improved seeds and the rehabilitation of rural roads resulted in the injection of more than US$4,810,832 in wages into the local economy.

53. **Impact on agricultural productivity and household and business income.** Agricultural productivity increased from 2 to 3.7 times depending on the sector analyzed, especially cassava. The impact of the project on agricultural income and the volume of processed agricultural products is notable. Also, agricultural households supported by the project saw their annual incomes multiplied by nearly 7 times, reaching an average of US$1,000 per household, against less than US$150 before the implementation of the project. In addition, MSMEs whose business plans have been funded will undoubtedly have a return on investment, which will allow them to increase their turnover and diversify their economic activities.

54. Similarly, food and nutrition security has improved. Almost 97,760 beneficiary agricultural households, nearly double the target, benefited from project interventions.

55. **Impact on the investment climate.** The reforms and communication activities supported by the PDPC have contributed to the improvement of the country's rating in the "Doing business" ranking. Thus, the times and costs of setting up businesses and the import-export times have been reduced. The profit tax rate is reduced from 35% to 30%. Tax declaration and payment procedures have been simplified for the benefit of SMEs. In addition, investors have an attractive framework within the framework of the SEZ, with the adoption of a legal and regulatory framework, the operationalization of a public establishment responsible for the administration and regulation of these Zones. Moreover, the Maluku site is secured and ready to be developed in order to install investors there who benefit from the tax and customs incentives provided for by the Law.

[38] Impact assessment study of Development project west growth poles development project (PDPC), 2020.

Appendix 1: Technico-economic data on MSMEs (micro, small and medium-sized enterprises) of the PDPC project

N°	Name of MSME	Nodal hub	Investment made	Number of MSME member	Number of direct jobs to be created by the processing unit	Annual processing capacity of the raw material (t or ltr)	Annual quantity of finished products to market (t or l)	Investment cost (USD)	PDPC Contribution (USD)	Year	% Operational expenses	Revenue	Operational costs	Net profit
RICE PROCESSING														
1	OSV NGEMBA	Kimpese	transformation Equipment & Transport	**155**	7	48,12	48,00	9.240,00	6.468	2020	20%	13903	1293,6	3.369
2	SOCOORIMA	Tshela	Transport Equipment	121	2	39	25,35	6.294,00	4.405,80	2020	22%	11267	969,276	4.004
Sous-total				**276**	**9**	**87,12**	**73,35**	**15.534,00**	**10.873,80**			25170	0	7.373
CASSAVA PROCESSING												0	0	
3	GAS	Kimpese	Tractors & accessoiries	225	6	4538	1497,54	54.013,08	37.809,16	2020	22%	1311028	8318,0152	1.248.697
4	TUSIKAMA	Mbanza Ngungu	Vehicle	200	5	1.454,55	480	42.424,68	29.697,28	2020	22%	420218	6533,4016	371.260
5	SOPADEC	Mbanza Ngungu	Vehicle	86	3	4000	1320	69.068,00	48.347,60	2020	22%	1155600	10636,472	1.075.896
6	UCKC	Kimpese	Tractors & accessories	256	3	1650	544,5	45.370,00	31.759,00	2020	22%	476685	6986,98	424.328
7	COOAD	Kimpese	Processing and transport equipment	50	4	220	72,6	25.884,00	18.118,80	2020	38%	63558	6885,144	30.789
8	COOPADES*	Kimpese	Processing and transport equipment	28	6	200	66	7.750,00	5.425,00	2020	38%	57780	2061,5	47.969
9	COOPAT	Mbanza Ngungu	Processing and transport equipment	300	9	1350	445,5	25.928,00	18.149,60	2020	38%	390015	6896,848	357.190
10	COOPDS	Kimpese	Transport equipment	117	3	2084	687,72	2.676,10	1.873,27	2020	22%	602068	412,1194	598.979
11	GFDK	Inkisi	Transport equipment	28	3	130	130	2.390,00	1.673,00	2020	22%	37557	368,06	34.799
12	TUSALASANA	Inkisi	Transport equipment	28	4	100	100	3.240,00	2.268,00	2020	22%	28890	498,96	25.151
13	SCRAM	Lukula	Processing and transport equipment	91	6	2122	775	11.081,00	7.756,70	2020	38%	613046	2947,546	599.017
14	COOPROMA	Lukula	A large-format tricycle motorcycle and various documents relating to its use	139	3	11.775,76	3.886,00	7.280,00	5.096,00	2020	22%	3402016	1121,12	3.393.615
15	COOPROMAK	Lukula	Transport equipment	188	5	11.118,18	3.669,00	12.660,00	8.862,00	2020	22%	3212043	1949,64	3.197.433
16	SCOOFIMATSUKI	Boma	Processing and transport equipment	891	7	1.035,67	621,4	34.700,00	24.290,00	2020	22%	299204	5343,8	259.160
17	COOPROMABO	Boma	Transport equipment	240	7	23535	23535	6.000,00	4.200,00	2020	22%	6799262	924	6.792.338
18	GLODER	Boma	Transport equipment	120	11	9000	9000	3.000,00	2.100,00	2020	22%	2600100	462	2.596.638
19	COODAL*	Kimpese	Transport and processing equipment	26	3	86,55	28,56	4.500,00	3.150,00	2020	22%	25003	693	19.810

N°	Name of MSME	Nodal hub	Investment made	Number of MSME member	Number of direct jobs to be created by the processing unit	Annual processing capacity of the raw material (t or ltr)	Annual quantity of finished products to market (t or l)	Investment cost (USD)	PDPC Contribution (USD)	Year	% Operational expenses	Revenue	Operational costs	Net profit
20	COOPEMALU*	Kimpese	Transport equipment	180	3	150	150	1.700,00	1.190,00	2020		43335	0	41.635
21	COOMEDM*	Kimpese	Transport equipment	115	3	150	150	1.700,00	1.190,00	2020	22%	43335	261,8	41.373
22	COOFEPA	Mbanza Ngungu	Processing equipment	76	4	9000	2970	2.250,00	1.575,00	2020	38%	2600100	598,5	2.597.252
23	COAMNS	Mbanza Ngungu	Irrigation material	70	4	140	140	1.998,00	1.398,60	2020	22%	40446	307,692	38.140
24	CADECL*	Mbanza Ngungu	Processing equipment	1.375,0	6	2112	696,96	2.300,00	1.610,00	2020	22%	610157	354,2	607.503
25	ANODMA	Tshela	Processing equipment	202	5	78,8	26	2.430,00	1.701,00	2020	22%	22762	374,22	19.958
26	SOCORES	Lukula	Processing equipment & vehicle	n.a	17	2.909,09	960	75.404,50	37.702,25	2020	22%	840436	8294,495	756.737
	Total			**5.031,0**	**130**	**88.939,58**	**51951,78**	**445.747,36**	**296.942,25**	2020		25694643	0	25.175.667
	OIL PALM (tons)													
27	JL PRODUCTION	Boma	Vehicles	n.a	7	3.000,00	900	197.200,00	98.600,00	2020	22%	866700	21692	647.808
28	COOPROHUK-AVENIR	Boma	Transport and processing equipment	952	7	3.016,00	452,4	42.500,00	29.750,00	2020	38%	871322	11305	817.517
29	COOPROPAK	Boma	Transport and processing equipment	120	9	874,00	131,1	18.150,00	12.705,00	2020	22%	252499	2795,1	231.554
30	APCLK	Mbanza Ngungu	Vehicles	80	5	20.035,00	3.005,25	70.720,00	49.504,00	2020	22%	5788112	10890,88	5.706.501
31	BDD BOMA	Tshela	Processing equipment	75	2	25.393,33	7,618	3.378,00	2.364,60	2020	38%	7336134	898,548	7.331.857
				1.227,0	**30**	**52.318,33**	**4496,368**	**331.948,00**	**192.923,60**					14.735.237
			Grand Total	**6.534,0**	**169**	**141.345,03**	**56.521,50**	**793.229,36**	**500.739,65**					

ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

From: Alain Lungungu <lungungukisoso@minfinrdc.com>
Sent: Wednesday, June 09, 2021 4:02 PM
To: Benjamin Billard <bbillard@worldbank.org>; lungungu_alain@cfef.cd; lungungu_alain@yahoo.fr; a.kibangula@yahoo.fr
Cc: Patience Balomba Mpanzu <pmpanzu@worldbank.org>; rntoto_yahoo com <rntoto@yahoo.com>; Ep^hrem LUTETE <elutete@cfef.cd>; janvier kiambu <janvierkiambu@gmail.com>; Ilunga Baka <ilungabaka@yahoo.fr>; Milaine Rossanaly <mrossanaly@worldbank.org>
Subject: Re: *IMPORTANT - Demande de commentaires du Gouvernement*: Projet de Rapport d'achèvement sur la mise en oeuvre et des résultats (ICR) préparé par la Banque mondiale pour le PDPC en Version Française - Amendements CFEF 090621

[External]
Monsieur Billard,

Nous accusons réception du document et vous félicitons pour sa qualité reflétant la vie du PDPC et la richesse des informations y contenues.

Y réagissant après revue du document, je vous remercie de trouver en pièces jointes, nos amendements anotés en track change.

Merci également de prendre en compte les observations reprises dans l'autre fichier joint.

Très franche collaboration.

Alain Lungungu

One pager of comments received from the Government

All begin with the concerned paragraph that is commented on in *italic*, then with Government additional observations *underlined* then with ICR Team responses directly below it appearing in **bold**

ICR - Paragraphe 30 : "En revanche, le projet n'a pas eu d'impact significatif sur les rendements en riz et en huile de palme des ménages cultivant ces cultures, et peu ou pas d'effet sur les autres sources de revenus non agricoles".

Gouvernement : Il est important de souligner que les rendements en riz ont accru significativement dans les zones productrices. Ce qui est à la base de l'augmentation sensible. Les rendements en riz sont passés en moyenne de 1,8 à 3,1 tonnes sur l'ensemble de l'aire du projet grâce à l'utilisation des semences améliorées et aussi des techniques de culture de riz irrigué.

ICR Team : This paragraph refers to Impact Evaluation – IE findings, for which it has been clarified in the

document with a footnote that it is important to note that "the IE did not target PDPC project beneficiaries per se (since it was not possible to identify them ex-ante) but rather a representative subsample of households in the PDPC project area, which may or may not have benefitted from its interventions. Hence, one must keep this in mind when looking at findings. However, restricting the analysis to villages that benefitted from the project does not substantially change results". Finally, paragraph 29 does acknowledge that PDPC contributed to increase rice yield from 1.8 tons/ha to 3.1 tons/ha.

ICR - Paragraphe 33. Cette plateforme bénéficiera directement à près de 21.000 ménages de la région de Lukula et de Tshela, avec un accès à une infrastructure de transformation industrielle et à de meilleurs prix pour leurs produits. Un opérateur privé pour gérer cette plate-forme doit encore être sélectionné.

Gouvernement: Il est important de faire observer que les 21.000 ne se réfèrent qu'aux ménages structurés dans la zone. D'autres ménages (Lukula et Tshela) estimés à plus de 100. 000 seront également bénéficiaires de la plateforme dec Lukula. En outre il est important de préciser le processus de sélection de l'opérateur de la plateforme de Lukula.

ICR Team : The 100,000 figure of beneficiaries is not found in the Government ICR while the 21,000 figure of structured households is taken of other official reports that were used for this paragraph.

ICR - Paragraphe 55.

Décaissements 57.6 millions dollars EU
0.57 (57%)

Gouvernement : dans le calcul de la notation partagée il a été utilisé un taux de décaissement de 57%. A mon avis ce chiffre semble erroné. C'est 99%, je pense.

ICR Team : The 57% disbursement figure is taken from the Split rating evaluation table for which it is necessary to split disbursement figures before and after restructuring. Hence, the reason behind the 57% figure.

ICR - Paragraphe 66.

(1) On ne détecte pas d'impact significatif du projet sur les rendements du riz et de l'huile de palme parmi les ménages qui les cultivent, et on ne note peu voire pas d'effet sur les autres sources de revenu non agricoles.

(2) Ces résultats suggèrent que le PDPC a entraîné une adaptation de l'activité des ménages, qui ont évolué des activités de commercialisation de leurs cultures à la transformation. Ces effets peuvent représenter des couts d'ajustement associés à cette adaptation de leur activité économique.

(3) Comparativement aux objectifs de rendements visés dans le CdR pour les cultures de manioc, de riz et d'huile de palme, les estimations obtenues à la fin du projet sont inférieures aux résultats attendus pour le manioc et l'huile de palme, et supérieures pour le riz. En effet, les objectifs de rendements visés dans le CdR étaient respectivement de 20 tonnes /ha comparé à 6,06 tonnes/ha estimé pour le manioc, 3 tonnes/ha comparé à 5,08 tonnes/ha pour le riz et 10 tonnes/ha comparé à 1,71 tonnes/ha pour l'huile de palme. Cependant, la productivité médiane montre des valeurs faibles pour le manioc (1,66 tonnes/ha), le riz (1,33 tonnes/ha) et l'huile de palme (0,93 tonnes/ha).

(1) Gouvernement: Même observation faite pour le point 30.

(2) Gouvernement: Il est appréciable d'observer la réduction de la production commercialisée brute au profit de la production transformée. Ce résultat est bon pour un projet de développement des chaînes de valeur.

(3) Gouvernement : C'est le volume de production réalisé par les ménages accompagnés qui est inférieur et non les rendements. Au regard des valeurs moyennes obtenues, les rendements médians présentés dans le document sont incorrects. Il se pose probablement un problème de calcul.

ICR Team: (1) and (3) These are IE findings and see above our response about paragraph 30, which was also about IE . Regarding (2), well noted thanks.

Paragraphe 78. Mécanisme de gestion des plaintes - MGP. Un MGP était en place à l'UCP ainsi qu'au CFEF. Les bénéficiaires avaient également la possibilité d'envoyer leurs plaintes par la poste ou de le….

Gouvernement: Envoyer par courrier (la poste ne fonctionne pads dans la zone du projet.

ICR Team : Well noted, correction made.

****

Other: some changes (mostly editorial) were made by the Government in a word copy of ICR sent to the WB. The changes were included in the English version of ICR only when relevant.

ANNEX 6. SUPPORTING DOCUMENTS (IF ANY)

Project Appraisal Document for the Western Growth Poles Project, WB, May 15, 2013
Financing Agreement, WB, July 22, 2013
Implementation Status & Results Reports
Aide-Memoires and Managing Letters
Restructuring Papers (4)
Country Assistance Strategy for DRC, WB, April 12, 2013
National Agricultural Development Program, Project Information Document, WB, July 2019
DRC SEZ Program Project Completion Report, IFC, May 2013

Reports in French by PDPC/CFEF
Rapport d'Achèvement du Projet, Octobre 2020
Rapport d'Activités à fin Septembre 2020
Manuel de procédures du système de suivi-évaluation du PDPC, Février 2015 (Version provisoire
Avant-Projets Sommaires des Plateformes Agro-Industrielles de Kimpese, Lukula et Tshela, Octobre 2017
Rapport de Clôture du Projet, Volet Social et Environnemental
Enquête d'impact et de satisfaction sur les réformes menées en rapport avec les indicateurs Doing Business, Rapport Définitif, Atraxis Group
Rapport de Satisfaction des Bénéficiaires du Projet, Rapport Final, Octobre 2020
Convention de Maitrise d'Ouvrage Déléguée entre CFEF et SNV, Février 2016
Mission d'Evaluation du Portefeuille Agricole du PDPC, Emmanuel Bayle Octobre 2020
Impact evaluation report, November 2020

ANNEX 7. IMPACT EVALUATION REPORT

EXECUTIVE SUMMARY

This report presents the results of a follow-up survey of PDPC beneficiaries, and the short term results of the impact evaluation of the PDPC project intervention on the economic outcomes of beneficiaries. Using a rigorous methodology for impact evaluation, the matched-control differences-in-differences method, the study aimed to identify and measure the impacts attributable to the PDPC on beneficiaries in the project area.

This impact evaluation report[39] is based on the analysis of data collected during the baseline survey in December 2015 and data collected at the end of the project in July 2019 with the same households. The main findings are summarized below:

- The project's beneficiary households are generally small-scale farmers with plots totaling about 2.38 ha.
- There is little diversification of household members' activities outside of agriculture. Few household members are engaged in non-agricultural or wage sectors. Those who are wage earners generally have short-term contracts that do not exceed one month of work in a year.
- The results of the impact analysis suggest that the PDPC resulted in a significant increase in the productivity of cassava-growing households. The project also improved household farm income and had a positive impact on the processing of agricultural products. In contrast, there was no significant impact of the project on rice and palm oil yields among households growing these crops, and little or no effect on other non-agricultural sources of income. Sales of unprocessed agricultural products and total household income appear to have stagnated or declined. These results suggest that the CDP has led to an adjustment in household activity, as households have shifted from marketing their crops to processing. These effects may represent adjustment costs associated with changes in their economic activity.
- Compared to the yield targets set in the results framework for cassava, rice, and palm oil, the estimates obtained at the end of the project are lower than expected for cassava and palm oil, and higher for rice. Indeed, the yield targets set out in the logical framework were 20 tons/ha compared to an estimated 6.06 tons/ha for cassava, 3 tons/ha compared to 5.08 tons/ha for rice, and 10 tons/ha compared to 1.71 tons/ha for palm oil. However, median productivity shows low values for cassava (1.66 t/ha), rice (1.33 t/ha), and palm oil (0.93 t/ha).

[39] It is important to note that the impact evaluation did not target PDPC project beneficiaries per se (since it was not possible to identify them ex-ante) but rather a representative subsample of households in the PDPC project area, which may or may not have benefitted from its interventions. Hence, one must keep this in mind when looking at findings. However, restricting the analysis to villages that benefitted from the project does not substantially change results.

Introduction

The Government of the Democratic Republic of Congo applied for and received a US$110 million grant from the World Bank to finance the Western Growth Poles Development Project (PDPC). The project was implemented during the period 2013-2019 and mainly covered the province of Kongo Central, with a complementary Special Economic Zone in the city-province of Kinshasa. The objectives of the PDPC were to generate approximately 11,000 jobs, increase incomes for nearly 50,000 farmers, and benefit at least 10 large businesses and 30 SMEs.

The main objective of the project was to increase productivity and employment in the cassava, rice and palm oil value chains in target areas of the province. Component 1 of the project focused on strengthening agricultural supply capacity in three value chains, was expected to increase the incomes of nearly 50,000 farmers (40% of whom were women) and rehabilitate 500 kilometers of rural roads. Component 1 covered the perimeter of six growth poles identified in Central Kongo: the poles of Boma, Lukula, Tshela, Kimpese, Mbanza-Ngungu, and Inkisi.

An impact evaluation was integrated into the design and implementation of the project to determine the effects at all levels of the results chain. The impact evaluation also provided input into the indicators of the project's monitoring and evaluation system. As part of this impact evaluation, two surveys of agricultural households in the intervention zone were conducted: a baseline survey and a follow-up survey. The baseline survey was conducted in December 2015, before the start of field activities that could have an impact on beneficiaries. It provided a baseline of the project's key indicators. At the end of the project, the follow-up survey was conducted in July 2019 among the same households to study the evolution of the beneficiaries' realities.

This report is divided into four sections. Section 1 presents the PDPC intervention with producers. Section 2 presents the impact evaluation. Section 3 summarizes the analysis of the Follow-up survey data on the indicators of the results framework of Component 1 of the PDPC. Section 4 presents the analysis of the impact of the PDPC on economic indicators of beneficiary households.

1. Summary of PDPC intervention

During its implementation, the PDPC provided support to the various links in the value chain of the crops targeted by the project (cassava, rice, and palm oil) to the beneficiary producers in the project's intervention zone. Specifically, the project supported the structuring of farmers' organizations, production, storage, processing, and marketing of products. In addition to strengthening producers' capacities through extension services, the PDPC has also provided producers with quality agricultural inputs, equipment, and infrastructure.

Producer capacity development:

TTable 1 shows the cumulative number of farm households trained by the PDPC, by territory and by training theme, in November 2019. The different PDPC training themes covered good agricultural harvesting and production practices, plant disease management, processing and marketing of agricultural products. The databases of agricultural households in each pole were collected by the SNV (Netherlands

Development Organization) from information entered in farmer notebooks.

Table 1: Number of households trained by territory and by training theme

	Theme of the training				
Territory name	**Production**	**Disease**	**Harvest**	**Transformation**	**Production cost**
LUKULA	6 239	3 253	4 565	3 085	3 085
MADIMBA	4 092	3 145	2 799	673	2 283
MBANZA NGUNGU	1 347	1 291	1 356	30	2 080
MUANDA	9 497	9 497	9 497	0	8 996
SONGOLOLO	759	759	759	759	759
TSHELA	10 132	10 132	10 132	10 132	10 062
Total	**32 066**	**28 077**	**29 108**	**14 679**	**27 265**

Source: PDPC Recipient Training Fact Sheet

PDPC support for agricultural inputs, equipment and infrastructure

During its implementation, the PDPC provided producers with a large quantity of inputs: an estimated 46,956 tons of basic rice seed and 79,49 tons of R1 seed, 2,845,817 linear meters of basic cassava cuttings, and 8,391,328.91 linear meters of primary cuttings, and more than 882,148 oil palm seedlings were made available to producers and their organizations. The project has also rehabilitated nearly 542.2 km of rural roads. The PDPC built an electrified industrial platform that houses 31 MSMEs financed by a cost-sharing financing mechanism (source: PDPC completion report, October 2020).

2. Summary of the impact evaluation

Purpose of the study

The overall objective of the study is to collect and provide quantitative data to rigorously measure the impact of PDPC's Component 1 activities on recipient households.

Collection instruments and data collected

To collect the information necessary for the study's analyses, a quantitative questionnaire was designed. This questionnaire includes (i) a household module to collect all the information on the conditions and activities of the household, (ii) an individual module, addressed to a single farmer member of the household to obtain more detailed information, and (iii) a community module to summarize the characteristics of the villages surveyed (baseline survey only).

The household module included the following sections: socio-demographic characteristics, education, household plots, crops, inputs, agricultural production, marketing of agricultural products, storage, agricultural labor, forest products and gathering, processing, fishing, livestock and animal products, income-generating activities, other economic activities, other sources of income, health, food security, associations, housing, goods, and shocks. The individual module focused on the following topics: ethnicity and religion, decision-making, time use, time preferences and risk aversion, childcare, extension and agricultural knowledge, constraints, and credit and savings. The village module included the following

sections: socio-demographic characteristics, community infrastructure, agriculture, prices in the village, programs and projects, groups and associations, and farmers' organizations.

Scope of the survey

The scope of the survey is delineated by the project's intervention area, defined as extending 40 km from the center of the growth poles, and the control zones. All households in the area, except those residing in urban communities, were included in the sampling frame. During the baseline survey in 2015, it was difficult to obtain a reliable sampling frame due to a lack of administrative data on localities and their inhabitants. With the help of data obtained from territorial administrations and the assistance of key informants, a list of all villages in the target area was prepared for a two-stage sampling (villages as primary sampling units, then households). To replicate the eligibility criteria defined by the project, the sampling frame was limited to villages with at least one farmer organization, based on administrative data obtained and the opinion of key informants at the territory and sector level. The village frame was then stratified on two variables to ensure the representativeness of certain characteristics in the final sample: the presence of target crops (cassava, rice, oil palm), and distance to a road to be rehabilitated by the project.

The growth poles, as defined by the project, are overlapping; a village may, for example, be in both the pole of Inkisi and Mbanza Ngungu. To facilitate data analysis and interpretation of results, data were disaggregated by territory - actual administrative entities that are mutually exclusive - rather than by project-defined clusters. The Boma cluster corresponds roughly to the territory of Muanda, Kimpese to Songololo plus the western part of Mbanza Ngungu, and Inkisi to Madimba plus the eastern part of Mbanza Ngungu. The other poles correspond approximately to the territories bearing the same name.

Stratification of the universe to the basic survey

In the baseline survey, the total size of the study sample was 2,931 households, including households in the treatment group (1,286) and comparison households (1,645), spread across 144 villages, including 61 treatment villages and 83 control villages.[40]

Treatment group sample

The number of households and villages to be surveyed was determined by statistical power calculations to detect a 25% increase in agricultural productivity attributable to the project. Taking into account a potential attrition rate of 20%, the resulting sample size in the intervention area (treatment group) is 1,286 households. With 20 households to be surveyed per village (a trade-off between precision of estimates and logistical feasibility), this yields 61 primary sampling units.

The sample of 61 villages was drawn randomly and by maximizing the geographic distribution of villages in the six growth pole areas while respecting stratification. Once the villages were drawn in the first stage, an exhaustive enumeration of households residing in them was carried out, thus constituting a sampling frame for the drawing of 20 agricultural households per village. The sample of households was also stratified before the random draw, allowing for at least 10 female and 10 male lead farmers in the sample for the administration of the individual module. The statistics show that a total of 6,698 household members were identified among the 1,286 households surveyed, corresponding to 5.2 individuals as the average size of households surveyed in the project intervention area.

[40] Some very small villages were supplemented with the nearest village to form a cluster-village, and in very large communities a neighborhood was sampled.

Comparison group sample

The impact evaluation methodology includes an analysis of the counterfactual effects: what would have happened if the project had not been implemented. As a result, agricultural households in comparison areas were also surveyed, selected on the basis of a quantitative similarity analysis (satellite vegetation data, population density, brightness, etc.) and qualitative data. For example, 1,645 households in the comparison group were surveyed in 83 villages in the Bulungu and Idiofa territories of Kwilu province and the territory of Seke Banza and Madimba in Central Kongo province. These households include a total of 9,186 individuals, corresponding to an average size of 5.6 people per household in the comparison group sample.[41]

Follow-up data collection

The follow-up survey was conducted in July 2019 by the CARDE-LEADD Consortium, with support from the World Bank's Africa Gender Innovation Lab. Unlike the baseline survey, which was administered in paper format, the follow-up survey was administered with questionnaires programmed with SurveyCTO software on tablet computers.

The follow-up survey targeted the same households and individuals who were surveyed in the baseline survey. A total of 2,657 households were surveyed in the treatment and comparison groups. Of the 1,286 households surveyed in the treatment group in the baseline survey, 1,174 households were surveyed in the follow-up survey. This corresponds to an attrition rate of 8.7%. Thus, the survey collected information on a total of 5,958 household members (instead of 6,698). In contrast, for the comparison group, it was possible to collect information during the follow-up survey on 1,483 of the 1,645 households (i.e., 9.8% attrition rate in the comparison group). Similarly, the number of household members on whom information was collected decreased from 9,186 to 7,789 individuals.

3. Analysis of follow-up survey data

The data analyzed in this section were collected from producers in the PDPC intervention area (treatment group) during the follow-up survey to inform the PDPC's monitoring and evaluation system.

Composition of households surveyed and characteristics of their plots

Composition of households surveyed

- In the final survey, a total of 1,174 households were surveyed in the project's area of intervention. On average, these households consist of 5.1 people, including 2.1 people aged between 15 and 64 (labor force).
- Less than a quarter of households (about 24%) have a female head of household. We note that the territories of Madimba and Songololo, with the highest proportions (36%) of female heads of household, also have smaller average household sizes.

[41] The number of comparison households is slightly higher to account for a rate of loss due to non-matching of households.

Table 2: Composition of surveyed households

Territory	Number of households	Households with female head of household [%]	Household size [average]	Number of adults (15-64 years) [average]
LUKULA	356	14	5.7	2.2
MADIMBA	265	36	4.4	1.8
MBANZA NGUNGU	94	25	5.2	2
MUANDA	130	27	4.8	2.1
SONGOLOLO	98	36	4.5	2.1
TSHELA	231	17	5.3	2.2
Total	**1 174**	**24**	**5.1**	**2.1**

Source: PDPC Follow-up Survey, July 2019

Characteristics of the plots of the households surveyed[42]

- Information was collected for a total of 6,549 plots, with an average of 5.57 plots per household. Of these plots, about 24% were cultivated last year (2019). The territory of Tshela has the highest proportion of plots exploited with 33% (in number), unlike the territory of Mbanza Ngungu where only 18% of the plots were exploited. Indeed, it is also observed that, on average, households in these territories have the largest (7) and small (4.65) number of plots, respectively.

- In general, the households surveyed have small plots. The average area of a sample field is 0.46 ha. At the household level, the sum of the field area is about 2.38 ha. Additionally, households in Lukula Territory have larger plots (individually and cumulatively).

Table 3: Field characteristics of surveyed households

Territory name	N. total of plots	N. of plots per household	Average size of a field [ha]	Total area of household plots [ha]	% of plots operated in the last year (N)
LUKULA	1 824	5.12	0.74	3.47	20
MADIMBA	1 562	5.89	0.35	2.04	21
MBANZA NGUNGU	658	7	0.25	1.84	18
MUANDA	913	7.01	0.28	1.71	25
SONGOLOLO	517	5.28	0.28	1.27	32
TSHELA	1 075	4.65	0.43	2.13	33
Total	**6 549**	**5.57**	**0.46**	**2.38**	**24**

Source: PDPC Follow-up Survey, July 2019

[42] For the calculation of the average size and cumulative size of the plots, the values above the 99th percentile were not included.

Employment of household members

Different categories of household members' activities

- More than half (61%) of households have at least one member who works in agricultural production. There are also households that have at least one member who are entrepreneurs (15%) or wage earners (13%). There are also some households (10%) who have at least one member in each type of agricultural and entrepreneurial activity. Only 8% of households have at least one wage earning household member and one farmer household member.

Table 4: Activity categories of household members

	Agriculture		Non-farm business		Breeding		Employee		Agriculture & business		Agricultural & Wage	
Territory	**N**	**% row**	**N**	**% row**	**N**	**% row**	**N**	**% row**	**N**	**% row**	**N**	**% row**
LUKULA	189	53	63	18	3	1	56	16	34	10	31	9
MADIMBA	150	57	39	15	4	2	31	12	20	8	19	7
MBANZA NGUNGU	45	48	9	10	0	0	14	15	4	4	7	7
MUANDA	99	76	15	12	1	1	14	11	13	10	10	8
SONGOLOLO	55	56	9	9	0	0	13	13	7	7	6	6
TSHELA	179	78	41	18	2	1	29	13	34	15	24	10
Total	**717**	**61**	**176**	**15**	**10**	**1**	**157**	**13**	**112**	**10**	**97**	**8**

Source: PDPC Follow-up Survey, July 2019

Main activities of household members aged 15 and over

- Nearly 70% of household members aged 15 and over have agriculture as their main activity, followed by 17% who are students, only 8% who are not in the labor force, and 5% who have non-agricultural main activities.

- Among age groups, household members aged 45 to 64 and 25 to 44 are the most active in agriculture**,** with over 92.9% and 87.5% of them working mainly in agriculture respectively. The youngest household members with ages between 15 and 24 are mostly students (49.4%).

Table 5: Main activities of household members by age group

	Agriculture		Non-agricultural		Student		Inactive		Total	
Age range	**N**	**% row**	**N**	**% row**	**N**	**% row**	**N**	**% row**	**N**	**% row**
15 to 24 years old	339	32.3	40	3.8	518	49.4	152	14.5	1,049	100
25 to 44 years old	941	87.5	73	6.8	30	2.8	32	3	1,076	100
45 to 64 years old	809	92.9	53	6.1	0	0	9	1	871	100
>64 years old	219	75.5	10	3.4	0	0	61	21	290	100
Total	**2,308**	**70**	**176**	**5**	**548**	**17**	**254**	**8**	**3,286**	**100**

Source: PDPC Follow-up Survey, July 2019

Main activities of adult household members

- The main activity of members between the ages of 15 and 64 is farming (69.7%). Among the territories, the rate of household members of the active population whose main activity is agriculture is higher in Mbanza Ngungu (78.1%) and lower in Madimba (65%). Non-agricultural activity is more intense in Muanda territory, encompassing nearly 8% of the active population. The territories of Madimba and Tshela respectively have working populations with the highest rates of students (23.1%) and inactive people (13.2%).

- The proportion of women whose main activity is agriculture is higher (76.7%), while among men, there are higher rates of students (21.8%) or men who have main non-agricultural activities (8.1%).

- Of the active household members, only 4% are wage earners, while the remaining 96% are self-employed. It can be seen that 89% of the self-employed household members are in the agricultural sector, while 90% of the members of households carrying out a salaried activity are in the non-agricultural sector.

Table 6: Main activities of adult household members (15-64 years)

	Agriculture		Non-agricultural		Student		Inactive		Total	
	N	% row	N	% row	N	% row	N	% row	N	% row
Name Territory										
LUKULA	681	68.2	49	4.9	206	20.6	62	6.2	998	100
MADIMBA	374	65	40	7	133	23.1	28	4.9	575	100
MBANZA NGUNGU	178	78.1	10	4.4	35	15.4	5	2.2	228	100
MUANDA	249	76.6	26	8	39	12	11	3.4	325	100
SONGOLOLO	184	76	11	4.5	43	17.8	4	1.7	242	100
TSHELA	423	67.4	30	4.8	92	14.6	83	13.2	628	100
Total	**2,089**	**69.7**	**166**	**5.5**	**548**	**18.3**	**193**	**6.4**	**2,996**	**100**
Gender										
Male	902	62.3	118	8.1	316	21.8	112	7.7	1,448	100
Woman	1,187	76.7	48	3.1	232	15	81	5.2	1,548	100
Total	**2,089**	**69.7**	**166**	**5.5**	**548**	**18.3**	**193**	**6.4**	**2,996**	**100**
Compensation										
Own account/unpaid activity	2,086	89.1	77	3.2	178	7.6			2,339	100
Wage/paid labor	4	4.3	90	95.7	0	0			94	100
Total	**2,089**	**85.9**	**166**	**6.8**	**178**	**7.3**			**2,433**	**100**

Source: PDPC Follow-up Survey, July 2019

Employment of surveyed household members (adults 15-64 years)

- About 38.8% of household members in the labour force said they were not engaged in any paid employment. This proportion is higher among women (43.5%) and household members in the Lukula territory.

Table 7: Employment of surveyed household members (adults 15-64)

	No paid employment[43]		At least one paid job		Total	
	N	% row	N	% row	N	% row
Name Territory						
LUKULA	428	46	503	54	931	100
MADIMBA	207	38	338	62	545	100
MBANZA NGUNGU	68	30.5	155	69.5	223	100
MUANDA	108	34.3	207	65.7	315	100
SONGOLOLO	95	39.9	143	60.1	238	100
TSHELA	181	33	368	67	549	100
Total	**1,087**	**38.8**	**1,714**	**61.2**	**2,801**	**100**
Gender						
Male	449	33.6	886	66.4	1,335	100
Woman	638	43.5	828	56.5	1,466	100
Total	**1,087**	**38.8**	**1,714**	**61.2**	**2,801**	**100**

Source: PDPC Follow-up Survey, July 2019

Number of non-household wage jobs (adults 15-64 years)

- Among household members with salaried activities outside the household, we find that more than half (53.6%) of these jobs are in the non-agricultural sector and about 40.8% of these jobs are in agricultural production (cassava, rice, palm oil).

- Most non-household wage activities (88%) are short-term, i.e., less than 30 days. For women, the majority (64.5%) of these non-household wage activities are in agricultural value chains, while for men, the majority of non-household wage activities are non-agricultural (59.6%).

[43] Paid employment is defined as own-account or salaried work (family help and unpaid farm work are not included).

Table 8: Wage and salaried activities outside the household (adults 15-64 years)

	Agricultural wage-earning activity, value chains		Salaried agricultural activity, excluding value chains		Non-agricultural salaried activity		Total	
	N	% row	N	% row	No.	% row	No.	% row
Name Territory								
LUKULA	7	19.4	2	5.6	27	75	36	100
MADIMBA	15	51.7	0	0	14	48.3	29	100
MBANZA NGUNGU	9	64.3	1	7.1	4	28.6	14	100
MUANDA	1	11.1	0	0	8	88.9	9	100
SONGOLOLO	7	63.6	0	0	4	36.4	11	100
TSHELA	12	46.2	4	15.4	10	38.5	26	100
Total	**51**	**40.8**	**7**	**5.6**	**67**	**53.6**	**125**	**100**
Gender								
Male	31	33	7	7.4	56	59.6	94	100
Woman	20	64.5	0	0	11	35.5	31	100
Total	**51**	**40.8**	**7**	**5.6**	**67**	**53.6**	**125**	**100**
Duration Employment								
Less than 30 days employment	46	41.8	5	4.5	59	53.6	110	100
Employment of 30 days or more	5	33.3	2	13.3	8	53.3	15	100
Total	**51**	**40.8**	**7**	**5.6**	**67**	**53.6**	**125**	**100**

Source: PDPC Follow-up Survey, July 2019

Profile of household members' non-farm businesses

- Household members' businesses fall into 7 categories, the most important of which are non-agricultural trade businesses (44%), agricultural[44] resale businesses (21%), and service, repair, and craft businesses (15%).
- These businesses have average operating times of 6 years. Restaurant and agricultural resale businesses have the longest operating times, 11 years and 9 years respectively.

[44] These sales are of agricultural products purchased and resold. They do not include the harvest from household plots.

Table 9: Characteristics of non-farm businesses of household members

Company categories	N companies	Average operating time in years	Average monthly sales (CF)
Trade/shop/wholesale	83	3	256,770
Resale of agricultural products	40	9	96,472
Sale of meals/snacks	12	11	49,667
Handicraft and repair	28	9	56,036
Transport	9	1	181,611
Artisanal mine	8	6	34,714
Traditional medicine and other	9	4	20,337
Total	**189**	**6**	**155,826**

Source: PDPC Follow-up Survey, July 2019

Characteristics and yields of household plots

Yield calculations

Estimated production

We include two types of production: observed production and expected production. The observed production estimate was for harvests of seasonal crops planted in Season A 2017 and Season B/C 2018, and harvests of perennial crops in the past 12 months. If a crop on a field was not yet fully harvested, the respondent was asked to estimate the proportion that remained to be harvested to extrapolate expected production. If a crop had been harvested more than once (which is very common for cassava), information was collected on the number of partial harvests and the amount harvested each time. For each household, we calculated the total observed production and the total expected production by summing the harvested production and the expected production of the household's plots for each crop type, respectively.

Estimated area

We include two types of area: field area and harvested field area. For each crop, the estimate of field area was based on the size of the field where the crop was grown. The area farmed was then calculated by multiplying the field size by the proportion of the field farmed to grow a given crop. The total area per household and the total area farmed per crop per household is obtained by calculating the sum of the field area and the sum of the area farmed per crop at the household level respectively.

Estimated yields

Finally, we present two different sets of results on agricultural yields at the household level: observed yield and expected yields. The observed yield is calculated by dividing the total observed production of a crop by the total area on which it was farmed. The expected yield was calculated by dividing the total production expected by the farmer by the end of the harvest over the area farmed. Since yield estimates are noisy, we present two levels of truncation: first at the 5% level (truncating data below the 5th percentile and above the 95th percentile), and then at the 2.5% level. The truncated data points most likely represent data errors, not simply outliers (e.g., we find that land size reporting systematically varies

according to the original unit of reporting)[45]. For our analysis of average treatment impacts, we use the more conservative truncation of 5% to ensure our results are not unduly influenced by any such misreporting. However, we include results truncated at the 2.5% level in our descriptive statistics below to present a more complete picture. The method of truncation does not change whether observed yields are above or below project targets for any of the three main crops (cassava, rice, and palm oil).

Cassava plots

- In total, of the 6,549 household plots, 2,558 plots are mainly for cassava cultivation with an average allocation of 60% of the area. The cassava plots have an average size of 0.39 ha, with the largest plots in the territory of Lukula and the smallest plots in Songololo territory.

- During the July 2019 survey, about 83.6% of the cassava in the plots had already been harvested, averaging 837.3 kg per field.

Table 10: Characteristics of cassava plots

Territory name	Field size (ha)	Total plots allocated (N)	% field allocated to cassava	% crop harvested	Quantity harvested (kg)
LUKULA	0.7	704	70	76.6	866.3
MADIMBA	0.38	521	70	91.5	720.4
MBANZA NGUNGU	0.23	389	70	89.5	895.7
MUANDA	0.28	252	50	69.4	845.4
SONGOLOLO	0.22	321	60	86.5	779.8
TSHELA	0.45	371	50	86.7	936.4
Total	**0.39**	**2,558**	**60**	**83.6**	**837.3**

Source: PDPC Follow-up Survey, July 2019

- The household-level cassava field yield tables show average observed yields of 6.06 t/ha and 8.19 t/ha for the 5% and 2.5% truncation levels respectively, and average expected yields of 13.6 t/ha and 21.3 t/ha. Households in Muanda and Songololo territories reported the highest average yields. In terms of area cultivated, households in Lukula reported having the largest areas, while households in Mbanza Ngungu produced the largest quantities.

[45] For more on land size misreporting, see Carletto, Savastano, and Zezza (2013); Holden and Fisher (2013); Carletto, Gourlay, and Winters (2015).

Table 11: Cassava field yields at the household level (5% truncation)

Territories	Average area per household (ha)	Average area cultivated per household (ha)	Average quantity produced (t)	Average expected quantity (t)	Average observed yield t/ha	Median observed yield T/ha	Average expected yield t/ha	Median expected yield T/ha
LUKULA	1.47	1	1.81	2.78	4.18	1.01	8.38	1.54
MADIMBA	0.87	0.62	1.23	1.43	6.53	2.12	10.88	3.53
MBANZA NGUNGU	1.07	0.73	2.38	3.23	5.96	2.58	13.96	5.42
MUANDA	0.73	0.43	1.34	3.11	7.58	2.86	23.16	8.67
SONGOLOLO	0.89	0.53	1.96	2.74	9.71	1.82	22.82	4.44
TSHELA	0.99	0.5	1.25	1.79	7.28	1.55	15.18	3.42
Total	**1.13**	**0.72**	**1.62**	**2.39**	**6.06**	**1.66**	**13.06**	**3.44**

Source: PDPC Follow-up Survey, July 2019

Table 12: Yields of cassava plots at household level (2.5% truncation)

Territories	Average observed yield t/ha	Median observed yield T/ha	Average expected yield t/ha	Median expected yield T/ha
LUKULA	4.1	1	7.89	1.45
MADIMBA	7.96	1.9	26.59	3.44
MBANZA NGUNGU	7.57	2.63	41.19	5.85
MUANDA	9.94	2.86	31.92	8.18
SONGOLOLO	20.12	2	55.88	5.73
TSHELA	11.41	1.55	18.74	3.32
Total	**8.19**	**1.63**	**21.3**	**3.45**

Source: PDPC Follow-up Survey, July 2019

Rice plots

- There are few household plots allocated to rice cultivation (446). Rice plots were counted in three territories: in Lukula with the largest allocation (316) and the largest areas (0.72 ha), in Tshela and Muanda (only 4 plots).
- During the survey, about 76% of the rice had already been harvested, averaging 801 kg per field.

Table 13: Characteristics of rice plots

Territory name	Field size (ha)	Total allocated plots	% plots allocated to rice	% crop harvested	Quantity harvested (kg)
LUKULA	0.72	316	70	71.10	966.2
MADIMBA					
MBANZA NGUNGU					
MUANDA	0.09	4	60	84.40	300
SONGOLOLO					
TSHELA	0.58	126	50	74.30	1064.3
Total	**0.49**	**446**	**60**	**76.00**	**801**

Source: PDPC Follow-up Survey, July 2019

- The average observed yields are 5.08 t/ha and 8.17 t/ha for the 5% and 2.5% truncation levels for rice, respectively. This yield increases to 9.45 t/ha and 13.88 t/ha for the estimates expected[46] by producers. In terms of quantity produced per household, households in Lukula Territory reported producing the greatest quantities of rice.

Table 14: Rice field yields at household level (5% truncation)

Territories	Average area per household (ha)	Average area cultivated per household (ha)	Average quantity produced (t)	Average expected quantity (t)	Average observed yield t/ha	Median observed yield T/ha	Average expected yield t/ha	Median expected yield T/ha
LUKULA	1.24	0.86	1.37	2.3	3.82	1.14	5.77	1.39
MADIMBA MBANZA NGUNGU								
MUANDA	0.11	0.08	0.3	0.34				
SONGOLOLO								
TSHELA	0.85	0.37	1.31	1.81	7.39	1.67	16.19	4.98
Total	**1.11**	**0.7**	**1.34**	**2.13**	**5.08**	**1.33**	**9.45**	**2.66**

Source: PDPC Follow-up Survey, July 2019

[46] This high yield could be explained by the difficulty producers have in estimating the size of their plots.

Table 15: Rice field yields at household level (5% truncation)

Territories	Average observed yield t/ha	Median observed yield T/ha	Average expected yield t/ha	Median expected yield T/ha
LUKULA	8.95	1.28	11.99	1.39
MADIMBA				
MBANZA NGUNGU				
MUANDA				
SONGOLOLO				
TSHELA	6.74	1.48	17.35	4.75
Total	**8.17**	**1.35**	**13.88**	**2.58**

Source: PDPC Follow-up Survey, July 2019

Palm oil plots

- Compared to plots allocated to other crops, those allocated to palm **oil** have a large area (0.56 ha on average). However, palm trees are planted on about 40% of the area of these plots.
- On average, 745.2 kg of palm nuts were harvested per field during the survey, corresponding to 88.5% of the expected harvest.

Table 16: Characteristics of palm field yield

Territories	Field size (ha)	Total allocated plots	% plots allocated to rice	% crop harvested	Quantity harvested (kg)
LUKULA	0.71	319	50	96.80	711.5
MADIMBA	0.45	41	40	97.20	703.5
MBANZA NGUNGU	0.42	6	30	62.50	920
MUANDA	0.64	23	40	77.90	575
SONGOLOLO	0.68	3	10	100.00	780
TSHELA	0.47	137	50	92.60	795.4
Total	**0.56**	**529**	**40**	**88.50**	**745.2**

Source: PDPC Follow-up survey, July 2019

- The observed and expected yields for palm oil are respectively 1.71 and 2.76 t/ha with 5% truncation and 6.5 and 3.85 t/ha with 2.5% truncation. Yields are higher in Lukula territory with nearly 2.24 t/ha. These households also remain those who cultivated over a larger area and collected the high quantities.

Table 17: Palm field yields (5% truncation)

Territories	Average area per household (ha)	Average area cultivated per household (ha)	Average quantity produced (t)	Average expected quantity (t)	Average observed yield t/ha	Median observed yield T/ha	Average expected yield t/ha	Median expected yield T/ha
LUKULA	1.37	0.71	1.29	1.31	2.24	0.85	2.16	0.75
MADIMBA	0.83	0.44	0.74	0.76	1.57	1.3	3.59	2.23
MBANZA NGUNGU	0.47	0.16	0.92	2.45	0.46	0.46	0.93	0.93
MUANDA	0.85	0.53	0.68	1.42	1.39	0.6	4.31	1
SONGOLOLO	0.68	0.09	1.15	1.15	0.86	0.62	5.43	2.65
TSHELA	0.91	0.47	0.99	1.18	1.71	1.2	2.28	1.43
Total	**1.16**	**0.6**	**1.12**	**1.24**	**1.71**	**0.93**	**2.76**	**1.3**

Source: PDPC Follow-up survey, July 2019

Table 18: Palm field yields (2.5% truncation)

Territories	Average observed yield t/ha	Median observed yield T/ha	Average expected yield t/ha	Median expected yield T/ha
LUKULA	2.36	0.83	5.04	0.75
MADIMBA	2.38	1.3	3.59	2.23
MBANZA NGUNGU	0.46	0.46	0.93	0.93
MUANDA	32.71	0.71	4.31	1
SONGOLOLO	0.86	0.62	5.43	2.65
TSHELA	9.02	1.28	2.15	1.41
Total	**6.51**	**0.95**	**3.85**	**1.3**

Source: PDPC Follow-up survey, July 2019

4. Impact of the PDPC on economic indicators of recipient households

This section discusses the analysis of the impact of the PDPC on beneficiary households. The results presented follow the differences-in-differences methodology (DID). Data from the baseline and follow-up surveys were combined to create a comprehensive database that includes the pre- and post-PDPC treatment sample and the pre- and post-PDPC comparison sample. To allow for comparison, data from the comparison sample were matched with data from the treatment group sample based on socioeconomic characteristics.[47]

The treatment group consists of households living in the project intervention area, defined as 40 km around the center of the growth poles. However, apart from public infrastructure such as rural roads, these households are not necessarily direct beneficiaries of the project. Thus, the results of the analysis

[47] These variables include education level, marital status, gender, age of household head, proportion of land cultivated, number of plots, total area of household plots, household size, and household assets.

could underestimate the actual impact of the intervention. Nevertheless, we re-analyze our impacts taking into the account the intensity of treatment (calculated using program data on program intensity by village) and the results do not change substantially. These "treatment-on-the-treated" effects are noted for each results table in the footnotes. A second methodological note is that for each result, we report the unconditional and the conditional result. The unconditional result considers all randomly selected households in our treatment and control areas, while the conditional results restrict the analysis sample to households that were engaged in a particular activity (e.g., that reported being engaged in agricultural production when considering agricultural yields).

Yields and harvest quantity

- The conditional analysis shows a positive and significant impact of the PDPC on total farm household productivity (all crops combined). This means that when restricting the analysis to households that harvested seasonal crops planted in the 2017 A and B/C 2018 seasons and/or harvested perennial crops during the last 12 months prior to the survey, living in a growth poles village resulted in an increase in agricultural productivity compared to villages in the control group (Table 19, column 2).

- In contrast, no impact of the PDPC on total productivity is detected when the analysis is extended to the entire sample in the follow-up survey (Table 19, column 1). This impact is sometimes negative, depending on the indicator used for the different crops.

- The difference between the conditional and unconditional analysis stems from the observed decrease in the proportion of households with a positive harvest of crops planted in the seasons considered (Table 20, column 2) in the growth poles areas, relative to the change in the control areas.

- Looking at the three crops targeted by the PDPC, the effects of the project on yields of these three crops are varied. Cassava appears to have benefited from the project, with a significant increase in cassava yields (Table 19, column 3). This increase is largely due to improved yields among cassava-producing households, rather than an increase in the proportion of households producing cassava (Table 17, column 4).

- In contrast, no significant impact of the project on rice and palm oil yields is detected. The conditional analysis on non-zero rice production does not detect a significant effect (Table 17, column 6). However, there is a zero to negative effect on rice yields for the full sample (Table 17, column 5) suggesting a decrease in the proportion of households engaged in this crop relative to the control group.

- Similar results are found for palm oil: no effect when analyzing the sample restricted to palm oil producers, but the impact becomes zero or negative (depending on the indicator used) on productivity when all households in the sample are included (Table 17, column 7), suggesting a decrease in the proportion of households producing this crop. However, for new palm plantations, given the length of time it takes for oil palm to mature, starting from the 3rd year of planting until the 5th year for full production, a positive impact was not expected during the project implementation period.

Table 17: Impact on Crop Yield (W95u)

	Total CF productivity per HA (W95u)		Cassava productivity in CF per HA (W95u)		Rice productivity in CF per HA (W95u)		Palm oil productivity in CF per HA (W95u)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DID	COND DID 48	DID	COND DID 49	DID	COND DID 50	DID	COND DID 51
Final survey indicator [52]	106,8751.951***	1,370,793.717***	-879.184***	-947.393***	-146.561	-41.925	39.705	41.529
	(77,077.016)	(102,501.318)	(110.771)	(136.928)	(113.868)	(229.215)	(76.098)	(54.063)
Impact of PDPC [53]	-30,198.501	1,005,433.014***	655.998***	915.262***	-263.395**	-345.727	-195.688**	
	(124,325.626)	(203,979.605)	(175.269)	(270.962)	(130.362)	(276.804)	(85.429)	
Constant	26,641.168	28,719.914	1,286.864***	1,606.509***	322.460***	559.546***	121.768***	306.545***
	(38,316.590)	(47,255.573)	(65.286)	(83.259)	(44.985)	(64.408)	(30.668)	(35.308)
Observations	3,582	2,881	2,612	1,911	920	219	865	164
R-squared	0.174	0.288	0.085	0.103	0.246	0.160	0.154	0.078
Total households	2,125	1,986	1,906	1,492	785	184	773	156

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: PDPC Baseline and Follow-up survey

[48] Restricts analysis to households that produced cassava, rice, or palm oil

[49] Restricts analysis to households that produced cassava

[50] Restricts analysis to households that produced rice

[51] Restricts analysis to households that produced palm oil

[52] This variable is a period indicator. It takes the value 1 for the monitoring data and 0 for the reference data.

[53] This variable is an interaction (multiplication) variable between the period indicator and the treatment indicator (=1 if treatment group and 0 otherwise)

Table 20: Impact of PDPC on field cultivation and harvesting

	Cultivation indicator at household level	Harvest collection indicator at household level
	(1)	(2)
VARIABLES	DID	DID
Final survey indicator	0.225***	-0.149***
	(0.019)	(0.013)
Impact of PDPC	0.065**	-0.181***
	(0.030)	(0.022)
Constant	0.332***	0.936***
	(0.010)	(0.007)
Observations	4,410	4,410
R-squared	0.119	0.183
Total households	2,205	2,205

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: PDPC Baseline and Follow-up survey

Household income

- The analysis restricted to households that were engaged in agricultural activity shows that agricultural incomes have increased significantly in the growth pole areas (Table , column 8). This income is the sum of the total value of the harvest, the sale of animals, fishing, and the sale of livestock products. Considering the entire sample, unlike income from the sale of agricultural production, which seems to be negatively impacted, there is a positive impact on income from fishing and livestock (Table 21, columns 1, 3, and 5). However, the impact of income from the sale of agricultural products is positive for households that have harvested crops (Table 21, column 6). Considering only the sample of individuals residing in villages that benefited from the intervention[54], we note an increase in agricultural income of nearly 72% over the average income in the treatment group.

- In contrast, non-agricultural household income was negatively affected by the project (Table 22, column 7, column 8). This non-agricultural income is made up of income from businesses, salaried activities, and agricultural processing activities. There is a negative impact on wage income and a positive impact on income from product processing and no impact on income from business sales. The reduction in salaried activities seems to be the source of the decrease in non-agricultural income.

- Overall, the PDPC has had a negative to nil impact on the total income (Table 23, column 1) of households living in villages located in the nodal areas, which is made up of farm and non-farm income. However, when we analyze the components of income, we see that not all components are changing in the same direction.

[54] Households in the pole areas that have had a project intervention in their village.

Table 21: Impact of the project on household agricultural income (W95u)

	Income from fishing activities in CF (W95u)		Income from the sale of animals in CF (W95u)		Income from the sale of agricultural production CF (W95u)		Total farm income (W95u)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DID	COND DID	DID	COND DID	DID	COND DID	DID	COND DID
Final survey indicator	-1,508.823***	-3,039.632	192.112	59,500.000***	1400554.218***	1805438.532***	1727964.303***	1791902.413***
	(162.157)	(2,517.281)	(718.655)	(13,365.289)	(72,595.767)	(93,691.914)	(103,819.301)	(108,774.396)
Impact of PDPC	1,126.120***	3,039.882	2,057.565*	8,500.000	-456,791.024***	384,259.014**	216,940.168	462,868.232**
	(254.399)	(6,036.229)	(1,169.202)	(37,802.746)	(118,589.095)	(190,382.159)	(186,475.130)	(206,538.238)
Constant	1,154.236***	6,702.848***	6,199.859***	10,645.829***	7,614.667	4,841.253	39,553.943	34,332.280
	(87.501)	(661.671)	(396.734)	(736.273)	(36,308.424)	(43,427.090)	(48,725.144)	(51,241.037)
Observations	4,182	412	4,195	1,211	3,593	2,892	3,359	3,201
R-squared	0.043	0.065	0.003	0.797	0.246	0.379	0.269	0.289
Total households	2,181	389	2,186	1,203	2,136	1,996	2,175	2,123

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: PDPC Baseline and Follow-up survey

Table 22: Impact of the project on non-farm household income (W95u)

	Total sales revenue (non-ag) in CF (W95u)		Total income from salaried activities (non-ag) in CF (W95u)		Total revenue from the sale of products processed in CF (W95u)		Total non-farm income in CF (W95u)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DID	COND DID	DID	COND DID	DID	COND DID	DID	COND DID
Final survey indicator	3,647.153*	85,892.857**	-42,083.337***	-135,250.000	-7,190.290***	-13,999.201***	-43,882.315***	-36,930.595**
	(1,875.712)	(35,435.765)	(5,486.693)	(111,348.312)	(1,610.876)	(5,021.148)	(8,474.163)	(17,454.323)
Impact of PDPC	-2,567.887	-67,109.547	-30,485.448***	-284,723.357*	-7,908.357***	-5,726.405	-68,183.621***	-85,125.104***
	(3,105.773)	(58,763.568)	(8,997.338)	(145,789.163)	(2,675.519)	(6,915.391)	(13,923.099)	(24,712.562)
Constant	8,640.106***	136,110.653***	57,048.285***	367,438.509***	8,814.155***	14,893.607***	115,732.485***	159,799.938***
	(1,050.699)	(15,677.530)	(3,045.706)	(24,972.178)	(905.623)	(2,085.028)	(4,705.898)	(7,422.704)
Observations	4,148	258	4,181	444	3,857	1,978	4,220	2,709
R-squared	0.002	0.232	0.075	0.493	0.040	0.050	0.060	0.058
Total households	2,185	236	2,183	420	2,177	1,500	2,190	1,839

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: PDPC Baseline and Follow-up survey

Table 23: Impact of the project on household income (W95u)

	Total income (W95u)	
	(1)	(2)
VARIABLES	DID	COND DID [55]
Final survey indicator	930,159.364***	1,133,799.850***
	(50,830.635)	(61,012.876)
Impact of PDPC	-355,990.295***	-143,842.353
	(82,705.183)	(108,970.318)
Constant	203,912.119***	200,913.377***
	(27,994.002)	(32,051.133)
Observations	4,208	3,680
R-squared	0.170	0.236
Total households	2,196	2,168

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: PDPC Baseline and Follow-up survey

Processing and marketing

- Analyzing the impact of the PDPC on the quantity of products processed, we do not find a significant impact (Table 24, column 1 and 2). However, if we consider the IHS (inverse hyperbolic sine) specification, which allows for a better correction of outliers, we observe a positive and significant impact on the processing of agricultural products. There is a strong increase in the quantity of processed product obtained as well as an increase in the proportion of households engaged in processing activities (Table 25, column 3). This is a positive impact of the project on both the intensive and extensive margins: more households are processing agricultural products, and these households are obtaining a greater quantity of processed product.

- On the other hand, the PDPC had a negative effect on the commercialization of unprocessed agricultural products (Table 24, column 2). We also observe a decrease in the proportion of crops that is sold (Table 25, column 1). This may indicate that the decrease in raw agricultural production sold is coming from farmgate selling. The decrease in crop sales may be due to an increase in the amount that is self-consumed, stored or processed. Given the observed increase in processing, the latter explanation is likely at least part of the picture.

[55] Restricted to households with farm and non-farm income.

Table 24: Impact of the project on the quantities processed (W95u)

	Quantity of products processed in KG (W95u)		Quantity of product sold in KG (W95u)		Quantity of cassava processed in KG (W95u)		Quantity of palm oil processed in KG (W95u)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DID	COND DID [56]	DID	COND DID 57	DID	COND DID 58	DID	COND DID 59
Final survey indicator	-2,152.950***	-1,807.834***	-299.316***	-13,999.201***	-2,098.235***	-484.384***	-85.086**	-1,694.546***
	(136.331)	(194.509)	(37.639)	(5,021.148)	(151.993)	(99.851)	(39.097)	(216.772)
Impact of PDPC	272.440	81.179	-417.271***	-5,726.405	-84.165	-467.210***	-32.869	-314.005
	(218.940)	(292.967)	(63.011)	(6,915.391)	(254.859)	(140.234)	(46.751)	(340.399)
Constant	2,297.011***	2,282.736***	579.953***	14,893.607***	2,364.340***	975.160***	121.815***	2,341.985***
	(74.792)	(76.782)	(20.517)	(2 085.028)	(86.656)	(38.121)	(22.531)	(89.863)
Observations	3,472	2,530	3,945	1,978	3,246	2,066	1,280	2,304
R-squared	0.215	0.175	0.130	0.050	0.208	0.190	0.139	0.164
Total households	2,118	1,829	2,171	1,500	2,082	1,565	1,117	1,690

Standard errors in parentheses

p<0.01 ** p<0.05 * p<0.1

Source: PDPC Baseline and Follow-up survey

[56] Restricted to households that have processed a portion of the crop.
[57] Restricted to households that have sold part of their crop.
[58] Restricted to households that processed cassava.
[59] Restricted to households that processed palm oil.

Table 25: Impact of the project on % of products sold and processed (W95u)

VARIABLES	% of production sold (1) DID	% of production sold to the market (2) DID	% of production processed [60] (3) DID
Final survey indicator	-0.161***	-0.179***	-0.545***
	(0.020)	(0.023)	(0.018)
Impact of PDPC	-0.086**	-0.039	0.075**
	(0.038)	(0.043)	(0.032)
Constant	0.461***	0.564***	0.665***
	(0.010)	(0.012)	(0.009)
Observations	2,711	2,711	2,940
R-squared	0.127	0.103	0.554
Total households	1,857	1,857	1,953

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: PDPC Baseline and Follow-up survey

5. Conclusion

This report presents the socio-economic characteristics of the PDPC beneficiaries as well as the impacts of the PDPC on key outcome indicators. The results show the importance of agriculture among the activities of household members in our study sample. The PDPC generally targeted small-scale farmers with an average field size of 2.38 ha and 5 household members. Of the three targeted commodities (cassava, rice, palm oil), cassava is the dominant crop.

Compared to the yield targets set out in the results framework for cassava, rice and palm oil, the estimates, with the upper and lower extremes truncated at 5%, obtained at the end of the project are lower than the expected results for cassava and palm oil, and higher for rice. Indeed, the yield targets set out in the logical framework were respectively 20 tons/ha compared to 6.06 tons/ha and 8.19 tons/ha estimated for cassava (at 5 and 2.5% truncation), 3 tons/ha compared to 5.08 tons/ha and 8.17 tons/ha (at 5 and 2.5% truncation) for rice, and 10 tons/ha compared to 1.71 tons/ha and 6.51 tons/ha for palm oil (at 5 and 2.5% truncation). These results are promising given the relatively short project implementation time.

The results of the impact analysis suggest that the PDPC resulted in a significant increase in the productivity of cassava-growing households. The project also significantly improved household farm

[60] We restricted the analysis to 100% or less of the percentage of production processed.

income and had a significant positive impact on the processing of agricultural products. In contrast, there is no significant impact of the project on rice and palm oil yields among households growing these crops, and little or no effect on other non-agricultural sources of income. Although the analysis presents some results that are lower than the project's expected targets, there is reason for optimism given the short-term nature of the evaluation and adjustment costs for households.

Appendices

Part A: Growth Poles and Project Beneficiaries

Growth or development poles are considered points of economic growth or centers of economic activity that benefit from agglomeration economies, and through their interaction with surrounding areas spread prosperity from the center to the periphery. A growth pole is therefore characterized by a key industry or cluster, around which ancillary services and related industries develop. Therefore, the growth pole concept emphasizes an integrated approach (across sectors, space and time) focused on providing basic services in areas of potential or actual growth.

A program beneficiary, also called an individual in the treatment group, is defined as a household that benefits from one or more components of the program's package of interventions, such as improved transport infrastructure, support for cooperative structuring, access to inputs, or provision of agricultural extension services. A treated household is located in a treated village, which is within 40 km of the center of the growth pole. All growth poles are located in Bas-Congo Province. The impact should be greater where the activities are more concentrated, i.e. where households benefit from several elements of the intervention package.

The allocation of communities within the growth poles was determined using several factors, such as road quality, community demand, accessibility, agricultural potential, and need for improved technologies and extension services. Within these communities, households benefiting from the interventions are likely to be different from households that do not participate in the activities or use the services offered. To measure the impact of the intervention package as rigorously as possible, the evaluation therefore relied on matching combined with the differences-in-differences method. Multi-level matching is used to identify and control for territories, villages and households. The matching is based on the assumption that selection into the treatment group is based solely on a set of observable characteristics. A good counterfactual is a farmer who receives none of these activities but is otherwise similar in all other dimensions.

To reduce the potential for bias, we collected information at baseline on a large number of characteristics from both treatment and control households. To control for time-invariant heterogeneity, a difference-in-difference approach is also used, comparing the initial conditions of households in treatment villages and households in matched control villages to their respective outcomes after project implementation.

Part B: Impact Analysis Tables with IHSLog

Table 26: Impact of PDPC on Crop Yield (IHSLog)

	Productivity in FC per HA (IHSLog)		Cassava productivity in CF per HA (IHSLog)		Rice productivity in FC per HA (IHSLog)		Palm oil productivity in FC per HA (IHSLog)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DID	COND DID	DID	COND DID	DID	COND DID	DID	COND DID
Final survey indicator	3.650***	6.422***	-1.015***	-0.445***	-0.885	-0.139	0.995	-0.326
	(0.218)	(0.087)	(0.205)	(0.117)	(0.661)	(0.359)	(0.840)	(0.387)
Impact of PDPC	-3.652***	0.753***	-0.143	0.921***	-2.312***	0.203	-3.725***	
	(0.356)	(0.173)	(0.329)	(0.231)	(0.749)	(0.429)	(0.940)	
Constant	7.184***	7.650***	6.021***	7.219***	3.345***	6.632***	2.426***	6.713***
	(0.111)	(0.041)	(0.123)	(0.072)	(0.257)	(0.107)	(0.336)	(0.266)
Observations	3,777	3,076	2,751	2,050	962	261	907	206
R-squared	0.149	0.884	0.054	0.041	0.350	0.005	0.308	0.073
Total households	2,170	2,058	1,969	1,570	804	214	808	196
Standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								

Source: PDPC Baseline and Follow-up survey

Table 27: Impact of PDPC on Household Income (IHSLog)

	Total income (IHSLog)		Total farm income (IHSLog)		Total non-farm income (IHSLog)		Total sales revenue (non-agr) (IHSLog)		Total revenue from salaried activities (non-agr) (IHSLog)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	DID	COND DID	DID	COND DID	DID	COND DID	DID	COND DID	DID	COND DID
Final survey indicator	1.105***	2.225***	5.184***	5.169***	-1.052***	0.356	0.012	0.751	-0.794***	-0.596
	(0.202)	(0.195)	(0.132)	(0.128)	(0.232)	(0.383)	(0.142)	(0.545)	(0.164)	(0.395)
Impact of PDPC	-1.322***	-0.578*	0.594**	0.520**	-0.057	-0.448	0.120	-0.111	-0.902***	-0.622
	(0.328)	(0.345)	(0.240)	(0.243)	(0.377)	(0.540)	(0.231)	(0.732)	(0.268)	(0.540)
Constant	9.966***	10.162***	8.638***	8.896***	6.191***	8.532***	1.299***	12.516***	2.420***	13.171***
	(0.113)	(0.104)	(0.064)	(0.061)	(0.129)	(0.166)	(0.080)	(0.206)	(0.092)	(0.121)
Observations	4,410	3,881	3,543	3,385	4,410	2,899	4,338	448	4,365	628
R-squared	0.014	0.088	0.640	0.662	0.015	0.001	0.000	0.063	0.039	0.165
Total households	2,205	2,189	2,205	2,156	2,205	1,899	2,205	392	2,204	559

Standard errors in parentheses

p<0.01 ** p<0.05 * p<0.1

Source: PDPC Baseline and Follow-up survey

Table 28: Impact of CDP on the quantity of products processed (IHSLog)

	Transformed quantity obtained in KG (IHSLog)		Processed quantity sold in KG (IHSLog)		Processed quantity of cassava in KG (IHSLog)		Processed quantity of palm oil in KG (IHSLog)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	DID	COND DID	DID	COND DID	DID	COND DID	DID	COND DID
Final survey indicator	-4.722***	-1.563***	-1.768***	-2.149***	-4.564***	-1.416***	-4.007***	3.393**
	(0.131)	(0.139)	(0.130)	(0.194)	(0.138)	(0.141)	(0.508)	(1.520)
Impact of PDPC	1.629***	0.624***	0.186	1.157***	1.117***	0.075	1.121*	-1.001
	(0.205)	(0.201)	(0.210)	(0.258)	(0.224)	(0.211)	(0.594)	(1.558)
Constant	7.395***	7.471***	4.143***	6.765***	7.388***	7.517***	4.369***	4.581***
	(0.071)	(0.054)	(0.070)	(0.071)	(0.077)	(0.058)	(0.284)	(0.134)
Observations	3,646	2,704	4,123	2,244	3,408	2,466	1,325	383
R-squared	0.531	0.173	0.125	0.207	0.537	0.198	0.449	0.577
Total households	2,154	1,894	2,190	1,641	2,128	1,761	1,139	341
Standard errors in parentheses								
p<0.01 ** p<0.05 * p<0.1								

Source: PDPC Baseline and Follow-up survey

Part C Estimated yields[61] from individual field data

This section of the appendix presents the yield calculations at the plot level. Unlike the yields calculated in the main text, which are based on the ratio of the total amount produced by the household to the total area cultivated, the yields here are calculated directly for each individual field. Thus, for each field, we consider the division of the reported production by the area of that field. However, these yields have larger values because they are sensitive to errors in estimating the area of the plots. Indeed, it was noted that more than 13% of the plots have areas smaller than 100 square meters.

[61] These yields have higher values because they are sensitive to errors in estimating the size of the plots. In fact, it was noted that more than 13% of the plots have areas of less than 100 square meters.

Table 29: Yields in cassava plots

Territories	Average area per household (ha)	Average area cultivated per household (ha)	Quantity produced (t)	Expected quantity (t)	Observed yield t/ha	Expected yield t/ha
LUKULA	0.51	0.34	0.78	1.14	10.87	23.27
MADIMBA	0.35	0.24	0.72	0.83	25.26	38.71
MBANZA NGUNGU	0.23	0.14	0.79	0.98	33.84	68.64
MUANDA	0.26	0.15	0.83	1.25	14.75	81.23
SONGOLOLO	0.2	0.11	0.78	0.94	51.35	94.69
TSHELA	0.43	0.21	0.77	1.03	20.25	34.11
Total	**0.36**	**0.22**	**0.77**	**1**	**27.38**	**53.78**

Source: PDPC Baseline and Follow-up survey

Table 30: Palm oil field yields

Territories	Average area per household (ha)	Average area cultivated per household (ha)	Quantity produced (t)	Expected quantity (t)	Observed yield t/ha	Expected yield t/ha
LUKULA	0.63	0.27	0.67	0.73	2.36	9.53
MADIMBA	0.45	0.19	0.64	0.78	3.65	9.78
MBANZA NGUNGU	0.42	0.15	0.92	2.45	0.92	6.54
MUANDA	0.58	0.21	0.58	0.87	0.41	9.85
SONGOLOLO	0.68	0.09	1.15	1.15	1.8	14.4
TSHELA	0.45	0.23	0.78	0.8	2.47	5.03
Total	**0.56**	**0.25**	**0.69**	**0.77**	**2.42**	**8.61**

Source: PDPC Baseline and Follow-up survey

Table 31: Rice field yields

Territories	Average area per household (ha)	Average area cultivated per household (ha)	Quantity produced (t)	Expected quantity (t)	Observed yield t/ha	Expected yield t/ha
LUKULA	0.62	0.4	0.82	1.2	7.85	21.85
MADIMBA						
MBANZA NGUNGU						
MUANDA	0.12	0.08	0.3	0.34		
SONGOLOLO						
TSHELA	0.58	0.28	0.76	1.24	8.82	43.42
Total	**0.61**	**0.36**	**0.8**	**1.2**	**8.18**	**29.46**

Source: PDPC Baseline and Follow-up survey

ANNEX 8. NOTE ON MALUKU SEZ

Success story of the pilot Maluku Special Economic Zone in the Democratic Republic of Congo

The 244ha Maluku pilot Special Economic Zone (SEZ) in the DRC, in the Kinshasa province, was first framed through IFC's SEZ program, which was established at the request of the DRC's Ministry of Industry in 2008. The program, which ended in 2012, allowed to (i) identify a viable site; (ii) deliver technical preparatory studies, including a Master Plan, an Environmental and Social Impact Assessment (ESIA) and the Resettlement Action Plan (RAP) for the Zone; and (iii) create an legal SEZ framework, including the SEZ law promulgated in 2014. IFC concluded that the SEZ could be made viable, and that a private developer could manage the zone as a public-private partnership (PPP).

In 2013, the Maluku SEZ program became a key component of the $110m IDA-funded Western Growth Poles Project (PDPC), developed by the Government of DRC (GoDRC) with the support of the World Bank, aiming to increase productivity and employment in selected value chains in target zones in the DRC. The project was co-led by two WB Global Practices (GP): Agriculture and Finance, Competitiveness & Innovation (FCI). The second component of the PDPC set to provide advisory services to help the GoDRC facilitate PPP, strengthen institutional capacity in SEZ development, and support development of basic physical infrastructure. Results included a fully functional national SEZ authority, the *Agence des Zones économiques spéciales* (AZES), with trained capacity (regulation and management), a PPP signed officially on January 28, 2020 with an international private developer Strategos and basic infrastructure built on site plus a 6,155 meter long protective wall constructed with project funds.

Following signing of the PPP with Strategos, IFC got reengaged in the program and is now structuring Upstream TA (advisory aimed at co-financing studies, a program which helps to prepare a project for an IFC investment) to provide practical support to pursue the development of the Zone, including strengthening of viability; reinforcement of legal and regulatory framework to support domestic investment and promote market linkages and adapted infrastructure.

The Maluku SEZ showcases a strong, sustained, and effective collaboration over more than a decade, not only between the World Bank and IFC, but also between two WB Global Practices. The collaboration stuck through piloting this intervention in a highly complex FCV and political environment, through multiple TTLship changes, several Government changes, including two presidential elections, and multiple attempts to divert the project. The way forward and the need to develop a medium to long term perspective through MPA and SOP is important.