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R2017-0059/1

March 7, 2017

**Closing Date: Friday, March 24, 2017  
at 6 p.m.**

FROM: Vice President and Corporate Secretary

**Mexico – Grain Storage and Information for Agricultural Competitiveness Project**

**Project Appraisal Document**

Attached is the Project Appraisal Document regarding a proposed loan to Mexico for the Grain Storage and Information for Agricultural Competitiveness (R2017-0059), which is being processed on an absence-of-objection basis.

Distribution:

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Report No: PAD2242

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$120 MILLION

TO THE

UNITED MEXICAN STATES

FOR THE

GRAIN STORAGE AND INFORMATION FOR AGRICULTURAL COMPETITIVENESS  
PROJECT

March 3, 2017

Agriculture Global Practice  
Latin America And Caribbean Region

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective February 23, 2017)

Currency Unit = Mexican Pesos MXN

19.71 MXN = US\$1

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

AGD	All Purpose Warehouse ( <i>Almacen General de Deposito</i> )
ASERCA	Agency for Services toward the Commercialization and Development of Agricultural Markets ( <i>Agencia de Servicios a la Comercialización y Desarrollo de Mercados Agropecuarios</i> )
BANSEFI	National Savings Bank ( <i>Banco del Ahorro Nacional y Servicios Financieros</i> )
CD	Warehouse Receipt ( <i>Certificado de Depósito</i> )
CDD	Community-Driven Development
CDI	National Commission for the Development of Indigenous Communities ( <i>Comisión Nacional para el Desarrollo de los Pueblos Indígenas</i> )
CIMMYT	International Maize and Wheat Improvement Center ( <i>Centro Internacional para el Mejoramiento de Maíz y Trigo</i> )
EA	Environmental Assessment
E-IRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
FAO	Food and Agriculture Organization of the United Nations
FIRA	Agricultural Trusts ( <i>Fideicomisos Instituidos en Relación a la Agricultura</i> )
FIRCO	Risk Sharing Trust in Agriculture ( <i>Fideicomiso de Riesgo Compartido</i> )
FOCIR	Rural Investment Fund ( <i>Fondo de Capitalización e Inversión del Sector Rural</i> )
FND	Rural Financial Development Agency ( <i>Financiera Nacional de Desarrollo Agropecuario, Rural, Forestal y Pesquero</i> )
GDP	Gross Domestic Product
GHG	Green House Gas
INAH	Instituto Nacional de Antropología e Historia
IPMP	Integrated Pest Management Plan
IPP	Indigenous Peoples Plan
MasAgro	Sustainable Modernization of Traditional Agriculture Program of SAGARPA
NAFIN	Federal Government Development Bank ( <i>Nacional Financiera</i> )
NDP	National Development Plan
NPV	Net Present Value

OECD	Organization for Economic Co-Operation and Development
PCN	Project Concept Note
PDO	Project Development Objective
PEC	Special Concurrent Program ( <i>Programa Especial Concurrente</i> )
PEF	National Budget ( <i>Presupuesto de Egresos de la Federación</i> )
PESA	Special Program for Food Security of SAGARPA ( <i>Programa Especial de Seguridad Alimentaria</i> )
PROAGRO	Program of SAGARPA
PROMEXICO	Trade and Investment Trust of the Government of Mexico ( <i>Fideicomiso para la promoción del comercio e inversión internacional</i> )
SAGARPA	Ministry of Agriculture ( <i>Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación</i> )
SFP	Ministry of Public Administration ( <i>Secretaría de la Función Pública</i> )
SHCP	Ministry of Finance ( <i>Secretaría de Hacienda y Crédito Público</i> )
SICOP	Accounting and Budget System ( <i>Sistema de Contabilidad y Presupuesto</i> )
SME	Small and Medium Enterprise
TESOFE	Treasury ( <i>Tesorería de la Federación</i> )

Regional Vice President: Jorge Familiar  
Country Director: Gerardo M. Corrochano  
Senior Global Practice Director: Juergen Voegelé  
Practice Manager: Garry Charlier (Acting)  
Task Team Leader(s): Svetlana Edmeades



**BASIC INFORMATION**

Is this a regionally tagged project? No	Country(ies)	Lending Instrument Investment Project Financing
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- Situations of Urgent Need of Assistance or Capacity Constraints
- Financial Intermediaries
- Series of Projects

Approval Date 24-Mar-2017	Closing Date 24-Mar-2022	Environmental Assessment Category B - Partial Assessment
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Bank/IFC Collaboration No	
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**Proposed Development Objective(s)**

Improve access to grain storage and information for agricultural producers in Mexico

**Components**

Component Name	Cost (US\$, millions)
Grain Storage Infrastructure and Operation	170.00
Information for Grain Management, Markets and Monitoring	25.00

**Organizations**

Borrower : Secretaría de Hacienda y Crédito Público (SHCP)

Implementing Agency : Secretaria de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SAGARPA)  
 Agencia de Servicios a la Comercialización y Desarrollo de Mercados Agropecuarios (ASERCA)



<input checked="" type="checkbox"/> Counterpart Funding	<input checked="" type="checkbox"/> IBRD	<input type="checkbox"/> IDA Credit	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Trust Funds	<input type="checkbox"/> Parallel Financing
		<input type="checkbox"/> Crisis Response Window	<input type="checkbox"/> Crisis Response Window		
		<input type="checkbox"/> Regional Projects Window	<input type="checkbox"/> Regional Projects Window		
Total Project Cost: 195.00	Total Financing: 195.00		Financing Gap: 0.00		
	Of Which Bank Financing (IBRD/IDA): 120.00				

**Financing (in US\$, millions)**

Financing Source	Amount
IBRD-87290	120.00
Borrowing Country's Fin. Intermediary/ies	60.00
Local Farmer Organizations	15.00
<b>Total</b>	<b>195.00</b>

**Expected Disbursements (in US\$, millions)**

Fiscal Year	2017	2018	2019	2020	2021	2022
Annual	0.12	15.00	35.04	45.00	14.04	10.80
Cumulative	0.12	15.12	50.16	95.16	109.20	120.00

**INSTITUTIONAL DATA****Practice Area (Lead)**

Agriculture



**Contributing Practice Areas**

**Gender Tag**

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

**SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)**

Risk Category	Rating
1. Political and Governance	● Moderate
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Substantial
5. Institutional Capacity for Implementation and Sustainability	● Substantial
6. Fiduciary	● Substantial
7. Environment and Social	● Moderate
8. Stakeholders	● Low
9. Other	
10. Overall	● Substantial

**COMPLIANCE**

**Policy**

Does the project depart from the CPF in content or in other significant respects?

Yes  No



Does the project require any waivers of Bank policies?

Yes  No

**Safeguard Policies Triggered by the Project**

**Yes No**

Environmental Assessment OP/BP 4.01

✓

Natural Habitats OP/BP 4.04

✓

Forests OP/BP 4.36

✓

Pest Management OP 4.09

✓

Physical Cultural Resources OP/BP 4.11

✓

Indigenous Peoples OP/BP 4.10

✓

Involuntary Resettlement OP/BP 4.12

✓

Safety of Dams OP/BP 4.37

✓

Projects on International Waterways OP/BP 7.50

✓

Projects in Disputed Areas OP/BP 7.60

✓

**Legal Covenants**

**Sections and Description**

Schedule 2, Section I (A.1(a)). No later than forty five (45) days from the Effective Date, or any other date as shall be agreed by the Bank, designate and thereafter maintain, throughout Project implementation, a team within ASERCA with functions and responsibilities acceptable to the Bank, which shall be responsible for overall Project coordination and day to day implementation of the Project, and staffed with personnel in adequate numbers, with qualifications, experience and terms of reference satisfactory to the Bank and set forth in the Project Operational Manual.

Schedule 2, Section I (C.1). For purposes of implementing Part 1.1 of the Project, immediately upon the selection and approval of a Grain Storage Subproject pursuant to the eligibility criteria and procedures established in the POM, the Borrower, through SAGARPA (through ASERCA), shall provide Direct Support , to the relevant Eligible Producer Organization pursuant to an agreement (Subproject Agreement) to be entered between the Borrower, through SAGARPA (through ASERCA), and the Eligible Producer Organization, under terms and conditions acceptable to the Bank.

Schedule 2, Section I (E.1). The Borrower, through SAGARPA (through ASERCA) shall carry out the Project in accordance with the EMP and the IPP. Except as otherwise agreed by the Bank, the Borrower, through SAGARPA (through ASERCA), shall not amend, abrogate, waive, or fail to enforce the EMP and/or IPP or any of their provisions.

**Conditions**

Type	Description
Effectiveness	The Contrato de Mandato has been duly executed by the parties

**PROJECT TEAM****Bank Staff**

Name	Role	Specialization	Unit
Svetlana Edmeades	Team Leader(ADM Responsible)	Sr. Agriculture Economist	GFA04
Francisco Rodriguez	Procurement Specialist(ADM Responsible)	Procurement	GGO04
Luis Barajas Gonzalez	Financial Management Specialist	Financial Management	GGO22
Angel Alberto Yanosky	Environmental Specialist	Environment	GENDR
Arelia Jacive Lopez Castaneda	Safeguards Specialist	Social	GSU04
Elena Segura Labadia	Team Member	Legal	LEGLE
Ifeyinwa Uchenna Onugha	Team Member	Market Analyst	GTCCS
Jose C. Janeiro	Team Member	Disbursement	WFALA
Juan Carlos Serrano-Machorro	Team Member	Finance	GGO22
Katie Kennedy Freeman	Team Member	Economist	GFA04
Panayotis N. Varangis	Team Member	Finance	GFM3A
Roy Parizat	Team Member	Economist	GFAGE

**Extended Team**

Name	Title	Organization	Location
Erika Felix		FAO	
Javier Jahnsen	Consultant, Institutional Management Specialist		Bolivia
Mario Castejon	Agr. Economist / FAO		Panama,
Yerania Sanchez	JPO/FAO		Panama,





MEXICO

**GRAIN STORAGE AND INFORMATION FOR AGRICULTURAL COMPETITIVENESS**

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## I. STRATEGIC CONTEXT

### A. Country Context

1. The Mexican economy has been expanding at a moderate annual rate of 2.6 percent in 2015, similar to other OECD countries, with a slow down to about 2 percent in 2016, due to the monetary and fiscal policy response to adverse external shocks weighing down on aggregate demand. GDP growth forecasts for 2017 have been lowered further to 1.8 percent. A challenging external environment, including lower oil prices, an uncertain policy environment related to the change of administration in the United States (Mexico's largest trade partner), and a slowdown of growth perspectives in emerging market economies, has contributed to a significant depreciation of the Mexican peso, which over the past two years has lost nearly 30 percent of its value against the US dollar and continues to fall. In the short term, fiscal austerity measures are creating the need for re-thinking the role of the public sector in many economic activities and the prioritization of public spending across competing needs. In early 2016, supplementary public expenditure reductions were announced equivalent to 0.7 percent of GDP, with a process of redistribution of public resources from petrol price subsidies to social spending continuing in 2017.

2. Despite Mexico's significant economic and social improvements, stagnant productivity and insufficient inclusiveness are critical causes of persistent poverty, inequality, and regional disparities. In 2014-2015, the poverty rate stood at 46 percent (about 55.3 million people), with a higher incidence in rural and semi-urban areas. Between 2010 and 2014, annual income of the bottom 40 percent of the population grew at a trivial 0.1 percent, while the annualized mean income growth over this period was just 0.5 percent. Poverty reduction has been unequal across the territory; 5 of the 32 states (Chiapas, Mexico, Oaxaca, Puebla and Veracruz) account for 56 percent of the extreme poor in 2014. In this context, the Government of Mexico is consolidating support programs, including in agriculture, to improve poverty reduction efforts, promote productivity and leverage economies of scale. Agriculture and rural development programs represented between 0.5 percent and 2 percent of Mexico's budget over the past decade, similar to 0.8 percent to 2.4 percent observed in other OECD countries, but much less than other segments of the Mexican economy (7 percent for urban development or 3 percent for education). Agricultural budgets have been significantly reduced in the past two years, forcing a process of prioritization in the operation of current programs and search for new approaches.

### B. Sectoral and Institutional Context

3. Agriculture continues to be an important sector in the economy, accounting for around 8 percent of Mexico's GDP, when considering the forward and backward linkages created through primary production, post-harvest agro-industrial processes and food systems. The sector employs an average of 13 percent of the formal labor force in the country (7 million people). Almost one quarter of Mexico's population (representing more than 24 million people) live in rural areas and depend on agriculture for their livelihoods (45 percent of the employed rural labor force works in the primary sector). The rural poverty rate (61.6 percent) is far higher than the urban rate (40.6 percent), with rural poverty perpetuated by the low productivity of labor in the agricultural sector among other structural factors.

4. Agricultural land represents 55 percent of the total land area of Mexico (or close to 112 million hectares of arable land), with 5.5 million agricultural units devoted mostly to the production of cereals



such as maize, wheat and sorghum. One half of the agricultural land is under communal ownership (*ejido*), which has important implications for land use, particularly in the South of the country. Although only 6 percent of agricultural land is irrigated, agriculture consumes 77 percent of water in Mexico and is a source of increasing conflict, in particular in the semi-arid Northern states.

5. There are important geographical differences in the structure and performance of the agricultural sector in Mexico. In the South of the country, agriculture plays an important role for food security and as a cultural fabric for many indigenous communities, while in the North it is a key driver of economic development through commercial, export-oriented agriculture. The average productivity of the sector is low in comparison with other OECD countries and differs across regions, masking a sharp sector duality. Most agricultural producers (73 percent) are small (<5ha) and semi-subsistent, employing traditional, rain-fed production practices, and concentrated in the Center and South of the country, working on 6 percent of the total arable land. Around 5 percent are large producers (>50ha), well-integrated, and predominantly export-oriented. Farm units with more than 100 hectares represent 2 percent of the total units and concentrate two-thirds of the land dedicated to agriculture.

6. Improving agricultural productivity and competitiveness faces important challenges. Some are structural and difficult to overcome (e.g. land fragmentation), while others can be more easily tackled and gradually resolved (e.g. access to rural credit, integration into local and regional markets, information on prices, risk management, and storage capacity, capacity building for better management practices, including technological packages, inputs, etc.). While improving productivity is a core priority for the Ministry of Agriculture, there have been fewer attempts to empower small producers to assume a more active role in the commercialization of their grains and other agricultural products. This has been driven by their small scale, high risk of compliance with market quality standards, and lack of financing.

7. Storage infrastructure of agricultural commodities in Mexico is insufficient and/or inadequate, lacking the necessary equipment and norms to determine and maintain the uniformity of quality. This reduces the ability for intertemporal arbitrage for smoothing commercialization and consumption patterns of the grains and for distribution to where demand is high at the national level. Furthermore, the use of traditional storage structures has contributed to high levels of grain losses. According to the Food and Agriculture Organization of the United Nations (FAO), post-harvest losses in maize, wheat and beans range between 5 percent - 25 percent of total production, due to grain humidity and related fungal and pest problems. On farm, losses range between 13 percent - 28 percent, representing an important constraint to food security.

8. There are important grain storage infrastructure disparities between the Central/Southern states and the states located in the North of the country, where most current storage infrastructure is located. The states in the North count with modern storage facilities (warehouses) integrated with semi-mechanized and mechanized equipment, with a storage capacity between five and 50 thousand tons. These facilities are well integrated into upstream value chains such as storage, packing, and distribution, and are generally located near large urban (consumer) centers and away from agricultural production areas. In contrast, the states in the South lack the storage capacity and commercialization conditions to meet current market demands. The majority of existing silos and collection centers have not been modernized and lack the necessary equipment for grain conservation. Commercialization costs, shaped by the lack of organization, access to training and, access to market information in real time, when combined with low volumes and high transport costs, generate important financial burdens on



producers, further prohibiting participation of small agricultural units. This has also limited the interest of the private sector in working with them, further alienating them from grain supply chains in the country.

9. Access to finance is one of the biggest challenges for Mexican producers. Small and medium-sized producers have limited access to financial resources given the heterogeneous agrarian structure also linked to land tenure patterns, relying on non-traditional and informal financial services. In recent years, financial services provided by commercial banks to the agricultural sector have been reduced and many institutions dedicated to agricultural promotion have been disassembled. Credit to the agricultural sector has decreased from 1.8 percent of GDP in 1994 to 0.1 percent in 2012. Beyond the need of credit for rural production activities, there is also a need for other financial services to strengthen agricultural value chains. Integrating financial products into existing agricultural commercial systems can improve the socio-economic conditions of small and medium-sized producers.

10. Storage and financial services are closely linked. Mexico has undertaken steps to promote the development of a warehouse receipt system under the 2014 Financial Reform. Before the reform, little control over warehouses and information flows led to cases of fraud and resulted in the reduction in use and value of warehouse receipts. This atomized information on: current inventories, in- and outflows of stored goods, transactions with the deposited goods, report of certificates of deposit and pledges issued, cancelled or traded; and in certain cases, phytosanitary or animal health related information. The 2014 reforms have added government oversight to the self-regulatory system, creating a verification mechanism on the warehoused goods with a new registry, new rules for corporate governance and more stringent sanctions. This has increased trust in the system. However, scale continues to be an issue. The rural sector is perceived as too risky to lend into unless there are liquid and solid guarantees to mitigate losses; hence, only a few large-scale rural producers who have tangible assets to use as collateral have traditionally been able to access this instrument.

11. Added to these challenges are distortions in Mexican agricultural markets, which inhibit the participation of small and medium size producers. For example, spot price information for many agricultural commodities is very fragmented, and not readily available within and across regions or on a daily basis. Mexican maize prices are set using the Chicago futures market as a reference to which a “base” is added, regionally negotiated between buyers and sellers, which is then reflected in forward contracts. This negotiated “base” price is a critical market distortion inhibiting a price formation mechanism. Furthermore, the reference price of Chicago is based on trading of yellow corn<sup>1</sup>, while Mexico is the world’s largest producer of white maize, including many native varieties that are valued for their distinctive features. The use of a reference price from the Chicago futures market thus equalizes – and in many cases reduces – the values of many Mexican maize commodities. These market-price distortions have important economic implications as they reduce comparative advantages that Mexico can have in trading white maize with other large consumers (such as many African countries), as well as limits the development of local and regional markets for different maize varieties. Lack of a grain inventory database and user-friendly climate information further exacerbate the ability of producers, private and public entities to make decisions. This is true for other important crops in Mexico.

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<sup>1</sup> Although the words “corn” and “maize” are used as synonyms, in this document, corn will be used to signify the yellow type, while maize will refer to white and traditional varieties.



### C. Higher Level Objectives to which the Project Contributes

12. Through its focus on improving the competitiveness and economic opportunities of small and medium agricultural producers in poor areas of the country, the project is aligned with the World Bank Group's twin goals of ending extreme poverty and boosting shared prosperity. The proposed project is consistent with the World Bank Group's Mexico Country Partnerships Strategy (CPS) 2014-2019 (Report No. 104752). One of the four strategic themes of the CPS is Unleashing Productivity. It aims to increase competitiveness through a) removing barriers to competitiveness and promoting financial inclusion, with focus on Small and Medium Enterprises (SMEs); b) improving innovation within the private sector and supporting investments to boost productivity. The proposed project directly addresses this thematic area by focusing on increasing the competitiveness of small and medium private agricultural production units in the Center and South of the country, where poverty is widespread and indigenous populations abound, by providing access to transparent pricing information of agricultural commodities, increasing access to financial mechanisms in the sector, while strengthening the warehouse system, and supporting investments in human capital to reduce post-harvest losses.

13. The Mexican National Development Plan (NDP) 2013-2018 seeks to improve productivity in a number of areas, including the promotion and strengthening of entrepreneurship and small and medium-size businesses and the promotion of investments and competitiveness of the agriculture sector. Objective 9 of the NDP refers to improving rural producers' income by increasing Mexican presence in global markets, linking producers with value-added processes. The Plan also fixes quantitative objectives in terms of increasing the share of domestic production in the supply of main grains and oilseeds from 58 percent in 2011 to 75 percent in 2018 and bringing the agro-food trade balance from a deficit to zero. While aligning itself with the Agricultural Sectoral Plan<sup>2</sup>, the project will advance these targets by investing in infrastructure and support systems to help agricultural production units become more competitive and promoting financing and capitalization of the rural sector.

14. Mexico has also taken important steps to strengthen financial inclusion, including the creation in 2011 of two coordination bodies, the Committee on Financial Education and the National Council on Financial Inclusion. Furthermore, in June 2016, the President announced the policy for financial inclusion. This policy is aligned to the project's development objectives, as it has among its goals to increase the development of financial infrastructure and services with a special focus on the rural population living in the southern and south-eastern regions of the country.

15. The project builds off of earlier work requested by the Mexican Government (Ministry of Finance (SHCP) and the Agency for Services toward the Commercialization and Development of Agricultural Markets (ASERCA)) under the Agricultural Risk Programmatic Approach, and it is informed by analytical work done collaboratively with the Government of Mexico and FAO on benchmarking of storage systems. The project complements the World Bank's ongoing efforts to improve productive and financial inclusion of rural areas in Mexico, including the Sustainable Rural Development Project (FIRCO),

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<sup>2</sup> The plan includes five goals: 1) boost food production through investment in physical, human and technological capital; 2) promote partnerships that generate economies of scale and add value in food production; 3) safeguard the food supply through risk-management mechanisms; 4) encourage the sustainable use of natural resources; and 5) reduce the risk of food shortages in rural areas.



Savings and Credit Sector Loan (BANSEFI), Expanding Rural Finance Project (FND) and Special Economic Zones Project.

## II. PROJECT DEVELOPMENT OBJECTIVES

### A. PDO

**Improve access to grain storage and information for agricultural producers in Mexico.**

### B. Project Beneficiaries

16. The direct beneficiaries of this project are small and medium semi-commercial and commercial agricultural producers that (i) on average produce on less than 50ha of land<sup>3</sup>, with capacity to generate marketable surpluses and benefit by storing excess grain production for commercialization; and (ii) are organized into Eligible Grain Producer Organizations<sup>4</sup>. Although larger, commercial producers will not be targeted directly, the project will also benefit them with the enabling environment it will create through the public information platform and related services.

17. The project will initially focus on maize, as the most important staple crop of Mexico, however, other grains can be considered given the temporal nature of production/harvest. It is estimated that the project will directly benefit 12,500 small and medium grain producers, including women, across the project area, legally constituted into an estimated 250 organizations. This will be achieved through the support of approximately 300 grain storage facilities (new and rehabilitated) in the project area.

18. The project will be implemented in seven States of Central/Southern parts of Mexico for the purposes of infrastructure investments and related capacity building, with all other project activities (such as the information platform) being nationwide. Based on a methodology for selecting project intervention areas (prioritizing those with market potential, gaps in storage capacity vis-à-vis production volumes, with a large number of small agricultural producers), the 7 Mexican states identified include Estado de Mexico, Michoacán, Veracruz, Guanajuato, Chiapas, Oaxaca and Puebla (Annex 1).

### C. PDO-Level Results Indicators

***Number of beneficiaries using project supported grain storage facilities (disaggregated by gender)<sup>5</sup>***  
***Number of beneficiaries accessing project enabled grain market information (disaggregated by gender)<sup>6</sup>***

<sup>3</sup> This is aligned with SAGARPA's definition for rain-fed agricultural producers in transition and small commercial producers, and presented in detail in the Project Operational Manual.

<sup>4</sup> The Project Loan Agreement defines Eligible Grain Producer Organization as a legally established grain producer organization which operates in Mexico and meets the eligibility criteria set forth in the Project Operational Manual for implementing a Grain Storage Subproject.

<sup>5</sup> This indicator measures the participation of grain producers in the first stage of the grain market. "Use" will be measured by the physical delivery of grains to a project supported grain storage facility. *Links to higher level objective on improving food security (reduction of post-harvest losses).*

<sup>6</sup> This indicator measures the access to the key variables (such as price, volume, grain quality, etc.) that the project will make publicly available. "Access" will be measured by the number of producers receiving the information either through direct access to the information platform, or by other means/through other sources. *Links to higher level objective on improving competitiveness (reduction of transaction costs and information asymmetries).*



### *Share of grain sold from project supported storage facilities<sup>7</sup>*

## III. PROJECT DESCRIPTION

### A. Project Components

19. The overall goal of this project is to improve the access of small grain producers to storage facilities<sup>8</sup> and information, thus contributing to food security, market inclusion and competitiveness in important grain producing areas of Mexico. Each of the proposed project components will contribute to developing market conditions that enable producers to participate in a storage system that incentivizes productivity through profitable commercialization practices, reduces losses through post-harvest management, facilitates access to financial mechanisms, and differentiates prices through symmetric information to compete in national and global markets. Project design, as defined in the Legal Agreement, is presented here. Project description is provided in Annex 1.

20. Component 1. Grain Storage Infrastructure and Operation: The purpose of the activities described below is to improve the grain storage infrastructure and strengthen the capacity for the operation and application of grain quality norms and standards, through:

21. The provision of support for the carrying out of Grain Storage Subprojects in Selected States consisting of the following activities, including:

- (a) the rehabilitation and/or upgrading of existing grain storage facilities, including collection and trade centers, and purchase and installation of required equipment; and/or
- (b) the construction of new grain storage facilities, including collection and trade centers, and purchase and installation of required equipment

22. The provision of support for the operation and sustainability of Grain Storage Subprojects, including:

- (a) (i) the preparation of business plans; (ii) the carrying out of capacity building activities for grain storage facilities operators, including the preparation of capacity building materials, on the operation, control and maintenance of grain storage facilities and required equipment under Grain Storage Subprojects; and (iii) the certification of said grain storage facilities; and
- (b) the provision of support to grain storage facilities operators, Eligible Grain Producer Organizations, and other relevant agricultural producers, on: (i) the application of relevant grain quality norms and standards through, *inter alia*: (A) the carrying out of capacity building activities on, *inter alia*, grain quality control and management on-farm; and (B) the preparation of capacity building materials for grain quality control and management in collecting and trade center; and (ii) relevant financial and administrative aspects.

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<sup>7</sup> This indicator measures the turnover of stored grain and hence its integration further up the value chain. It internalizes the development of infrastructure (including financing) as well as management and quality aspects of the infrastructure investments, but focuses on the result – their use. *Links to higher level indicator on market integration and competitiveness.*

<sup>8</sup> Storage facilities comprise collection centers that are smaller structures dedicated to grains (and are typically located by production areas), as opposed to the larger warehouse units (or AGDs) that are used for the storage of a wide range of goods, including agricultural products (and are typically located by urban/consumer areas).



23. Component 2. Information for Grain Management, Markets and Monitoring: The purpose of the activities described below is to improve access to information to enable the Borrower’s agricultural producers in their decision making, through:

24. Provision of support for: (a) the development, operation and maintenance of an information system for grain markets and management, including data collection and integration, and the carrying out of related capacity building activities on the use of said system and data collection; and (b) the carrying out of dissemination activities to promote the use of the information system.

25. Strengthening the commercialization linkages of grain storage facilities through the following activities, including: (a) the participation of Eligible Grain Producer Organizations in agricultural fairs and other relevant sector events; (b) the carrying out of pertinent analysis on, *inter alia*, new market opportunities, market segmentation potential, and other strategic needs to improve grain commercialization; and (c) the carrying out of capacity building activities to improve market access of Eligible Grain Producer Organizations.

26. Provision of support for the preparation, implementation, monitoring and evaluation of the Project.

## B. Project Cost and Financing

27. The total project cost is US\$195 million, of which US\$75 million is counterpart funding.

Project Components	Project cost Million US\$	IBRD Financing Million US\$	percent IBRD Million US\$	Counterpart Funding Million US\$
<b>Component 1: Grain Storage Infrastructure and Operation</b>	170.0	95.0	56 percent	75.0
<b>Component 2: Information for Grain Management, Markets and Monitoring</b>	24.7	24.7	100 percent	0
<b>Total Project Costs</b>	194.7	119.7		75.0
Front End Fees	0.3	0.3		
<b>Total Financing Required</b>	195.0	120.0		75.0

## C. Lessons Learned and Reflected in the Project Design

28. The project design benefited from lessons learned from experiences in Mexico and other countries throughout the world in storage systems, storage financing mechanisms, and national-level agricultural information systems. A 2016 World Bank Storage Study<sup>9</sup> highlighted the need for investments in improved storage infrastructure, inclusive financial mechanisms and aggregated and

<sup>9</sup> “Almacenando Granos para la Seguridad Alimentaria y Competitividad: Un Estudio Comparativo”, World Bank, 2017



transparent information. Other important lessons considered in the project design were taken from project work on matching grant mechanisms, increasing competitiveness, building large-scale transparent agricultural information systems, among others:

- a) It is necessary to complement any infrastructure investment with capacity building on i) managing and operating the new infrastructure, ii) administrative and financial management, iii) development of business plans, and, iv) commercialization, to ensure a long term sustainability of investments.
- b) Grants should be strategically used to mobilize private investment and bank financing for grain storage infrastructure, which can then help facilitate new forms of financing, such as warehouse receipt systems.
- c) Technical assistance to help matching grant beneficiaries prepare business plans and proposals for financing can play a key role not just for a successful execution of the grants, but also to help banks/financial institutions understand these projects and enable them to finance them to complement the grant and beneficiary own contribution.
- d) Experience from India suggests that is important that beneficiary producer organizations not only own but also participate in the management/operation of storage facilities, as well as in the decision process related to the identification of infrastructure needs.
- e) New technology, such as mobile financial services, and reaching clients through cooperative-based off-farm aggregation centers, present great financial opportunities to overcome challenges of delivering deposit based financial services to smallholders.
- f) Stimulating partnership investments and backward linkages in post-harvest systems needed to access commercial grain markets helps create a powerful “pull-through effect,” stimulating increased commercialization of smallholder staple food production.
- g) Price discovery improves smallholders’ certainty about where to sell. Transparent measurement tools strengthen smallholder negotiating power, providing grading/price premiums.
- h) Increasingly affordable information communication technology (ICT) tools make information systems a cost-effective way of reaching people. With access to online or cellphone-based pricing, weather, market or other information, farmers in rural areas have low-cost ways of accessing information to increase the sophistication of their farming systems.
- i) Market analysis conducted as an input to the project highlights the potential in the commercialization of traditional maize varieties in and outside of Mexico, as well as the strong demand for white maize in domestic and export markets. However, important weaknesses in the value chains need to be overcome, including uniform quality and scale of grains.
- j) Enabling the Business of Agriculture (EBA)<sup>10</sup> indicators highlight a number of regulatory strengths and constraints that shape the agribusiness environment in Mexico. Strong regulations are in place for the establishment and operation of producer organizations, requirements on trade of agricultural products, deposit-taking microfinance institutions and financial cooperatives, and the use of movable collateral relevant to agricultural enterprises and smallholders. Among the regulatory weaknesses identified are those related to agricultural inputs - machinery (e.g. tractors), seed, fertilizer and transport sectors, variety registration, fertilizer import registration and permits, quality control of seed and fertilizer, and cross-border transportation licensing.

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<sup>10</sup> The report can be found at <http://eba.worldbank.org/>



## IV. IMPLEMENTATION

### A. Institutional and Implementation Arrangements

29. The Project will be implemented by the Ministry of Agriculture (SAGARPA), through the ASERCA, as stated in the *Contrato de Mandato* between the United Mexican States (the Borrower), through SHCP, SAGARPA and ASERCA, and NAFIN, as the financial agent for project implementation, as described in the Loan Agreement. The *Contrato de Mandato* is established as an effectiveness condition. ASERCA, a deconcentrated agency of SAGARPA, has a mandate to: 1) promote the commercialization of surpluses of maize, wheat, sorghum, soy and beans, and 2) position Mexican agriculture products in global markets. This is achieved through the provision of incentives for the commercialization of commodities through contract farming, production guarantees, risk coverage and incentives for storage. With an annual budget of roughly MX\$10 billion, ASERCA reaches around 260,000 beneficiaries per year (or 4 percent of those formally employed in agriculture), many of whom are large farmers.

30. ASERCA will enter into sub-project agreements with eligible producer organizations that are legally constituted and have experience in grain production and management (component 1). Development institutions such as Agricultural Trusts (*Fideicomisos Instituidos en Relación a la Agricultura*, FIRA, for its acronym in Spanish) and the Rural Financial Development Agency (*Financiera Nacional de Desarrollo*, FND for its acronym in Spanish) may support project activities through the provision of financial instruments, including partial guarantees for loans issued by commercial banks to producer associations/organizations. Commercial banks would support project activities through the provision of partial loans for rehabilitating/constructing storage infrastructure and/or for working capital for storage facilities. The International Maize and Wheat Improvement Center (CIMMYT), (in coordination with the Sustainable Modernization of Traditional Agriculture Program (MasAgro)) would provide capacity building related to grain quality standards, grain management and traceability (under sub-components 1.2. and 2.2), as well as to the information platform development (sub-component 2.1) and for project safeguards monitoring (sub-component 2.3). FAO would support the project with grain storage facility standards, under sub-component 1.2, and climate information, under sub-component 2.1. Furthermore, ASERCA will collaborate with other public sector agencies through existing collaborative agreements (such as PROMEXICO, FOCIR, FIRCO) and private sector entities (*Almacenes Generales de Depósito*, AGDs) for the development of project activities.

### B. Results Monitoring and Evaluation

31. The cost of project baseline, mid-term review and project final evaluation and impact assessment have been internalized into the project design as sub-component 2.3. The cost also includes the need for adequate environmental and social safeguard monitoring by the client. Project baseline will be carried out after sub-projects are identified and selected for funding, but before resources are allocated or training is provided<sup>11</sup>. ASERCA will assume responsibility for the monitoring and collection of relevant project data. Oversight and monitoring of safeguards will be carried out in coordination with CIMMYT. This will leverage CIMMYT's existing experience in the country, and specifically experience

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<sup>11</sup> The use of a control group, other producer organizations in the regions of project intervention that will not benefit from the Project but have similar structure and production characteristics to those that will, is intended to enable a proper assessment of project impact.



with MasAgro in the key project states. The project baseline will be carried out by a third party entity, competitively selected and hired to undertake the analysis. This will also be the approach for the preparation of the mid-term review and the end line/project impact assessment. ASERCA will prepare semi-annual progress reports to record project activities throughout project implementation.

### C. Sustainability

32. The project design internalizes several elements of technical and financial sustainability. Project infrastructure will be owned and managed by producer organizations hence ensuring their buy-in into the grain collection, storage and commercialization process from the onset. The use of private financial resources will reduce reliance on government support and enable producers to learn entrepreneurial skills to continue the process of accessing credit and investment in their own production decisions. Building information management capacity for grain management and marketing in-house and connecting it effectively to production areas will build an information flow that will be critical for production and commercial decisions, hence increasing usage.

### D. Role of Partners

33. ASERCA may enter into agreements to support the implementation of project activities including, but not limited to: 1) FIRCO (as an entity of SAGARPA) as a technical agent for infrastructure oversight; 2) CIMMYT (as a consultant, subject to Bank's prior review) to provide capacity building related to sustainable production and post-harvest management of grains, including grain quality and information guidelines, as well as support ASERCA with the oversight of safeguards compliance and traceability of grains for commercialization, and information systems; 3) FIRA, FND and FOCIR as supporting public sector financial entities; 4) FAO (as a consultant, subject to Bank's prior review) to develop certification protocols and provide capacity building for their use as well as participate in the data consolidation activities with climate-related information; 5) commercial banks partially financing the infrastructure; 6) PROMEXICO for commercialization efforts abroad. ASERCA will coordinate efforts with other public and private entities for specific data required for the information platform.

## V. KEY RISKS

### A. Overall Risk Rating and Explanation of Key Risks

34. The overall risk rating for the project is Substantial:

a) *Technical Design of Project* – (i) The heterogeneity of productive units and their differential access to productive inputs, storage facilities and financial and other technical assistance, asymmetric information, diversity of crops and regional market dynamics make attribution and correct measurement of results challenging; *Mitigation*: The project structure will be kept simple and focused on specific results, which will be closely monitored; geographic and sector scope will be limited to enable better understanding of all underlying issues; (ii) The potentially weak managerial, technical and/or financial performance of the numerous smallholder producer organizations can be a potential



problem for project disbursements. *Mitigation:* Business plans will be developed by each Eligible Grain Producer Organization where capacity building will be a core factor in sub-project implementation.

b) *Institutional Capacity for Implementation and Sustainability* – (i) The project will be implemented by SAGARPA through ASERCA. Although the World Bank has a continuous engagement with SAGARPA, ASERCA, as a deconcentrated entity, has not previously implemented World Bank funded projects. Although this provides an opportunity to develop capacity and strengthen the collaboration between the World Bank and SAGARPA, it also imposes a risk to project implementation and close alignment with World Bank norms and processes, as those will be new to ASERCA; *Mitigation:* The World Bank team will work closely with ASERCA’s team to provide all the necessary training and technical support during preparation and implementation of the project. Collaboration with other programs within SAGARPA and other important entities in the agricultural sector in Mexico will also be sought to strengthen the knowledge base and support implementation; (ii) Successful project implementation will hinge on effective collaboration with a number of different entities from the public and private sectors, as well as international organizations; although this would use existing knowledge and systems, too many institutions can reduce the efficiency in project delivery, including lack of commitment, and require a greater span of control for the implementing entity. *Mitigation:* Project activities that are to be implemented in collaboration with other entities will be defined in the procurement plan with specific terms of reference developed before contractual agreements are signed.

c) *Budget* – (i) Adequate budget allocations and their timely provision to project activities could be challenging in a period of fiscal austerity (budget cuts) and program consolidation, and can affect project implementation progress. This situation is further sharpened by the weak Mexican peso; *Mitigation:* ASERCA’s annual budget is considerably larger than the amount to be financed under this project and the Bank will work with SAGARPA to ensure that sufficient budget is planned for this project for each fiscal year; (ii) ASERCA currently dedicates 98 percent of its budget to administer the Contract Agriculture Program, which supports commercial grain producers, the majority of whom are in the North of Mexico; *Mitigation:* As resources for this project are not additional to current budget, its implementation would require the re-distribution of ASERCA’s budget to finance the new activities and re-focus towards the South of the country.

d) *Fiduciary* – (i) As the Implementing Agency, ASERCA, has no previous experience in Bank financed projects, a Project Coordination Team will need to be established inside ASERCA, including financial management and procurement responsible staff, who will need training and implementation support. The project will also need to coordinate and work with a large number of agricultural producers and storage facility owners/tenants, as well as other participants from the public and private sector; *Mitigation:* Ensure from the onset that fiduciary training is provided not only to project staff, but also to producers and public and private sector participants, who are project beneficiaries or interact with project beneficiaries. (ii) Lack of regulation for “non-certified” warehouses (storage facilities used only for commodities which in many cases operate side-by-side with certified warehouses); *Mitigation:* Efforts to promote adequate regulation and stronger supervision for “non-certified” warehouses is part of the current regulatory process; this project will seek to work closely with warehouses to enable the potential certification of project-supported storage facilities.

## VI. APPRAISAL SUMMARY



## A. Economic and Financial (if applicable) Analysis

35. A standard economic cost-benefit analysis was performed to assess the ex-ante economic viability of the Project. The stream of costs considered in the analysis include: (i) all project implementation expenses to be financed by the World Bank loan; (ii) expected storage infrastructure and equipment expenses and other subproject implementation costs to be financed by private sector (i.e. organized producers through their own capital or loan financing from commercial and/or development banks); (iii) expected incremental recurrent expenses (i.e. expected operation and maintenance expenses for the equipment and storage infrastructure to be rehabilitated or built under Component 1) throughout the period of analysis; and (iv) the cost to society of estimated net greenhouse-emission, which are mainly those related to incremental energy use for the functioning of rehabilitated or new storage facilities. The economic benefits accounted for are those derived from grain losses that would be averted from expanding storage capacity and use, and the enhancement of grain handling by small and medium scale producers; and a net reduction in Green House Gases (GHG) derived mainly from avoided grain losses outweighing incremental energy use by grain storage facilities. There are other economic benefits that would be expected to accrue to society as a result of the Project, but as they are not easily quantifiable they were not accounted for in the cost-benefit analysis<sup>12</sup>. Therefore, the economic feasibility indicators presented in this section should be considered to be a conservative estimate of the actual project's economic worth from Mexican society's perspective.

36. Assuming no distortions (other than taxes) to input and output prices (i.e. shadow prices are equal to market prices), and with a realistic set of assumptions with respect to the volume and value of grain losses averted, storage turnover, the economic cost-benefit analysis yielded an Economic Internal Rate of Return (E-IRR) of 17 percent, and a Net Present Value (NPV) of nearly USD 40.4 million<sup>13</sup>. To test the sensitivity of these results, a Monte Carlo simulation was performed to account for the likely simultaneous variability of key parameters. These include: (i) the volume and the value of losses averted; (ii) the assumed storage turnover ratio; and (iii) the exchange rate of the Mexican Peso with respect to the United States Dollar. The results of the sensitivity analysis show that the Project would remain economically viable, with a minimum expected E-IRR<sup>14</sup> of 11 percent and a minimum expected NPV of approximately USD 6.2 million<sup>15</sup>.

37. A financial cost-benefit analysis for the Project as a whole from the point of view of the investor (i.e. the Mexican government) would not be relevant, as project design does not contemplate that

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<sup>12</sup> The main economic benefits unaccounted for in the cost-benefit analysis include: (i) increased expected net revenues to participating producer organizations due to greater access to more remunerative markets through improved grain storage, and better access to market information for decision making; (ii) increased economic efficiency achieved through the systematization and democratization of market information; and (iii) local economic growth resulting from increased demand for local goods and services during construction/rehabilitation and the operation of storage facilities. Also the economic benefits from averted grain losses included in the analysis referred to maize only. In states like Guanajuato and Michoacán storage facilities used for maize could be used to store wheat, as these grains grow in different seasons.

<sup>13</sup> Using a social discount rate of 10 percent as per "BANOBRAS - Centro de Estudios para la Preparación y Evaluación de Proyectos (CEPEP), 2015. Guía general para la presentación de estudios de evaluación socio-económica de programas y proyectos de inversión", and in line with latest World Bank guidelines (2016).

<sup>14</sup> With a statistical confidence level of 99 percent.

<sup>15</sup> Averted storage losses (without and with project), storage turnover were simulated using a triangular distribution (i.e. minimum, maximum and most likely values were established according to available data and technical references). Corn prices and exchange rate variations were simulated using a normal distribution. For the Montecarlo Simulation, the number of iterations was set in n=5000 and the level of confidence at 99 percent ( $\alpha=0.01$ ).



financial returns from the public investment ought to cover the corresponding financial costs. Furthermore, as the particulars of the storage subprojects to be supported by the Project will not be known before implementation, a meaningful ex-ante financial cost-benefit analysis for these was not possible at appraisal. However, in order to safeguard the economic sustainability of subprojects, a thorough ex-ante financial cost-benefit analysis would be performed for each grain storage subproject to be co-financed by the Project as part of their business plan before any sub-project financing is approved.

38. The project has an important distributional effect. As project funds are not incremental to ASERCA's regular budget, the US\$120 million of public monies to be used for this project would imply reductions to other programs, or uses, by the agency. As the Contract Farming Program, which supports larger commercial producers with well-established market linkages and access to storage and financial services, represents the largest share of ASERCA's expenses, a significant portion of project financing would reduce expenditures of this program. This represents an implicit but clear shift in policy, moving away from public support to larger commercial producers, mainly in Northern States, and towards public support to semi-commercial and small-scale commercial producers with less market opportunities due to lack of suitable storage infrastructure and financing options in Southern States of Mexico.

## B. Technical

39. There is a renewed<sup>16</sup> interest by ASERCA to incentivize storage and grain commercialization in the country in a way that reduces the fiscal weight, provides greater decision making options to producers, and focuses on effective commercialization. Through its renewed approach, ASERCA is also aiming to engage the semi-commercial and small commercial producers, an important production segment in Mexico's agricultural sector. This has been reflected in the 2017 Operational Rules of ASERCA, published in the Federal Government's Official Gazette, to which this project adheres. With the current fragile level of market organization, lack of appropriate physical and financial infrastructure, and coexisting asymmetries between agricultural production regions, there is an important role for ASERCA to lead the improvement of the national agricultural storage and information systems. As a public agency, ASERCA currently invests 98 percent of its annual budget in supporting the commercialization of grain through the provision of price guarantees and incentives, focused primarily on agriculture by contract approaches. Until now, the poorer regions in the South have operated at scales too small to participate in ASERCA's incentive programs. Within the scope of the project, ASERCA will expand its role to also include the provision of support for the productive and financial inclusion of small and medium farmers and help them become more commercially viable, contributing to the overall growth and value of the sector.

## C. Financial Management

40. The financial management risk for this project is considered Substantial. This project poses considerable implementation challenges in terms of financial management. Infrastructure sub projects

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<sup>16</sup> Through its price support system (also known as Objective Income, *Ingreso Objetivo*) embedded into the country's agriculture by contract modality, ASERCA has been stabilizing prices of grains in Mexico for the past 10 years. The reduced variation of prices across time has undermined the incentives to store and has contributed to reducing storage capacity. Moreover, ASERCA's interventions through this contract system are very costly and fiscally unsustainable, as well as targeting large commercial producers, predominantly in the Center and North of the country.



financed under Component 1.1 will need strict validation mechanisms and controls to be used by the implementing entity in order to ensure that eligibility requirements are met, as well as monitoring and supervision of financial and physical progress is carried out, considering that capacity is not yet in place. Sub projects will be partially funded with credit from either commercial or national development institutions and in the event of non-payment, sub project completion could be at risk<sup>17</sup>. Project staff and beneficiaries will need extensive training and technical support to successfully complete project activities. Mitigation measures are designed to address identified risks.

#### **D. Procurement**

41. *Procurement Arrangements.* Procurement will be conducted according to the World Bank Procurement Regulations for Borrowers under Investment Project Financing', dated July 1, 2016, for the supply of goods, works, and non-consulting and consulting services.

42. *Procurement Capacity Assessment.* Procurement activities for sub-component 1.2 and Component 2 will be undertaken by ASERCA. For sub-component 1.1., procurement will be conducted by formally organized grain producers following a Community-Driven Development approach. The capacity assessment concluded that ASERCA has adequate experience and capacity to implement procurement activities. However, the incorporation of an additional Procurement Specialist should be required. Considering the proposed use of Community Driven Development (CDD), the Project Operational Manual shall include clear supervision arrangements as well as appropriate simplified templates for the Procurement Plan, contracts, request of quotations, and others (please see Annex 2 for further details).

#### **E. Social (including Safeguards)**

43. ASERCA prepared a Social Assessment and Indigenous Peoples Plan (IPP), both of which are disclosed on ASERCA's and the World Bank's external website<sup>18</sup>. Both documents were prepared under the guidance of the Bank and are found acceptable to the Bank. Within Mexico, the lack of storage infrastructure is most evident in the Southern states. The proposed Project area contains 59 percent of the total indigenous population - but within this area, there are only 5 off-farm collection centers. The project seeks to increase the participation of small agricultural producers, and will make special efforts to include indigenous beneficiaries through tailored interventions like language provisions, participatory approaches, targeted capacity building and construction techniques. The prepared IPP has three lines of actions based on (a) reinforcing participation and reducing cultural barriers, (b) communicating the opportunities of the project in a culturally appropriate way, and (c) developing a grievance handling mechanism. The IPP also proposes a monitoring and evaluation mechanism to assure activities and recommendations are duly implemented.

44. The Project triggers OP 4.10 (Indigenous Peoples). Adverse social impacts from Project activities are unlikely, given the Project will not involve large-scale infrastructure works. However, the indigenous population is the most vulnerable and needs to be carefully taken into consideration. Since the majority of Project area includes Indigenous Peoples, key elements of OP 4.10 have been incorporated into

<sup>17</sup> To mitigate the non-payment risk, the project will envisage access to federal guarantee programs.

<sup>18</sup> The Social Assessment and Indigenous Peoples Plan (IPP) were published on the ASERCA website on January 20, 2017 and on the World Bank external website on February 2, 2017.



Project design to safeguard potential participation of indigenous beneficiaries. The *Consejo Consultivo* is the initial point of contact with indigenous leaders who participated in the consultations, along with regional authorities of the National Commission for Development of Indigenous People (*Comisión Nacional para el Desarrollo de los Pueblos Indígenas*, CDI, for its acronym in Spanish). The Project will collaborate with the MasAgro program and use many of the variables that MasAgro has been collecting, including: gender inclusion, cultural relevance, participation, technologies to improve maize production, monitoring and farmer empowerment. Consultations have proven that it is necessary to disseminate messages orally and in the native language and that the best communication media is the radio. In some cases social media may also be used.

45. Stakeholder consultations were held with representatives of producer organizations, NGOs, local governments, and other public and private entities. A strategy and an action plan were prepared based on the inputs received in two of the most biodiverse states in Mexico, and home to many indigenous peoples (Chiapas and Oaxaca). Several recommendations were made: (a) project design to ensure that there are no barriers to participation of the most vulnerable and restore aggregation centers in areas of low accessibility; (b) technology and training for post-harvest pest management are necessary; (c) increase in productivity to generate surplus and address the loss of fertility; (d) protect traditional crops and evaluate differentiation of products and market scenarios; (e) adequate treatment of waste and residues; (f) use best practices to increase production and quality of products; (g) information and communication have to be tailored to the each group, including language, cultural norms, and other community characteristics; (h) there should be consultations throughout the Project to ensure access to grievance channels. During appraisal, additional visits were made to other Project states (Mexico, Veracruz, Michoacán and Guanajuato) to seek feedback on project design and broad support for project activities.

46. The Project also triggers OP 4.11 Physical Cultural Resources. The Environmental Assessment indicates that it is highly unlikely that any activity will have an impact on objects, sites, structures, natural features or landscapes with archeological, paleontological, historical or any other aspect of cultural significance. Based on this, it is considered of low risk that project activities were to have a potential impact on features of cultural significance. However, procedures and protocols to address chance findings of archeological and cultural resources during construction works, if any, will be included in the Project Operational Manual and it will be recommended that any chance finding is immediately communicated to the INAH.

### **Gender**

47. According to the Mexico Country Partnership Strategy, the gender gaps in the Mexico range from economic opportunities, prevention of violence, to equal treatment and rights. This project will contribute to closing the gender gap in economic opportunities by involving women in farmer organizations' storage facility activities. The project acknowledges the important relationship between women and agriculture in the country particularly in places where men have migrated out of rural areas and women have been left behind to assume farming responsibilities. In these places, women maintain the dual responsibility of farming and household production. Their role in grain preservation and processing in traditional productions systems is particularly important. Women are often involved in the drying, grading, shelling, winnowing of grains. These activities are essential precursors to attain effective grain storage.



48. The project will ensure that women take advantage of the new storage technologies, access to inventory-based credit and are aware of information available to increase their market opportunities. This will be done through gender disaggregated indicators to measure project impact on women; targeted training materials to reach female farmers; and special incentives for groups receiving matching grants that include female farmers. Recognizing the critical role that women play in Mexican agriculture, project implementation will closely monitor the gender disaggregated impacts and make adjustments if necessary to ensure maximum inclusion of female farmers.

### **Citizen Engagement**

49. The preparation for the proposed Project has included extensive rounds of citizen consultations – from the technical, social and environmental safeguards sides. During preparation, the World Bank and Government team held extensive technical consultations with bean, maize and sorghum farmers in Mexico City. These consultations allowed farmers from different states across the country to understand the proposed design of the project, as well as provide input into the design of the Project. The social and environmental teams have also conducted extensive consultations for the social and environmental assessments, as well as undertaking consultations specifically targeting indigenous groups. Feedback from all consultations was considered in the Environmental / Social Assessment and incorporated in Project design. Project design incorporates several citizen engagement mechanisms to be employed throughout Project implementation. Citizen satisfaction surveys will be used to determine the overall satisfaction with the Project’s service delivery and communications. Dissatisfaction will be recognized and addressed by the Project. Community oversight will be used at the state level to monitor the construction and rehabilitation of new off-farm grain collection centers. Information about the Project will be displayed publically - posted in all supported off-farm collection centers. The Project will develop a grievance mechanism in the first year of implementation (available through email, phone, SMS) to allow citizens to ask questions, or express problems or concerns. The Project will address each of these in turn, and monitor the response rate and quality.

### **Nutrition**

50. The project will contribute to improving food security of small and medium producers through reduction of post-harvest losses and improvements in grain quality standards for commercialization. In this process of post-harvest management of grains, important food safety improvements will also be achieved, through the reduction of mycotoxins (aflatoxin) in maize through adequate storage of grains, and the use of better management practices for handling pests in grain storage, hence reducing the toxicity of stocks due to excessive use of pesticides. Another project outcome would be the strengthening of the value chains of traditional maize varieties that have important nutritional and cultural characteristics in particular across indigenous people’s communities in the South of the country, with an increasing value in foreign niche markets. Lastly, improving competitiveness and inclusion would have important income effects, which can lead to diet diversification.

## **F. Environment (including Safeguards)**

51. ASERCA has prepared an Environmental Assessment and an Environmental Management Plan (EMP) that are acceptable to the Bank. Preliminary analysis has concluded that the proposed Project is expected to directly generate important environmental and social benefits, given that it will improve



post-harvest conditions, competitiveness of the small producers, and improve conditions in productive areas. The overall environmental impact of the Project is expected to be positive, and none of the eligible activities would generate significant risk or irreversible adverse environmental impacts if carried out in compliance with the EMP. This EMP sets out procedures for the effective management of environmental impacts of the Project, including screening, potential impact identification and monitoring. The Environmental Assessment and the EMP have both been publically disclosed on ASERCA's and the World Bank's external website<sup>19</sup>.

52. The project is not expected to have negative impacts; however, some areas of potential concerns in terms of habitats, pollution, and sustainable use of natural resources, agro-biodiversity, should all be taken into consideration. Therefore, the project is classified as category B, as its environmental and social impacts are moderate and site-specific. Five Bank environmental safeguard policies were triggered: OP 4.01 on Environmental Assessment; OP 4.04 on Natural Habitats, OP 4.09 on Pest Management, OP 4.11 on Physical Cultural Resources and OP 4.36 on Forests. For activities requiring rehabilitation, construction and physical works, there is likely to be temporary disturbance in certain areas and negative impacts (dust, noise, waste) are considered minimal. Impacts are site-specific and manageable through site selection, and based on specific screening of sub-projects. The type and scale of investments will be guided by needs assessments aligning storage capacity to production potential and market demand. Sub-project eligibility criteria will be developed in the Project Operational Manual considering Bank's safeguards and fiduciary norms, including safeguard policies.

53. The analysis indicates that the project is expected to generate important environmental benefits, including improvement of post-harvest conditions, competitiveness of small producers from increased productivity and sale of production surpluses, improving conditions and standards of grains, while conserving the diversity of production. The project will not directly support agricultural production decisions, but may influence them through their integration to value-chains. No land use change activities will be supported, no native areas (including primary forests) will be degraded, traditional crops will not be replaced by high yielding or Genetically Modified Organism (GMO) varieties, and no actions will be taken which could affect conservation or protected areas, their buffer zones, or Key Biodiversity Areas, including critical natural habitats, forest ecosystems or areas with physical cultural resources, and no activity will include the uncontrolled use or increased use of agrochemicals.

54. Compliance with safeguard policies will be part of the eligibility criteria and sub-projects will be required to comply with a series of environmental and social requirements, including the compliance with a restrictive list. Sub-projects will be screened and some types of investments will be excluded under a negative/restrictive list built to safeguard natural habitats (conservation areas and key biodiversity areas, and environmental impacts and others, also focused on the efficient use of agrochemicals). The Environmental Assessment considered the use of agrochemicals as a risk, including other pest management practices, as they relate to grain storage supported by the project. The EMP has provided a thorough analysis and action plan to secure effective implementation of this policy. This Integrated Pest Management Plan as integral part of the EMP provides an action plan for supporting the adoption of best environmental practices and standards, complying with environmental/legal requirements, evaluations or permits applicable, as related to grain storage.

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<sup>19</sup> The Environmental Assessment and Environmental Management Plan were published on the ASERCA website on January 20, 2017 and on the World Bank external website on February 2, 2017.



### **Green House Gas Emissions**

55. Given the scope of the project, the major GHG impact identified is from the additional energy requirements associated with grain storage and conservation. The availability and improvements of grain storage infrastructure and the provision of capacity building will, on the other hand, reduce grain losses in the country, which are currently estimated at around 10 percent pre-harvest and 24 percent post-harvest. Food losses contribute to greenhouse gas emissions as well as to depletion of water and land resources. Taking into consideration both aspects, the results for an analysis period of 20 years (estimated lifetime of the equipment) show that the project constitutes a carbon sink of 1.81 million tCO<sub>2</sub>-eq. This is more than sufficient to overcome the emissions generated by the energy consumption in grain processing and storage infrastructure that will be supported by the project. If these avoided emissions from food losses are not accounted for, the project would generate 8.31 million tCO<sub>2</sub>eq and be a net source of 77, 786 tCO<sub>2</sub>-eq. Another viable alternative for mitigating emissions could be through the use of renewable energies, particularly solar energy, for grain processing and storage. Mexico has ample experience in their use by agri-businesses, through a World Bank supported project on Sustainable Rural Development.

### **Climate Change Co-Benefits**

56. Extreme weather events are considered one of the main risks facing agricultural producers, with small producers particularly vulnerable given their reliance on rain-fed agricultural cycles for their livelihoods. Floods and droughts have a direct impact on productivity, as well as on post-harvest management of grains, with food losses resulting from high humidity or incidence of pests and diseases. Project activities will yield potential climate co-benefits with the capacity to mitigate GHG emissions, while helping farmers adapt to climate change risks. It is estimated that the project has the potential of generating important climate (adaptation and mitigation) co-benefits, estimated at 40 percent, related to reduction in grain loss, improvement in infrastructure and capacity, as well as climate information and market segmentation: 1) the project will decrease the risk of post-harvest losses by increasing the capacity and quality of storage facilities, while simultaneously integrating grain producers into grain markets. Improving infrastructure to reduce food-losses will yield both adaptation and mitigation co-benefits (reduction of food losses will support avoided emissions of approximately 1.9 million tCO<sub>2</sub>-eq); 2) by generating an information system that includes weather and climate variables, the project can efficiently reach producers across the country with weather and climate information and support for early warning systems, thus helping producers to better adapt to changing climatic conditions; 3) the provision of technical assistance to grain producers to reduce post-harvest and on-field losses will be contoured to the context of adaptation to weather conditions; 4) the project will facilitate linkages to the ongoing World Bank project in Mexico, Rural Sustainable Development (FIRCO), which supports solar panels and energy efficient technologies to agricultural producers and producer groups. Through linkages to FIRCO, the project will make energy efficient and renewable energy technologies available to new and rehabilitated storage infrastructure supported through sub-projects, and thus provide mitigation co-benefits.

## **H. World Bank Grievance Redress**

57. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result



of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org).



**VII. RESULTS FRAMEWORK AND MONITORING**

**Results Framework**

**COUNTRY : Mexico**

**Grain Storage and Information for Agricultural Competitiveness**

**Project Development Objectives**

Improve access to grain storage and information for agricultural producers in Mexico

**Project Development Objective Indicators**

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
<b>Name:</b> Number of beneficiaries using project supported grain storage facilities		Number	0.00	12500.00	every 6 months	Primary data, collected during project implementation	ASERCA
Number of women beneficiaries using project supported grain storage facilities		Number	0.00	3800.00			

**Description:** This indicator measures the participation of grain producers in the first stage of the grain market. "Use" will be measured by the physical delivery of grains to a project supported grain storage facility. Links to higher level objective on improving food security (reduction of post-harvest losses).

<b>Name:</b> Number of		Number	0.00	12500.00	every 6 months	Primary data, collected	ASERCA
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Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
beneficiaries accessing project enabled grain market information						during project implementation	
Number of women beneficiaries accessing project enabled grain market information		Number	0.00	3800.00			
<p><b>Description:</b> This indicator measures the access to the key variables that the project will make publicly available. “Access” will be measured by the number of producers receiving the information either through direct access to the information platform, or by other means/through other sources. Links to higher level objective on improving competitiveness (reduction of transaction costs and information asymmetries).</p>							

<b>Name:</b> Share of grain sold from project supported storage facilities		Percentage	0.00	80.00	every 6 months	Primary data, collected during project implementation	ASERCA
<p><b>Description:</b> This indicator measures the turnover of stored grain and hence its integration further up the value chain. It internalizes the development of infrastructure (including financing) as well as management and quality aspects of the infrastructure investments, but focuses on the result – their use. Links to higher level indicator of market integration and competitiveness.</p> <p>It is a industry norm to keep 20% of stored volumes of grain as a strategic reserve for food security reasons.</p>							

**Intermediate Results Indicators**

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
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Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
<b>Name:</b> Number of project supported grain storage facilities that are equipped and in use		Number	0.00	300.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Volume of grains stored by project supported storage facilities		Metric ton	0.00	500000.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Number of producer organizations trained to operate storage facilities and use grain quality standards		Number	0.00	250.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Number of project beneficiaries using technical services for grain storage		Number	0.00	12500.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Number of project women beneficiaries using technical services for grain storage		Number	0.00	3800.00			
Description:							
<b>Name:</b> Number of unique users of the integrated information platform		Number	0.00	20000.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Average number of trade agreements between a project supported producer organization and market agents (per year)		Number	0.00	3.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Percentage of beneficiaries satisfied with the access to grain storage and the quality of services received		Percentage	0.00	95.00	every 6 months	Primary data, collected during project implementation	ASERCA



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description:							
<b>Name:</b> Grievances registered related to delivery of project benefits that are actually addressed		Percentage	0.00	100.00	continuous, reported immediately	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Share of project supported storage facilities that use warehouse receipts		Percentage	0.00	30.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Loan recovery rate of investments financed by commercial banks		Percentage	0.00	95.00	every 6 months	Primary data, collected during project implementation	ASERCA
Description:							
<b>Name:</b> Number of local areas where grain price		Number	0.00	14.00	every 6 months	Primary data, collected during project	ASERCA



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Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
information is generated daily and disseminated						implementation	
Description:							



**Target Values**

**Project Development Objective Indicators**

<b>Indicator Name</b>	<b>End Target</b>
Number of beneficiaries using project supported grain storage facilities	12500.00
Number of beneficiaries accessing project enabled grain market information	12500.00
Share of grain sold from project supported storage facilities	80.00
Number of women beneficiaries using project supported grain storage facilities	3800.00
Number of women beneficiaries accessing project enabled grain market information	3800.00

**Intermediate Results Indicators**

<b>Indicator Name</b>	<b>End Target</b>
Number of project supported grain storage facilities that are equipped and in use	300.00
Volume of grains stored by project supported storage facilities	500000.00
Number of producer organizations trained to operate storage facilities and use grain quality standards	250.00
Number of project beneficiaries using technical services for grain storage	12500.00
Number of unique users of the integrated information platform	20000.00
Average number of trade agreements between a project supported producer organization and market agents (per year)	3.00



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Indicator Name	End Target
Percentage of beneficiaries satisfied with the access to grain storage and the quality of services received	95.00
Grievances registered related to delivery of project benefits that are actually addressed	100.00
Share of project supported storage facilities that use warehouse receipts	30.00
Loan recovery rate of investments financed by commercial banks	95.00
Number of local areas where grain price information is generated daily and disseminated	14.00
Number of project women beneficiaries using technical services for grain storage	3800.00

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ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY : Mexico

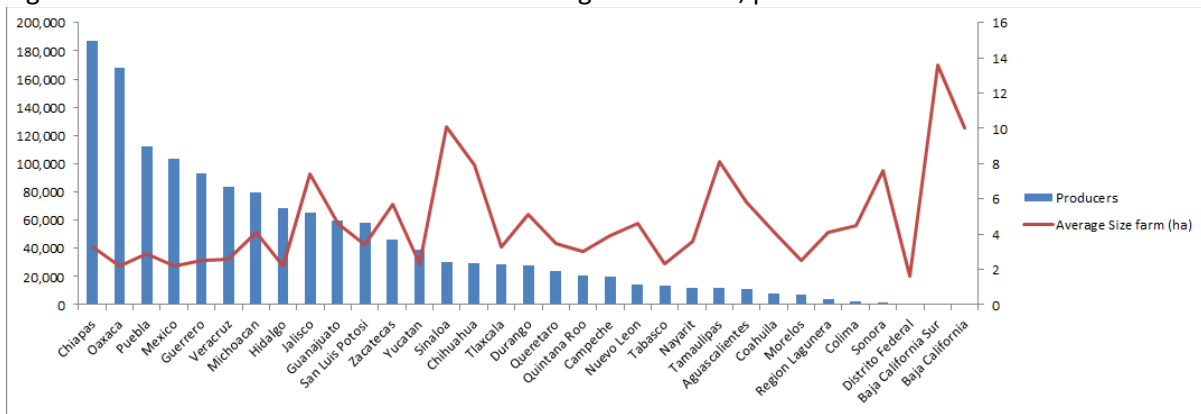
Grain Storage and Information for Agricultural Competitiveness

Project Scope

58. The project will be implemented in seven States in the country, focusing initially on maize due to its significance in national food security, and the global importance of Mexico as the center of origin and source of genetic diversity. Mexico has the largest diversity of native landraces in Latin America, accounting for around 29 percent of total global biodiversity<sup>20</sup>. The diversity of maize persists in Mexico’s traditional agricultural systems today. Mexico is thus considered one of the last reservoirs of maize genetic resources for humanity.

59. Furthermore, according to ASERCA, there are approximately 1.4 million producers of maize registered in PROAGRO, with one million of these producers concentrated in 10 states in the center and south of Mexico (Figure 1). Chiapas has the largest number of producers with about 187,376 followed by Oaxaca with 167,862. A large number of states in the center and south of Mexico have farm sizes less than 4 ha while the average maize farm in the northern states is greater than 7 ha (Fig 1). All of these factors make the maize market a complex and dynamic one that requires targeted and informed assistance to establish solid financial and information systems. Any mechanisms for maize can then be easily expanded and adapted to the other crops.

Figure 1: Number of Maize Producers and Average Size Farms, per State.



Source: ASERCA “Caracterización de Productores a Noviembre 2014”.

60. States targeted for project intervention were selected using key variables and indices that capture information on production, diversity of production systems, storage capacity, marketing as well as socio-economic indicators. Due to the heterogeneity of the Mexican territory, its production systems and culture diversity, a more localized diagnostic will be done during project implementation in each of the selected areas to identify the specific mechanisms of intervention and inform the design of the project.

<sup>20</sup> Maíces y Razas de Maíces (CONABIO): <http://www.biodiversidad.gob.mx/usos/maices/maiz.html>



61. The following information was collected and processed for each state in Mexico in order to support the selection process:

- Production: hectares of maize planted, total volume of grains (maize, wheat, sorghum and beans) produced, total volume of maize produced<sup>21</sup>;
- Diversity of production: Area and percentage of maize “criollo” or native planted<sup>22</sup>;
- Storage capacity: total storage capacity per state, number of storage facilities for different capacities<sup>23</sup>;
- Marketing: disaggregated volume of grains in contract agriculture<sup>24</sup>;
- Socio economic variables: inequality (gini coefficient), competitiveness (rankings) and poverty (social deprivation average).

62. Descriptive results emerging from the preliminary analysis indicate the following:

- The 5 top states with the largest combined areas planted with maize, wheat, sorghum and beans are: Tamaulipas, Sinaloa, Chiapas, Zacatecas and Guanajuato. The largest combined volumes produced of maize, wheat, sorghum and beans are in the states of Sinaloa, Jalisco, Tamaulipas, Guanajuato and Michoacán. Of the four crops, maize is the most significant representing 62 percent of the planted area and 64 percent of the production in the country;
- The states with the largest area planted to maize are: Chiapas, Oaxaca, Puebla, Veracruz, and Jalisco. The states with the highest volumes of production are: Sinaloa, Jalisco, Michoacán, and Estado de Mexico;
- The states of Oaxaca, Chiapas, Veracruz, San Luis Potosi and Mexico are among the states with the largest area planted to “criollo” or native varieties of maize;
- In Chiapas and Oaxaca, the MasAgro program over the past years has attained yields between 30 and 70 percent higher through the use of best practices including the use of improved native or “criollo” varieties. This indicates the potential viability for closing yield gap to generate surpluses thus highlighting a forthcoming need for commercialization;
- The volume of production of maize alone is greater than the installed storage capacity in the states of Chiapas, Campeche, Puebla, Oaxaca and Veracruz;
- Most of the storage facilities in Campeche, Chiapas, Durango, Nayarit Oaxaca and Zacatecas have a storage capacity of 2000 tons or less;
- A preliminary comparison between the registry of storage facilities in ASERCA and the number storage facilities certified to issue Warehouse Receipts (CD) indicates in Chiapas and Guerrero less than 10 percent of the storage facilities are certified to issue CD;
- In Durango, Guanajuato, Michoacán, and Zacatecas, less than one half of storage facilities are certified to issue CD. This could be done due to the size of the facilities and/or failure to meet infrastructure or administrative requirements.

63. Based on these results and on the comparison between total production volumes and storage capacity (Figure 2), the following eight States were selected as potential project intervention areas

<sup>21</sup> Data from National Agriculture System (SIAP) for cycles fall/winter 2013/2014 and spring/summer 2014.

<sup>22</sup> Information from SIAP on total seeds and percentage of criollo seeds used in 2014. Information on diversity of landraces from CONABIO.

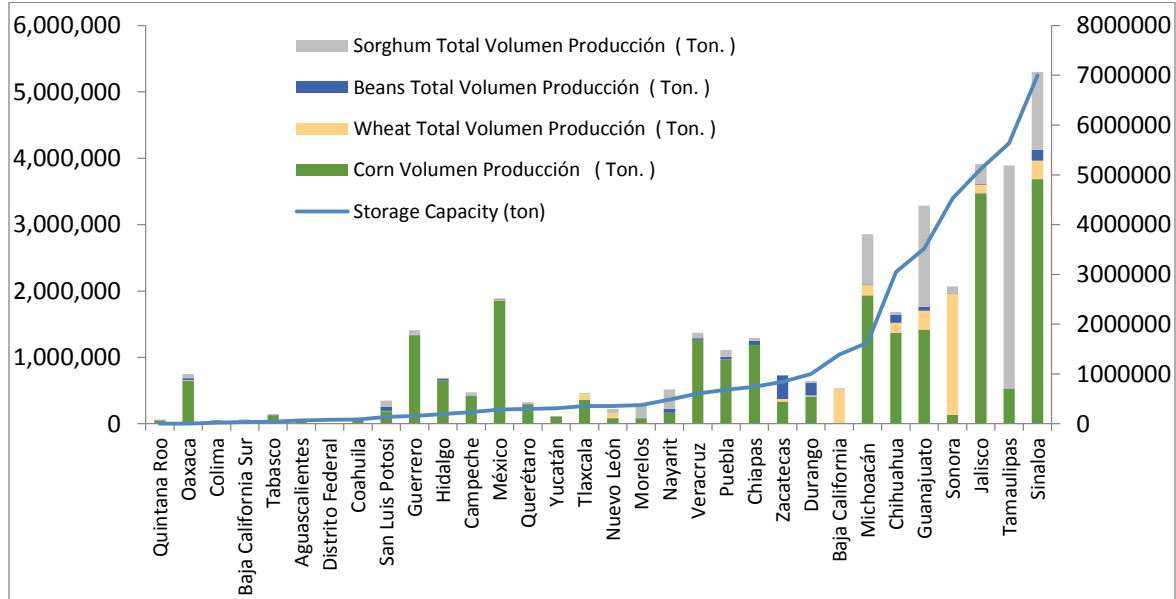
<sup>23</sup> ASERCA’s Storage Facility Registry. Information on CD Certified Storage Facilities from the Asociacion de Almacenes Generales.

<sup>24</sup> Information from ASERCA from Contract Agriculture 2014 disaggregated by state with variables on crop, tons, values.



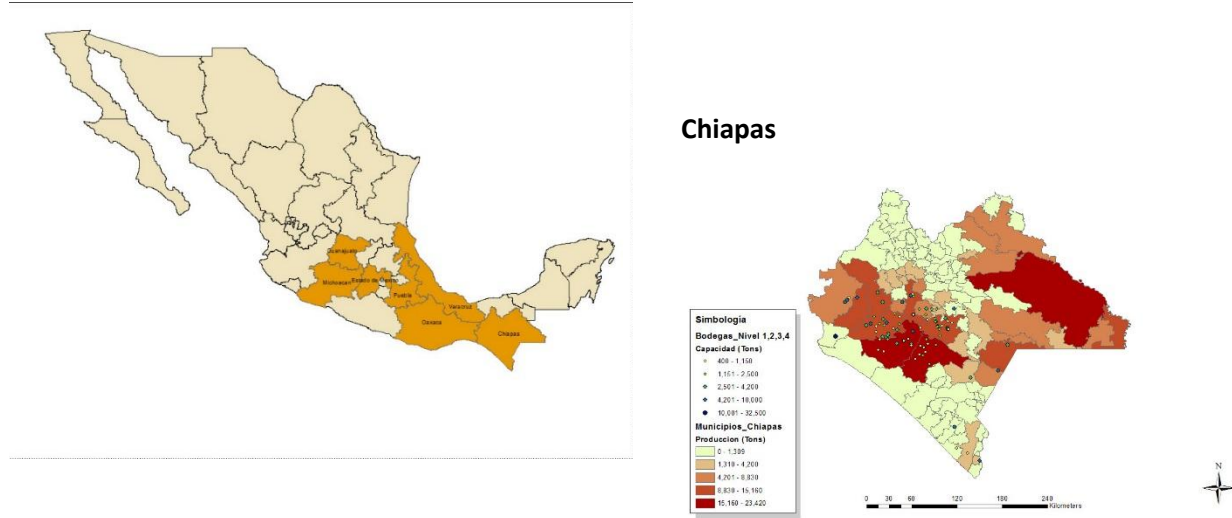
under Component 1: Mexico, Guerrero, Michoacán, Guanajuato, Veracruz, Puebla, Chiapas and Oaxaca. Because of heightened security situation in the State of Guerrero, the State could be considered in a future intervention, thus limiting the selection to seven States for the scope of this project (Figure 3). These were also validated with country experts.

Figure 2: Volume of production and storage capacity available per state



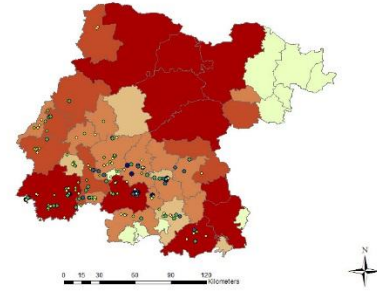
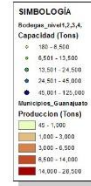
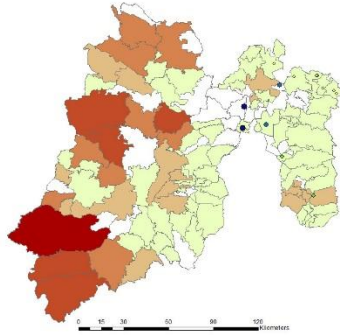
Source: SIAP Production year 2014 and ASERCA Registry of Storage Facilities in the country.

Figure 3. States for Project Interventions

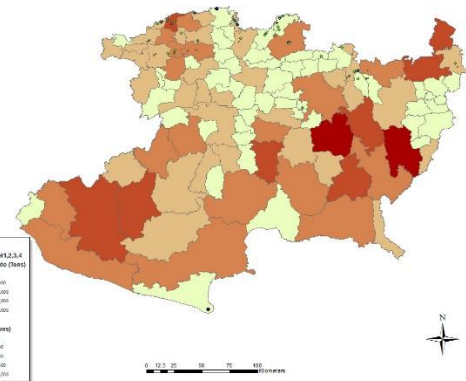




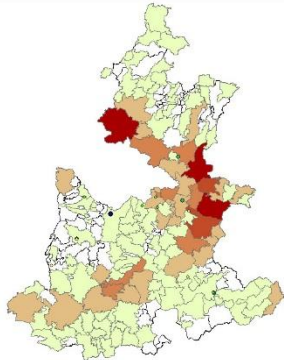
### Mexico



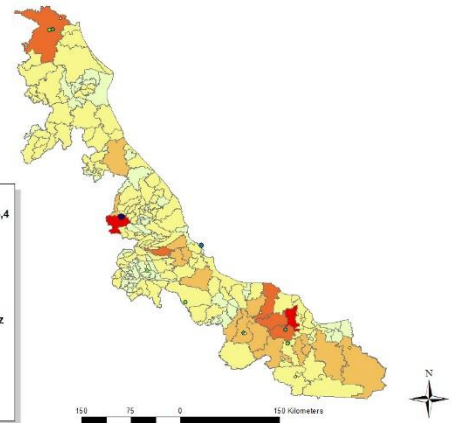
### Michoacán



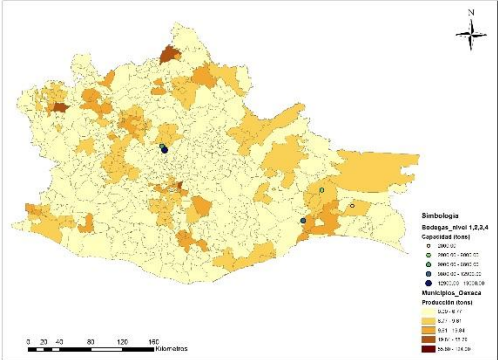
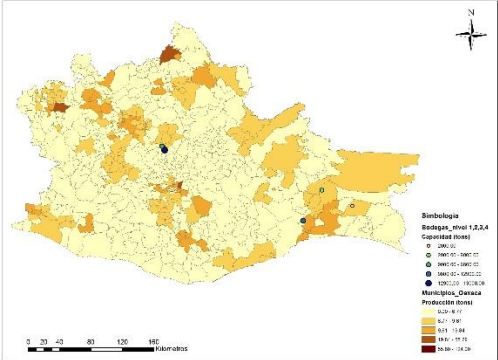
### Puebla



### Veracruz



### Oaxaca



### Guanajuato



## Project Description

### **Component 1: Grain Storage Infrastructure and Operation (Total cost: USD\$170 million; IBRD US\$95 million; Banks US\$60 million; Producers US\$15million)**

64. The objective of this component is to support infrastructure investments and capacity building for grain quality, storage operations and administrative management of storage facilities. Under this component the project will: (i) promote storage of grains for commercialization and food security by financing the rehabilitation and/or construction of off-farm collection centers<sup>25</sup> (*centros de acopio*) located near grain production areas and trade centers<sup>26</sup> (*bodegas*) in areas strategically located to access markets; (ii) develop clear and uniform grain storage requirements for meeting grain market quality standards, including for the quality of grains as well as for the operation and maintenance of storage facilities (including handling, safe keeping and information processing), (iii) provide support services to collection and trade centers that strengthen their technical capacities to become sustainable businesses and thus strengthening the backward and forward linkages across the grain value-chain, and (iv) support and improve the access of project's beneficiaries, through the cooperatives and associations managing the storage facilities, to financial resources to enable grain storage and commercialization. This project component has the potential of generating important climate (adaptation and mitigation) co-benefits, estimated at 20 percent, related to reduction in grain loss, improvement in infrastructure and capacity.

65. Investments will be implemented as sub-projects by formally organized grain producers in selected States. The type and scale of investments will be guided by needs assessments aligning storage capacity to production potential and market demand. Sub-project eligibility criteria will be developed in the Project Operational Manual considering Bank's safeguards and fiduciary norms. Each sub-project will be assisted by an expert consultant to develop a business plan that comprises infrastructure needs as well as other sub-project specific requirements, such as support with grain quality, storage management and operation, financial services, information acquisition and reporting, as well as commercialization strategies among others. The business plan has to demonstrate economic, financial and technical sustainability to be eligible for project financing.

66. Each sub-project is a combination of investment in infrastructure and capacity building and will receive Borrower's Direct Support<sup>27</sup>. To align with the Operational Rules of SAGARPA, up to 50 percent of eligible sub-project cost will be covered with public resources (as a one-time support). The remaining 50 percent is expected to be financed by producer organizations with own cash contribution (10

<sup>25</sup> *Centros de acopio* are defined as grain collection centers with low volume capacity with grain storage units typically located near production areas.

<sup>26</sup> *Bodegas* or *centros de concentracion* are larger grain storage facilities with medium to large storage capacities, located in areas with easy access to markets. These are to be differentiated from *almacenes*, which are large warehouses located near consumer centres in close proximity to urban areas, with large storage capacity for a variety of products, including agricultural products.

<sup>27</sup> As defined in the project Loan Agreement "Direct Support" means a non-reimbursable contribution in an amount to be defined by a resource allocation formula set forth in the Project Operational Manual, made out of an equivalent amount of the proceeds of the Loan to any given Eligible Producer Organization to assist in the financing of Eligible Expenditures under a Grain Storage Subproject. In the text, this is also referred to as a matching grant, as a technical term used by other Bank projects to refer to the resource allocation formula.



percent) and loans from financial institutions (40 percent), such as commercial banks, with a partial guarantee provided by an established fund in SAGARPA jointly with development banks. The storage facilities, owned, operated and managed by producer organizations, can obtain working capital from financial institutions by using their grain inventories as collateral to borrow against. This will support and improve the access of project's beneficiaries, through their associations, to financial resources to enable grain storage and commercialization. The matching grant mechanism and working capital financial arrangements will be defined in the Project Operational Manual.

***Sub-Component 1.1: Improving Grain Storage Infrastructure (Total cost: USD\$150 million; IBRD US\$75 million; Banks US\$60 million; Producers US\$15million)***

67. This subcomponent will support investments in grain storage infrastructure. The investments in infrastructure include the grain storage facilities, such as *bodegas* and silos, and the associated equipment needed for the appropriate handling, management and preservation of grains. The project will not support investments in large warehouses (AGDs) owned and operated by private entities. The improvement in grain storage infrastructure will contribute to the reduction of grain losses and to efficiencies in the use of electricity for drying, hence bringing potential climate (mitigation) co-benefits estimated around 15 percent.

68. This sub-component will support the following activities:

- a. **Rehabilitation of Existing Grain Storage Facilities.** This activity will finance the cost of eligible equipment and support the rehabilitation of non-active storage facilities in surplus producing areas and the upgrading of active facilities to meet minimum grain preservation requirements and storage standards. The storage facilities include collection and trade centers in rural areas.
- b. **Construction of New Grain Storage Facilities.** The activity will finance the cost of eligible construction and equipment of new grain storage facilities in production areas with surplus production and without adequate storage capacity. New storage facilities will comprise small infrastructure, such as silos, located on community land managed by eligible producer organizations.

***Sub-Component 1.2: Improving Storage Operations and Control of Grain Quality (Total cost: USD\$20 million; IBRD)***

69. This sub-component will support capacity building activities required for the operation and long-term sustainability of infrastructure investments to ensure grain quality. The capacity building activities will not only improve the overall operation of storage facilities but can also contribute to generating climate co-benefits (of around 5 percent) related to better knowledge about reducing grain loss, while using available technologies/equipment for increasing grain volumes stored (reducing energy per grain stored).

70. This sub-component will finance the following activities:

- a. **Management of Grain Storage Facilities.** This activity will support the capacity building of grain storage facility operators (men and women) for business plan development, training on the operation and management of storage facilities, including financial training, preparation of capacity building materials for equipment, including storage facility, control and maintenance for collecting and trade centers and other activities related to the physical infrastructure.



- b. **Grain Quality Control.** This activity will support the capacity building of storage facility operators and producer organizations (including men and women) supported by the project on the use of grain quality norms to facilitate standardization and commercialization. It includes on-the-ground training and capacity building to producer organizations for grain quality (including pest management) control and management on-farm (as grain providers) and preparation of capacity building materials for grain quality control and management in collecting and trade centers (as grain receivers).

**Component 2: Information for Grain Management, Markets and Monitoring (Total cost: USD\$24.7 million; IBRD)**

71. The objective of this component is to organize and provide to the public easily accessible information that: a) aggregates and integrates existent information on grain prices, production volumes, storage facilities and inventories, climate variables, and others; b) generates new real-time information on spot prices, inventories, and grain quality standards among others, c) supports analysis and decision making for grain commercialization. The goal is to reduce transactions costs, improve transparency and strengthen commercialization flows and capacity for decision making for both the public and private sectors. In addition, by including weather and climate information modeling, the project will contribute to early warning systems, in service of grain producers across the country, helping them to better prepare and adapt to changing climatic conditions. The information platform can also play an important role for the spatial tracking of grain inventories and their turnover, thus contributing to food security, without the need for the establishing costly national grain reserves. The scope of this component is national with regard to information gathering and provision. This project component has the potential of generating important climate (adaptation) co-benefits, estimated at 20 percent.

***Sub-Component 2.1: Developing an information platform (Total cost: US\$17 million)***

72. Although data currently exist to track storage, financial and price information, the sources are not uniform and are held by multiple institutions, with limited information directly available to small producers. Data is also available in different formats and time horizons that limit its use. Furthermore, the lack of real-time price information creates information asymmetries, reducing production potential and distorting grain markets, hindering commercialization and thus impacting smaller farmers. Under this sub-component, the project will support activities that consolidate and deliver information to the public in a periodic, uniform, transparent and credible way. It is estimated that climate co-benefits generated under this sub-component are around 10 percent its total value; these are related to adaptation actions that the public information system can cause by integrating weather variables and ensuring open access to the information.

73. The following activities are envisioned to enable the information design and delivery mechanism:

- a. **Data consolidation (Total cost: US\$2 million).** The project will support the aggregation of existent information and the collection of new data and their integration into one information platform<sup>28</sup>.

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<sup>28</sup> Activities include: i) the use of existing information (currently collected and hosted by various institutions) to aggregate variables, maps, and other presentations of data into one, standardized, publicly-available information platform; ii) fill current information gaps in the agricultural sector by supporting an on-the-ground, real time information collection system for: a) point-of-sale prices of grains; b) monitoring of grain inventories; and c) grain quality. The information platform will also record



Although the information platform will be developed using maize as a grain of interest, its structure will be designed to allow for application to other commodities. The activity will also support the piloting and training necessary to implement these activities. Climate variables would be part of this consolidation process, enabling the use of weather variables for decision making at different levels (contributing an estimated 10 percent to climate co-benefits).

- b. **Software Development and Use (Total cost: US\$6 million).** The project will fund the core software development of the information platform<sup>29</sup>. It will build on an existing system, using existing institutional capacity, while expanding the scope and capability, as well as its use.
- c. **Information Hardware (Total cost US\$8 million).** The project will fund all hardware necessary for the operation, maintenance and use of the platform, as well as project monitoring. This will include computers and servers for the operation of the platform within ASERCA, as well necessary hardware for other collaborating partners (collecting information) and computers and/or tablets for storage facilities, including storage security equipment.
- d. **Public Access and Dissemination (Total cost: US\$1 million).** The project will support the dissemination of the public information platform to ensure widespread use and impact. This includes promotional resources, regular user surveys, training for storage facilities for the use of the platform and use of ICT for information exchange.

***Sub-Component 2.2: Identifying Market Opportunities (Total Cost: US\$3.7 million)***

74. Improving grain storage is directly linked to identifying market opportunities. This subcomponent will strengthen the commercialization linkages of storage facilities through support to processes and instruments to expand market availability of grain for domestic and foreign markets, including niche markets, market segmentation, and facilitating the opening of new market opportunities among others. To that end, the project will support activities, such as participation in agricultural fairs, market demand research and promotion to link to existent and potential off-takers, development of traceability guidelines, minimizing logistic bottlenecks, to explore new market opportunities, market segmentation potential, as well as other strategic needs to improve market penetration as well as returns. Such linkages will be formalized and measured by the project as trade agreements between storage facilities and buyers. By focusing on market segmentation and strengthening market integration of traditional maize varieties, the project will contribute to the agro-biodiversity of maize, which has important adaptation co-benefits related to the diversification of production, hence reducing the effects of adverse weather shocks (estimated 5 percent contribution to climate co-benefits).

***Sub-Component 2.3: Monitoring and Evaluation of Project Activities (Total cost: US\$4 million)***

75. In the process of information collection, key data will also be provided for project monitoring and evaluation. To be able to assess project impact, a baseline data collection and report, a mid-term review and an end-line report will be carried out by third parties and funded by the project. Project performance reporting will be done semi-annually, using the information structure enabled by the project. This includes reporting on results, safeguards compliance, fiduciary and procurement processes and other information of interest, such as gender-specific participation in the project, citizen

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the use of financial instruments used for the operation of storage facilities, including (potentially electronic) certificates of deposit.

<sup>29</sup> Investments will cover a) the software needed for the integration of selected variables into a platform; b) the storage, analysis and presentation of data; c) the development of smartphone applications for users to access information on their portable devices, d) software needed for the management of storage facilities and d) the development of capacity to operate and maintain the platform and databases.



engagement, etc. The project baseline analysis will integrate weather variables which will enable a better understanding of project context in both socio-economic as well as climatic conditions and contributing to a richer impact assessment (with estimated 5 percent contribution to climate co-benefits).



## ANNEX 2: IMPLEMENTATION ARRANGEMENTS

### COUNTRY : Mexico

#### Grain Storage and Information for Agricultural Competitiveness

##### Project Institutional and Implementation Arrangements

76. In the implementation of this project, ASERCA will play a leading role in the oversight of the infrastructure investments and information systems and support the capacity building required for their successful utilization. ASERCA will enter into sub-project agreements with eligible producer organizations for infrastructure and, through the matching grant mechanism, will also be a part in the financial arrangements made for their financing (a Bank loan supported by a guarantee). ASERCA will coordinate the preparation of business plans and capacity building activities needed by producer organizations for the operation of the grain infrastructure and the quality of the inventories. All eligibility criteria and implementation mechanisms will be detailed in the Project Operational Manual.

77. ASERCA will coordinate closely with other SAGARPA programs given their experience with some of the project's foci. For example, FIRCO can support ASERCA with capacity building for storage infrastructure; MasAgro / CIMMYT can be important for knowledge on small and medium producers and their production practices and commercial potential, for capacity building on grain quality standards, as well as for supporting ASERCA with the oversight of safeguards compliance, the Special Program for Food Security of SAGARPA (*Programa Especial de Seguridad Alimentaria*, PESA, for its acronym in Spanish) (FAO) can provide knowledge on community decision making processes and producer organizations and support on-the-ground efforts to engage with them. In this context, ASERCA may hire as consultants, subject to Bank's prior review, entities such as CIMMYT and FAO to provide support with the capacity building activities for the targeted beneficiaries, as well as for the generation of specific information for the information platform.

78. ASERCA would establish working arrangements with the two development institutions in Mexico, FIRA and FND, for the provision of financial intermediation, through guarantees, to support the investments. This is necessary to enable the financial inclusion of small and medium agricultural producers for commercialization of grains, as well as to enable participation of commercial banks in the investment process.

##### Financial Management

79. **Country issues relevant to the Project.** Generally, public financial management in the Mexican Federal Administration relies on strong budgeting, treasury, accounting and control systems. These financial management country systems apply to project transactions because Bank financed operations are incorporated in the Mexico's federal budget framework and are executed accordingly.

80. **Implementing Entity.** The project will be implemented by SAGARPA, through the Agency for Services toward Commercialization and Development of Agricultural Markets (ASERCA), a deconcentrated entity of SAGARPA, technically and operationally autonomous within the Agriculture Sector.



81. ASERCA has no previous experience in implementing World Bank financed projects, and it operates nationwide through its Regional Administrative Units ('Direcciones Regionales'), which will play an important role in the process of infrastructure projects validation, verification and supervision. For many years ASERCA has not implemented infrastructure projects, and will need to implement strict validation and supervision processes to ensure that infrastructure sub projects envisaged for Component 1.1. are satisfactorily implemented and completed, and also to ensure that sub project financial and physical progress information is generated and controlled, in order to allow financial and physical sub project monitoring. Project financial management function and procurement (except for procurement activities under Component 1.1.) will be in charge of ASERCA's Administration Directorate (*Dirección General de Administración y Finanzas*).

82. **Loan Financial administration.** Nacional Financiera, S.N.C., I.B.D. (NAFIN by its acronym in Spanish), a Federal Government Development Bank, will act representing SHCP as the Project financial agent of the Borrower with regard to the Loan. In that capacity, NAFIN would be responsible for financial administration, including managing loan disbursement processes and provide overall implementation support and oversight, based on its many years of experience with World Bank-supported projects.

83. **Budgeting arrangements.** Funds of the project are allocated into the federal budget (*Presupuesto de Egresos de la Federación*, PEF for its acronym in Spanish), its operation is subject to provisions of the annual PEF Law, the Federal Budget and Fiscal Responsibility Law, Government Accounting Law, and special budgetary provisions established in the operational rules issued by SAGARPA for each fiscal year. As a result of the overall Federal Budget restrictions in Mexico, ASERCA has experienced important budgetary reductions; approved budget for fiscal year 2017 was approximately 20 percent lower than 2016. If this budget situation continues during project implementation it possess a risk of budget constraints over project execution that could result in implementation delays. Infrastructure sub projects (Component 1.1) will be funded 50 percent ASERCA (World Bank financed), 40 percent by commercial or national development banks financing, and 10 percent by the beneficiary producer organization.

84. **Accounting and budget systems.** ASERCA keeps accounting records and budget control through the accounting and budget systems in use at country (federal) level. Accounting and Budget System (*Sistema de Contabilidad y Presupuesto*, SICOP, for its acronym in Spanish) is used for institutional accounting records, and the Federal Financial Administration System (*Sistema Integral de Administración Financiera Federal*, SIAFF, for its acronym in Spanish), linked to the National Treasury (*Tesorería de la Federación*, TESOFE for its acronym in Spanish) is used for budget execution and control. As part of the financial management arrangements for the project, additional controls will need to be implemented by ASERCA to keep separate control over funds used for project, including funds from federal budget and funds from other sources (infrastructure sub projects). Although project's financial reports will be prepared based on standard model agreed with the Ministry of Public Administration (*Secretaría de la Función Pública*, SFP for its acronym in Spanish) for the Mexico portfolio, this reports will be adjusted in order to report detailed information on sub projects financial and physical progress, setting forth sources and uses of funds, showing separately funds financed by the Bank.

85. **Internal control and internal auditing.** In addition to strict regulatory provisions under the federal budget framework, ASERCA is subject to specific operational rules, issued by SAGARPA for each



fiscal year, and also to the Federal Public Administration Internal Control Standards issued by the SFP, which as a whole provide for sound internal control arrangements for the project. Particularly for infrastructure sub projects, strict eligibility criteria will be defined in detail in the project's operational manual, which will also include specific provisions for selecting eligible beneficiaries<sup>30</sup> and verification, validation, monitoring and supervision measures to ensure that sub projects are satisfactorily completed. The internal auditing function is carried out by ASERCA's Internal Control Unit ('Organo Interno de Control') which reports to the SFP and must follow Public Audit Standards and guidelines issued by SFP. The latter also approves the Internal Control Unit's annual work program, oversees its operation and receives its audit reports. Good systems are in place for timely follow-up to internal audit observations and implementation of recommendations. The Internal Control Unit could include the project in its Audit Annual Plan and if so the report would be made available to the Bank. ASERCA is also within the scope of audit the Supreme Audit Institution ('Auditoria Superior de la Federacion'), which is independent from the three levels of Government in Mexico.

86. **External Audit.** Annual audits on project financial statements and eligibility of expenditures will be performed in accordance with Bank policy, as reflected in the Audit Terms of Reference and Memorandum of Understanding agreed between the Bank and SFP. An independent audit firm appointed by SFP and acceptable to the Bank will conduct the project audits. Audit terms of reference for the annual financial audit will require independent auditors to report on the actual use of funds and the scope of the audit will cover all project funds (Bank and counterpart), ensuring that project proceeds are used for the intended purposes.

87. **Identified financial management risks and mitigating measures.** ASERCA has no previous experience in implementing World Bank financed projects. Moreover, for many years ASERCA has not executed infrastructure projects. Strict supervision, validation and verification processes need to be put in place to ensure that infrastructure sub projects to be implemented under Component 1.1 are satisfactorily completed. ASERCA will implement strict control and supervision mechanisms and procedures, to ensure that infrastructure sub projects are executed and completed satisfactorily. The Bank and ASERCA have agreed on the following action plan aimed at mitigating the identified risks: (i) The mechanisms and procedures to oversee and monitor infrastructure sub projects financed under Component 1.1 will be agreed between ASERCA and the World Bank and reflected in the Project's Operational Manual; (ii) The Project Task Team will monitor budget allocation in order to assess if sufficient budget is timely allocated to execute the project; (iii) Training and capacity building to ASERCA Regional Units, as well as project beneficiaries, will be agreed with ASERCA and delivered; (iv) Strict eligibility criteria, particularly for infrastructure sub projects financed under Component 1.1, will be included in the Project Operational Manual.

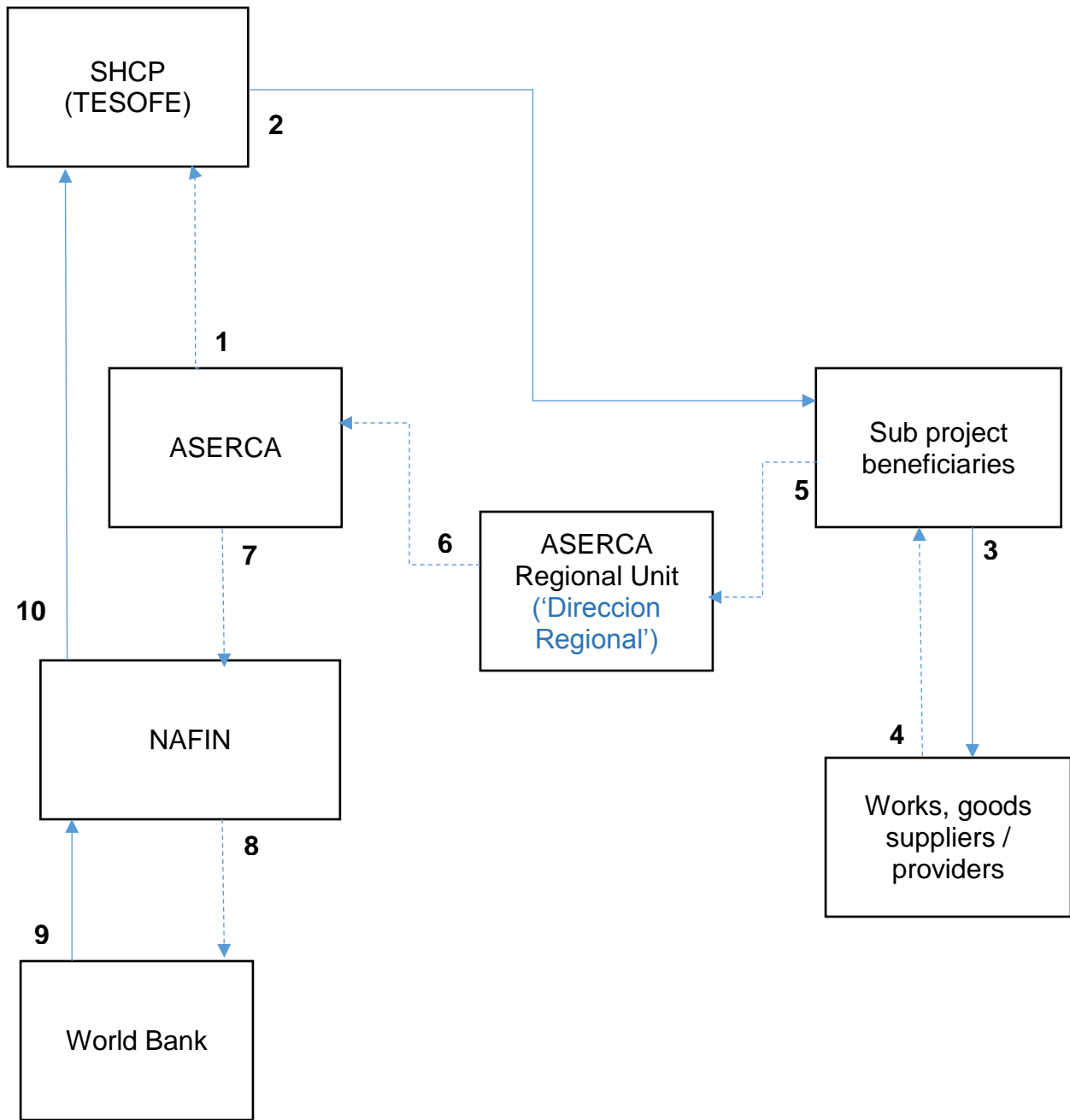
88. **Financial Management Supervision Strategy.** The Bank team will conduct two full financial management supervisions per year, which will include physical verification of infrastructure projects in the field.

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<sup>30</sup> Component 1.1 will not target individuals, rather established organizations with operational and financial records, eligibility criteria will be defined in detail in the project's Operational Manual.



### Flow of funds for Sub component 1.1



- Solid lines: Funds Flow
- Broken lines: Information Flow

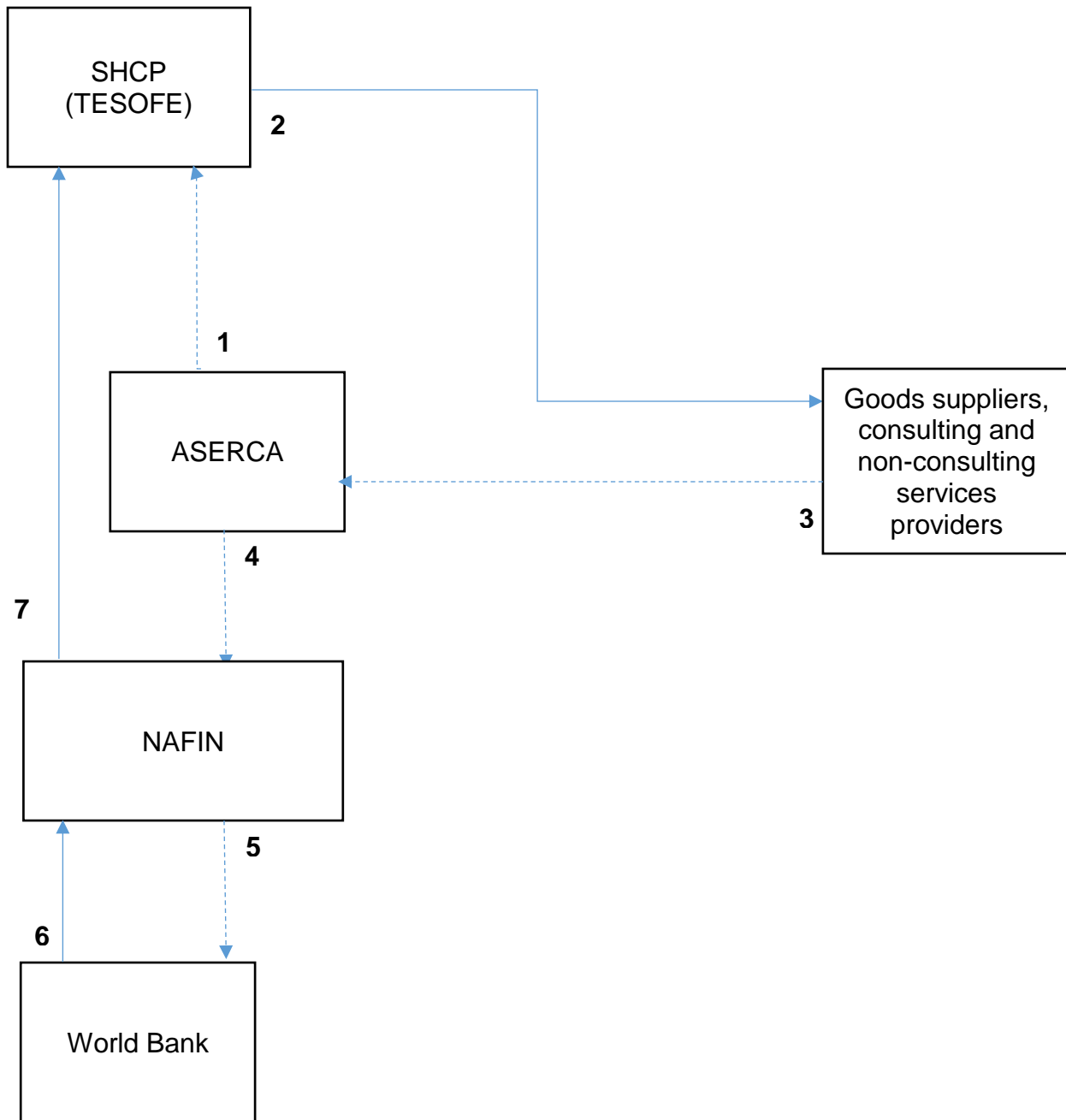


1. Based on the budget approved annually by the Congress, ASERCA will request TESOFE to transfer the funds to sub project beneficiaries, by issuing a payment instruction (*Cuenta por Liquidar Certificada*, CLC). Funds will be transferred according to the execution schedule set forth in the Sub Project Agreement entered between ASERCA and the beneficiary (Sub Project Agreement). Upon signing of the Sub Project Agreement, an initial 50 percent of the Borrower's Direct Support (financed with Loan proceeds) will be transferred to the beneficiary for execution to begin; subsequently, funds will be transferred by tranches to complete the remaining 50 percent of Borrower's Direct Support, according to physical progress, as set forth in the Agreement.
2. After receiving the CLC, TESOFE will transfer funds to the sub project beneficiaries, to the account open for the sub project.
3. Sub project beneficiaries will make payments to its suppliers/providers for the completion of the sub project.
4. Sub project suppliers/providers will provide to the sub project beneficiaries the documentation to support paid expenses (invoices, work advances reports).
5. Sub project beneficiaries will report to ASERCA (Regional Unit) financial and physical progress of the sub project and provide supporting documentation (invoices, work advances reports).
6. ASERCA Regional Unit will provide supporting documentation to ASERCA. ASERCA (central unit) will implement the necessary mechanisms and controls to ensure that the funds are correctly applied by each sub-project, and that all expenses meet the eligibility criteria.
7. ASERCA (Finance Directorate) will prepare and submit the disbursement applications to NAFIN.
8. NAFIN will receive and review the disbursement application and request disbursement to the World Bank.
9. World Bank will reimburse loan proceeds to NAFIN.
10. NAFIN will reimburse TESOFE Loan proceeds.  
Funds will be disbursed by the World Bank according to sub project physical progress. The initial transfer to beneficiaries upon signing the Sub Project Agreement (50 percent of Borrower's Direct Support) will be disbursed as this transfer is completed; the remaining 50 percent balance of the Borrower's Direct Support will be disbursed according to physical progress, as set forth in the Project Operational Manual.

Note: Sub projects will be financed 50 percent by the Borrower's Direct Support (budget allocated to ASERCA for each fiscal year through the PEF, this will be financed by an amount equivalent to loan proceeds), 40 percent through financing from either commercial or national development institutions, and 10 percent by beneficiary producer organization.  
This chart flow shows the flow of funds that will be financed with Federal Budgetary proceeds (Borrower's Direct Support financed by the World Bank).



**Flow of funds for Sub components 1.2, 2.1, 2.2 and 2.3**



- Solid lines: Funds Flow
- Broken lines: Information Flow



1. Based on the budget approved annually by the Congress, ASERCA will request TESOFE to transfer the funds to the goods suppliers and the consulting and non-consulting services providers, by issuing a payment instruction (*Cuenta por Liquidar Certificada*, CLC).
2. After receiving the CLC, TESOFE will transfer funds (payment) to the goods suppliers and the consulting and non-consulting services providers.
3. Goods suppliers and the consulting and non-consulting services providers will send to ASERCA the documentation supporting paid expenses (invoices).
4. ASERCA (Finance Directorate) will prepare and submit the disbursement applications to NAFIN.
5. NAFIN will receive and review the disbursement application and request disbursement to the World Bank.
6. World Bank will reimburse loan proceeds to NAFIN.
7. NAFIN will reimburse TESOFE Loan proceeds.

### Disbursements

**Table 1. Disbursement Arrangements**

Disbursement method	The following disbursement methods may be used under the loan: Reimbursement
Supporting documentation	SOEs, Invoices and Receipts. For infrastructure sub projects (sub-component 1.1), additionally the agreement between ASERCA and beneficiaries, CLC and physical progress support documentation.
Retroactive expenditures	Eligible payments must meet the following conditions: <ul style="list-style-type: none"> <li>▪ For payments made up to 12 months prior to the date of the Loan Agreement</li> <li>▪ That do not exceed 20 percent of the loan amount.</li> <li>▪ The retroactive expenditures would be subject to the same systems, controls and eligibility filters described above. Those expenditures would also be subject to the regular Project external audit.</li> </ul>
Recognition of expenditures for disbursement	For expenses financed under sub-component 1.1 (infrastructure sub projects), expenses will be recognized for disbursement as follows: <ul style="list-style-type: none"> <li>• The initial transfer to beneficiaries upon signing the Sub Project Agreement (50 percent of Borrower’s Direct Support) will be disbursed as this transfer is completed; the remaining 50 percent balance of the Borrower’s Direct Support will be disbursed according to physical progress, as set forth in the Project’s Operational Manual. The final disbursement tranche will be made upon completion of the works.</li> <li>• For expenses financed under sub-components 1.2, 2.1, 2.2 and 2.3, expenses will be recognized for disbursement after payments have been made and are properly documented.</li> </ul>

Note: All SOE supporting documentation, sub project documentation and files will be available for review by the external auditors and World Bank staff at all times during Project implementation, until at least the later of: (i) one year after the World Bank has received the audited Financial Statements covering the period during which the last withdrawal from the Loan Account was made; and (ii) two years after the Closing Date. The Borrower shall enable the World Bank’s representatives to examine such records.



**Table 2. Disbursements per Expenditure Category**

Category	Amount of the Loan Allocated (expressed in USD)	Counterpart (expressed in USD)
(1) Goods and works under Grain Storage Subprojects under Part 1.1 of the Project	74,850,000	74,850,000
(2) Goods, non-consulting services, consulting services, Capacity Building and Project Incremental Costs under Parts 1.2 and 2 of the Project	44,850,000	0.00
(3) Front-End Fee	300,000	
<b>TOTAL AMOUNT</b>	<b>120,000,000</b>	<b>74,850,000</b>

89. The Task Team and ASERCA have agreed on the following action plan for financial management aspects aimed at mitigating identified risks:

- a) The mechanisms and procedures to oversee and monitor sub projects financed under Component 1.1 will be agreed between ASERCA and the World Bank and reflected in the Project’s Operational Manual.
- b) The Project Task Team will monitor budget allocation in order to assess if sufficient budget is timely allocated to execute the project.
- c) Capacity building activities will be carried out for ASERCA Regional Units, as well as project beneficiaries, as agreed with ASERCA.
- d) Agreed eligibility criteria, particularly for infrastructure sub projects financed under Component 1.1, will be included in the Project Operational Manual.

**Procurement**

90. **Procurement will be conducted according to the World Bank Procurement Regulations for Borrowers under Investment Project Financing**<sup>7</sup>, dated July 1, 2016, for the supply of civil works, goods, consultants and non-consultant services. Procurement activities under Sub-component 1.2 and Component 2 will be undertaken directly by ASERCA and formally organized grain producers, following a Community-driven Development approach, will conduct activities under Sub-component 1.1. The World Bank’s Standard Procurement Documents will govern the procurement of World Bank-financed Open International Competitive Procurement. When approaching the national market, as agreed in the Procurement Plan dated February 13, 2017, the harmonized procedures and documents agreed by the Bank with the *Secretaría de la Función Pública* (SFP) and the Inter-American Development Bank will be used.

91. **A procurement capacity assessment** was carried out to ASERCA and the analysis concluded that ASERCA has experience in dealing with Procurement activities. However, considering the complexity of such activities and the large number of sub-projects, a dedicated and experienced Procurement Specialist should be hired to support Project’s implementation. The Project Operational Manual shall include clear procedures comprising a capacity assessment methodology for the beneficiaries (which will be conducted by ASERCA), eligible expenditures under CDD, Procurement methods that will apply under



CDD, templates for CDD (procurement plan, request for quotations, contracts, etc.) and supervision and audit arrangements.

92. **Procurement Arrangements.** A Project Procurement Strategy for Development (PPSD) was carried out and identified the appropriate selection methods, market approach and type of review by the World Bank, as follows:

**Goods and Non-consulting services** will be procured following Request for Bids, Request for Quotations and Direct Selection methods. Under Open International competitive procurement approach the Bank’s Procurement Standard Documents will apply. When approaching the national market, the Open National Procurement approach using the harmonized documents agreed by the World Bank with the SFP and the IADB will be used.

**Consulting services** will be procured following Quality and Cost Based Selection, Fixed Budget Based Selection, Least Cost Bases Selection, Quality Based Selection, Consultant’s Qualification Based Selection, Direct Selection and Individual Consultants methods. Under International Market Approach, the World Bank’s Request for Proposals Standard document will apply. When approaching the national market, the harmonized Request for Proposals agreed by the World Bank with the SFP and the IADB will be used.

**Procurement under sub-projects** will be conducted by formally organized grain producers. The eligible expenditures will exclusively comprise rehabilitation of existing grain storage facilities and construction of new grain storage facilities following the CDD approach, which will include RFQ and local competitive bidding. ASERCA will be responsible for monitoring and supervising the procurement activities conducted by the beneficiaries, including the designation of a responsible for procurement, that will support, supervise and monitor the procurement activities by beneficiaries, with Terms of Reference acceptable to the Bank.

93. **Risk Mitigation Plan.**

**Table 3: Procurement Improvement Action Plan**

Risks - Areas for improvement	Mitigation actions	When
A PPSD and a project procurement Plan	A comprehensive PPSD and a detailed Procurement Plan have been prepared.	Before Negotiations
Responsibilities related to the Procurement activities	<p>The Project Operational Manual shall contain:</p> <p>A clear definition of the processes, roles, and responsibilities of the staff related to the implementation of the Procurement activities.</p> <p>With respect to the CDD, the final Operational Manual shall include:</p> <ul style="list-style-type: none"> <li>- Capacity assessment methodology for the beneficiaries, which will be conducted by ASERCA</li> </ul>	Before Effectiveness



	<ul style="list-style-type: none"> <li>- Eligible expenditures under CDD</li> <li>- Procurement methods that will apply under CDD</li> <li>- Templates for CDD (procurement plan, request for quotations, contracts, etc.)</li> <li>- Supervision arrangements for CDD</li> <li>- Audit arrangements</li> </ul>	
Staff with expertise in procurement.	A Procurement Specialist with TOR acceptable to the Bank shall be incorporated to ASERCA.	As agreed in the Procurement Plan
Most of the procurement activities would be implemented through beneficiaries of subprojects	The agreements signed between ASERCA and each the organized grain producers shall include a statement in which the beneficiaries agree, that the procurement of civil works and goods would be carried out in accordance with the procedures set forth in the Operational Manual. Training to the beneficiaries shall be conducted by ASERCA.	During project implementation

**Environmental and Social (including safeguards)**

**Environmental Aspects**

94. ASERCA has prepared an Environmental Assessment (EA) and an Environmental Management Plan (EMP) acceptable to the Bank and in compliance with the recommendations received during the PCN. Consultations were held with small producers in two different states with high biodiversity (Chiapas and Oaxaca), and in Mexico City with a broader group of stakeholders (academia, NGOs, Governmental institutions, etc.). Recommendations, as well as lessons learned from other projects, were included into the project design. The Environmental Assessment was also enriched with the experience by MasAgro/CIMMYT.

95. The analysis indicates that the project is expected to generate important environmental benefits, including improvement of post-harvest conditions, competitiveness of small producers from increased productivity and sale of production surpluses, improving conditions and standards of grains, while conserving the diversity of production. The project will not directly support agricultural production decisions, but may influence them through their integration to value-chains. No land use change activities will be supported, no native areas (including primary forests) will be degraded, traditional crops will not be replaced by high yielding or Genetically Modified Organism (GMO) varieties, and no actions will be taken which could affect conservation or protected areas, their buffer zones, or Key Biodiversity Areas, including critical natural habitats, forest ecosystems or areas with physical cultural resources, and no activity will include the uncontrolled use or increased use of agrochemicals.

96. The project is not expected to have negative environmental impacts. The EA has not identified any large scale, significant, irreversible or cumulative impact. However, some aspects in terms of habitats, pollution, and sustainable use of natural resources, agro-biodiversity, food security and livelihoods of the most vulnerable should be taken into consideration. Hence, the project is classified as category B, as its environmental impacts and risks are moderate and site-specific. Six Bank environmental safeguard policies have been triggered: OP 4.01 on Environmental Assessment; OP 4.04 on Natural Habitats, OP 4.36 on Forests, OP 4.09 on Pest Management; and OP4.11 on Physical Cultural



Resources; together with OP4.10 on Indigenous People.

Environmental Assessment OP/BP 4.01	YES
Natural Habitats OP/BP 4.04	YES
Forests OP/BP 4.36	YES
Pest Management OP 4.09	YES
Physical Cultural Resources OP/BP 4.11	YES
Indigenous Peoples OP/ BP 4.10	YES
Involuntary Resettlement OP/BP 4.12	NO
Safety of Dams OP/BP 4.37	NO
Projects on International Waterways OP/BP 7.50	NO
Projects in Disputed Areas OP/BP 7.60	NO

97. Main activities of this project which could directly and indirectly have an impact are those related to infrastructure investments (land use, residues and waste, noise and vibrations, water use and pollution, air pollution, erosion) and capacity building for grain quality and storage operations (loss of grain diversity). The activities related to the physical rehabilitation of existing and/or construction of small storage infrastructure may have implications in terms of soil and water management, waste management and the use of storage agrochemicals. However, several provisions have been made to secure that soil, water and air are not polluted, equipment and hardware remainders and that agrochemicals are duly managed. These will be included in eligible business plans. The increase in storage capacity and the growing global demand for grains may pose a challenge to the project areas to produce more and this may have implications in terms of natural habitats. Institutional capacity for delivery and monitoring is another important finding, considering that ASERCA has no experience in addressing environmental issues. Pest management, and in particular the use of agrochemicals, is important, as some non-recommendable products are being used; special concerns are related to the use of particular pesticides to cure the grains against pests, which could deteriorate the grains when stored; and, the presence of mycotoxins (especially aflatoxins), poisonous chemicals produced by maize that affect human health.

98. **Consultations.** Consultations were extensive with representatives of producer organizations, NGOs, local governments, and other public and private entities. A strategy and an action plan were prepared based on the inputs of producers in two of the most biodiverse states in Mexico (Chiapas and Oaxaca). All stakeholders agreed on the importance of the project in terms of improving storage capacity and increasing production to generate surpluses. In terms of environmental aspects, the consultations have raised several recommendations, such as (a) project design to incorporate barriers to participation of the most vulnerable and restore aggregation centers in areas of low accessibility; (b) technology and training to fight against pest affecting post-harvest production; (c) increase in productivity to generate surplus and address the loss of fertility; (d) protect traditional crops and evaluate differentiation of products and market scenarios; (e) treatment of waste and residues; (f) best practices to increase production and quality of products; (g) information and communication with local knowledge and local application, among others.

99. **Mitigation measures.** The EA has produced a series of potential environmental risks that have to be taken into account, monitored and duly reported. All activities proposed in the Project do not require EIA according to the national legislation. Project’s environmental risks are duly addressed with



mitigation measures in the EMP and a particular instrument produced for pest management which is contained in the IPMP. Results derived from the consultation process were incorporated into the project design and the Project Operational Manual.

100. Environmental screening. Investments will be implemented as sub-projects by formally organized grain producers in the selected States. The type and scale of investments will be guided by needs assessments aligning storage capacity to production potential and market demand. Sub-project eligibility criteria will be developed in the Project OM considering Bank's safeguards and fiduciary norms, including safeguard policies. Compliance with safeguard policies will be part of the eligibility criteria. Each sub-project will develop a business plan that includes infrastructure needs as well as other sub-project specific requirements, and will demonstrate environmental (among others) sustainability to be eligible for project financing. Additionally, these business plans will be required to comply with a series of environmental and social requirements, including safeguards and the compliance to the restrictive list. The project would ensure effective environmental screening with introduction and enforcement of environmental measures and excluding sub-projects which could pose environmental damages in an ex ante assessment. In the unlikely case of sub-projects presented through the demand-driven nature of the Project, these will be analyzed in depth and consulted with the Bank to be subject for no-objection to further continue with their approval and implementation. The design of the monitoring and evaluation include environmental indicators which will demonstrate the environmental gains and benefits for a group, which will be supervised by the Bank Missions at least twice yearly. Sub-projects under screening which do not comply with safeguard policies will not be approved for funding. Those sub-projects which are of strategic importance may receive an additional and special support regarding safeguard policies so as it complies with the expected actions.

101. Institutional leadership. The institutional leadership, ensuring proper implementation of these policies and recommendations, will be led by CIMMYT, supporting ASERCA to carry out the implementation of safeguard policies and their monitoring. CIMMYT will contribute with the technical capacity, the existing work, the environmental and social dimensions incorporated in their activities and especially their sustainable technologies (adequate seeds, diagnostic tools, integral fertilization, conservation agriculture, and diversification and access to markets, and post-harvest technologies.) Working with CIMMYT is option to reduce and avoid risks as a strategic partner to ASERCA. ASERCA acknowledges the importance of safeguards and that competitiveness also implies practices which are social and environmental appropriate and sustainable, and these dimensions and the interaction with CIMMYT will help increase the quality, the risk management and the institutional development.

102. Training and capacity building. The project will incorporate a capacity building plan for safeguard implementation in the first quarter of the implementation period.

103. Natural habitats & Forests. A special consultancy will be carried out in the first quarter of project implementation to map existing and planned, national or sub-national official conservation areas as well as areas of high value for conservation such as Ramsar Sites or any Wetland of Importance, Key Biodiversity Areas (KBAs). This will safeguard potential impacts on natural areas. Biosphere Reserve or similar areas will be analyzed in a separate way as they contain productive land.

104. Special environmental guidelines. Special guidelines to be followed in case the environmental screening of sub-projects activate any of these are (a) waste management, (b) construction/



rehabilitation of infrastructure and their mitigation measures regarding noise, air, water and soil pollution, (c) management of hazardous materials, among others.

105. Pest management. The Integrated Pest Management Plan (IPMP) has been prepared as part of environmental assessment. The plan has focused on those aspects regarding the conservation of grains in terms of use of elements to fight against pest, the training and equipment needed and special aspects related to storage, management and application of controllers. Given the importance of aflatoxins in maize production and storage, particular recommendations are included in the IPMP.

106. Monitoring and evaluation. A set of indicators regarding environmental safeguard policies will be monitored every six months by the Bank and ASERCA/CIMMYT and special attention will be given to any arising environmental aspects during project implementation. All documents for particular projects will be filed and used in a monitoring scheme to secure successful implementation of guidelines depicted in the EMP.

### **Social Safeguards**

107. According to Operational Policy 4.10 on Indigenous Peoples of the World Bank, and in accordance with the findings of the social assessment, the Indigenous Peoples Plan (IPP) includes a) the necessary measures for indigenous peoples to have access to the social and economic benefits of the Project and receive culturally relevant benefits without generating inequality and b) recognizes the customary rights of indigenous and non-indigenous peoples and communities with respect to lands and territories. The IPP proposes actions that should form an integral part of the project in order to ensure all people have access to the Project's benefits. The IPP is a flexible document that allows the continuous improvement in order to guarantee full project compliance with social safeguards.

108. In any intervention, the main risks to indigenous peoples are: a) their exclusion due to the lack of recognition of their cultural diversity b) reinforcing a system that marginalizes them and c) the absence of cultural and environmentally appropriate actions, all of which risk widening cultural gaps.

### **Social assessment**

109. Given the large population of indigenous peoples in Mexico in general, and specifically in several of the project intervention states, this social assessment largely focuses on project impact on indigenous people. However, beyond this, the social benefits for producers are expected to be fully positive.

110. This project does not anticipate negative social impacts for the population because the main objective of the Project is to improve grain management infrastructure as a catalyst for greater productivity, storage and commercialization. The only potential risks are primarily related to Component 1, and are as follows:

1. **Project Coverage.** Work to do diffusion of information about ASERCA project.
2. **Production.** Given the project's investments in storage infrastructure for commercial maize, the following are risks to consider: a) The production of native race maize could be discouraged because it is more commonly for household consumption and not for storage and commercialization; b) Boosting of storage infrastructure close to indigenous municipalities can create risks of widening the inequality gap in this sector of the population due to the technical capacity of the indigenous population; c) The encouragement of improved seeds could risk displacing land race varieties and pose risks for food security at the household level; d) There is



a need for a greater level of technical assistance to be able to work with maize for indigenous communities.

**3. Indigenous organization and land ownership.** There is a need for better understanding of community structures and associations in order to be able to promote culturally appropriate interventions.

### Potential positive impacts

111. The Project presents several areas of opportunity for all producers, including indigenous producers, to benefit. These include: a) The construction and rehabilitation of storage centers in regions with high indigenous presence may trigger the formalization of indigenous organizations; b) The project may help producers avoid middlemen and provide access to credit and financing in indigenous communities; c) Indigenous communities will have access to project benefits, including capacity building, technological innovation, financial services, access to information and organizational, administrative, commercial and financial training; d) The project will aim to position landrace corn in niche markets. Given the large participation of indigenous populations in the production of native corn varieties, these activities may specifically benefit indigenous producers.

### Action plan

112. **Line of Action 1: Strengthen the participation of the indigenous population in the Project and reduce cultural barriers**

- 1.1 Design and implement a financial capacity development program tailored to indigenous entrepreneurs.
- 1.2 Define specific tools to include the indigenous population, focusing on multigenerational and gender aspects.
- 1.3 Create and implement a strategy to position the native maize in the market
- 1.4 Create strategies for technicians to better facilitate and manage community groups.
- 1.5 Establish and implement a differentiated strategy to ensure the equitable participation of indigenous men, women, youth and adults.
- 1.6 Continually revise instruments to promote social criteria in the project and facilitate inter-institutional linkages to improve the care of indigenous peoples, women and older adults
- 1.7 Train project facilitators through workshops and guides in facilitating work with the indigenous population.
- 1.8 Strengthen the technical assistance processes targeting the indigenous population.
- 1.9 Establish and implement marketing strategy for native land races of maize
- 1.10 Carry out a mid-term social evaluation of the project to determine positive impacts and negative impacts successfully avoided.

113. **Line of Action 2: Design a culturally appropriate project dissemination strategy for indigenous producers.**

- 2.1 Design audiovisual materials about the project for the dissemination in indigenous languages to create demand among indigenous people.
- 2.2 Design printed material about the project for dissemination to indigenous producers that describe the process for participating, taking into account the cultural characteristics of the population and written in the indigenous language.
  - 2.1. Disseminate and promote key messages related to the objectives of the project, highlighting the biocultural importance of land race maize in Mexico for different audiences.



- 2.2. Develop dissemination material to strengthen the capacities of the different audiences on social safeguard issues.
- 2.3. Conduct workshops to disseminate the Rules of Operations of the project
- 2.4. Carry out workshops that layout the benefits and obligations of the project
- 2.5. Hold forums or meetings that allow the exchange of technical knowledge between producers
- 2.6. Establish an agreement with the National Commission for the Development of Indigenous Peoples (CDI).

**128. Line of action 3. Establish a grievance mechanism.**

- 3.1. Design and implementation of a system for handling complaints through the operational units of the executing and co-executing agencies aiming to establish a communication channel to receive nonconformities.
- 3.2 Strengthening the areas of social comptrollership, to have oversight, transparency and accountability frameworks
- 3.3. Elaboration of guides to orientate indigenous population to the access channels of communication for grievances.

**129. Consultation process**

1. Municipality of Teopisca, Chiapas. 155 participants of the following indigenous groups: i) Tzotzil 51 (men) and 8 (women), Tzeltal 81 (men) and 6 (women), Tojolabal 6 (men) and others;
2. Municipality of Huautla de Jiménez, Oaxaca. 70 participants of the following indigenous groups i) Mazateco 21(men) and 30 (women), ii) Nahuatl 14 (men) and 3 (women) iii) Chinanteco 2 (men).

**130. Main Recommendations**

1. The indigenous producers of Chiapas have a high yield production and commercialization practices. These producers represent an atypical segment within indigenous Mexico, but could be a great opportunity since they are potential population for a national storage system.
2. The indigenous producers of Oaxaca have a greater maize diversity, but are mostly small producers plots less than one hectare and yields lower than 1.5 tons per ha. However, in Oaxaca there are Rural Production Societies that have the capacity to generate surpluses.
4. The dissemination of the project materials to indigenous producers should be tailored to each group.
5. There should be consultations throughout the Project to ensure access to grievance channels.

**Monitoring and Evaluation**

131. The project baseline for will be carried out after eligible sub-projects have been identified and before any projects investments take place. The monitoring of project activities will be carried out by ASERCA, with support from the ASERCA's regional offices. CIMMYT will support ASERCA with the monitoring of key safeguard information, considering their presence on the ground and already-developed monitoring systems.



### **ANNEX 3: IMPLEMENTATION SUPPORT PLAN**

**COUNTRY : Mexico**

**Grain Storage and Information for Agricultural Competitiveness**

#### **Strategy and Approach for Implementation Support**

132. An implementation strategy has been arranged to ensure a sound logic and timely project implementation. Lessons learnt from FIRCO and other sector Projects have been a valuable input to work on the approach for the implementation. One of the goals is to ensure that implementation support activities provide effective mitigating measures against to the Project's key risks and increase the likelihood of achieving the expected results of the Projects Theory of Change and the Results Framework.

133. The implementation support plan focuses on the key implementation risks identified in the risk assessment and describes actions to mitigate them. The ISP also includes a detailed table of the required expertise and resources for the planned implementation in collaboration with other partners including development partners (DPs), and the required human and financial resource commitment by the World Bank needed to ensure effective and successful implementation of the Project.

#### **Implementation Support Plan and Resource Requirements**

134. The ISP approach entails close monitoring of the Project's technical design and implementation aspects, Institutional arrangements, fiduciary, and safeguards issues. Given the overall design and scope of the project, a small multi-disciplinary team comprised of technical specialists, along with fiduciary, environmental, social and operations specialists will be needed to support ASERCA in implementing the Project. The support outsourced by ASERCA will strengthen the Central and Regional levels. This will guarantee timely coordination, and communication with the project stakeholders involved and benefited with the project's implementation.

135. One challenge for ASERCA will be to operationalize a new model on the ground, ensuring that information flows effectively and on a timely basis between all the project stakeholders. Critical to the Bank's effective implementation support will be its coordination and timing, aligned with key stakeholders/points in the planning and implementation of project activities.



Table 1: Project Implementation Plan - Summary of the critical path for the strategic implementation

Project Implementation Plan					
Activities					Responsible
<b>Project Effectiveness</b>					SHCP
<b>1. Strengthening of the ASERCA team with additional expertise ( HR recruitment , for Central and Regional level)</b>					ASERCA, FIRCO , NAFIN, other relevant stakeholders to project objectives
<b>2. Project launching Workshop</b>					
2.1 Logistics, identify/invite Key Stakeholders, preparation & workshop					
<b>3. Elaboration of the institutional agreements</b>					ASERCA Central and Regional and State Offices
3.1 Agreements review/fine-tuning > Signature					
<b>4. Preparation of the Dissemination/promotion Strategy in the targeted States</b>					ASERCA Central and Regional and State Offices
4.1 Implementation of the Dissemination Strategy ( Letters addressed to Producers associations, workshops, meetings at the State level)					
<b>5. Markets assessment study</b> To analyze and meet current market demands and trends					Consulting Services
<b>6. Baseline Study</b> It will be carried out after eligible sub-projects have been identified and before any sub-projects investments take place					Consulting Services
<b>7. Business Plan Development to support the Producers Association</b>					
7.1	Review/fine-tune the Business Plan Methodology and strategy ( eligibility criteria reflected in the Project Operational Manual )				ASERCA Central, Regional and State Offices (internal induction workshop)
7.2	Prepare the Official Public Call for Expressions of Interest				
7.3	Publish the Official Call for Expressions of Interest				
7.4	Preparation and submission of the Expressions of Interest				Producers Associations
7.5	Apply the checklist to verify compliance with eligibility criteria)				ASERCA Regional Offices
7.6	Official Communication to the Producers Organizations of the results				ASERCA
7.7	Firma de un Pre acuerdo para Desarrollar el plan de negocios				ASERCA & Producers Associations
<b>8 Start of the development of the Business Plans</b>					
	<b>8.1 Infrastructure Safeguards</b> ✓ Social ✓ Env.	<b>8.2 Equipment</b>	<b>8.3 Organizational Strengthening</b>	<b>8.4 Information System (Component 2 and sub-components)</b>	6.1.Producer Organizations 6.1.1 CYMMIT 6.2 FIRCO 6.3CYMMIT 6.4 ASERCA
The approach for the Business plan preparation is integral and the process is described in the Project Operational Manual					
a	Technical	Technical	Training plan	Development	Outsourced to



	<b>Specifications preparation/validation</b> Preparation and definition of the design, technical specifications and bill of quantities (outsourced)	<b>Specifications</b> preparation aligned to the infrastructure	<b>development</b> Outsourced and delivered according to the specific Producers Organization needs.	and approval of the Terms of Reference	specialized firms/ organizations
b	Identification of the Service Providers	Equipment list definition	Communication and coordination with the Producers Associations	No Objection	
c	Preparation of the design and budget (technical specification, drawings, budget)			Call for EOI Shortlisting No objection RFP	
d	<b>Business Plans preparation and presentation</b>				> Specialized Consulting Firms in Agribusinesses >Producers Association
e	Business Plans analysis and evaluation ( Technical & Financial feasibility)				Specialized Consulting firms (not involved in the preparation to avoid conflict of interest)
f	Endorsement by the Direccion General de Desarrollo de Mercados e Infraestructura Comercial and a Steering/evaluation Committee, that can be composed at the request of the Director.				ASERCA
g	Agreement signature ( Acuerdo de Concertacion ) to benefit the Producers Association from the matching grant				ASERCA & Asociaciones de Productores
<b>8.1</b>	<b>Infrastructure ( see Project Implementation Plan and Plan de Adquisiciones y Contrataciones PIP &amp; PAC)</b>				
8.1.1.	Direct Invitation to construct/refurbish the Grain's storage Compliance with the Social & Environmental Safeguards				>ASERCA, > Producers Associations
8.1.2	Proposals evaluation ( cost & quality)				
8.1.3	Negotiation with the best offeror				➤ Private Service Providers
8.1.4	Contract Signature				
8.1.5	Initial disbursement and start up of the works (by type of storage/ by				



	state)	
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8.2 Equipment ( see PIP and PAC)		
8.2.1	Set of equipment defined with approved technical specifications	> ASERCA, > Producers Associations  Private Service Providers
8.2.2	Prepare invitation to Equipment Suppliers	
8.2.3	Evaluation and selection of the best offer	
8.2.4	Equipment delivery and installation in the storage	
8.2.5	Signature of the final reception of the goods	

8.3 Training Program ( see PIP and PAC)		
8.3.1	Preparation of the training program and the implementation strategy	
8.3.2	Coordination with the stakeholders	> ASERCA, > Producers Associations, Private Service Providers
8.3.3	Presentation of the training program and approval	
8.3.4	Prepare the training plan for implementation	
8.3.5	Implement the training plan by state	

8.4 Component 2 Information System development and Implementation ( see PIP and PAC)		
8.4.1	Preparation and approval of the terms of reference	
8.4.2	No objection	> ASERCA, > Stakeholders involved with the Agriculture Competitiveness Strategic Information  Private Service Providers
8.4.3	Invitation, reception and shortlisting	
8.4.4	Request for proposals	
8.4.5	Evaluation , selection, negotiation and contract signature	
8.4.6	Assessment, design development, piloting/fine tuning and implementation	



Project Results Framework
Contribution to the Intermediate Results Indicators/targets