



Food and Agriculture Organization
of the United Nations

**FAO – WORLD BANK COLLABORATION PROGRAMME
GLOBAL ALLOCATION**

**CAPACITY DEVELOPMENT FOR THE LIVESTOCK SECTOR INVESTMENT AND POLICY TOOLKIT
LSIPT**

IMPLEMENTATION REPORT

**INVESTMENT CENTER DIVISION
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**

30 JUNE 2019



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1. INTRODUCTION

This implementation report has been jointly prepared by the Investment Center Division (DPI) and the Animal Production and Health Division of FAO (AGA). It summarizes the main activities and results of the implementation of the task “Capacity Development on the Livestock Sector Investment and Policy Toolkit (LSIPT)” financed under the Global Allocation of the FAO – World Bank Cooperative Program (FY19).

Activities under the Global Allocation have been implemented under the overall guidance of Pierre Gerber, Senior Livestock Specialist and TTL of the task (World Bank), and the responsibility of Marc Moens, Senior Livestock Investment Officer (DPIA) and Badi Besbes, Senior Animal Production Officer and Head of the Animal Production and Genetics Unit (AGAG). Other contributing FAO staff included Julien Vallet, Economist (DPIA), Aimable Uwizeye, Livestock Specialist (DPIA), Clare OFarrell, Communication Officer (DPID), Anne Mottet, Livestock Development Officer (AGAG), Clarisse Ingabire, Animal Production Officer, (AGAG), and Bronté Jackson, Communication Officer, (DPIA). Barbara Cintoli, Frontend Software Developer (CIO) and Eduardo Machado, Information Technology Officer (CIO) carried out the feasibility study for the transfer of the toolkit to a web-based user-friendly platform.

During implementation, a close collaboration was maintained with the members of the Consortium for the development of the toolkit i.e. the French Agricultural Research Centre for International Development (CIRAD), and the International Livestock Research Institute (ILRI). Both organizations contributed and actively participated to the development and review of the products prepared under this Global Allocation. Main contributors from CIRAD included Véronique Alary, Researcher, Agricultural Economics (SELMET-CIRAD/ICARDA Rabat) and Hugo Valls-Fox, Researcher, Ecology Specialist (SELMET-CIRAD) and, from ILRI, Karl Rich, Principal Scientist, and Sirak Bahta, Senior Agricultural Economist.

All products prepared under this global allocation and mentioned in this report have been shared with the World Bank through OneDrive.

2. EXPECTED PRODUCTS AND DELIVERABLES

Overview of the Livestock Sector Investment and Policy Toolkit

The Livestock Sector Investment and Policy Toolkit (LSIPT) was developed by the French Agricultural Research Centre for International Development (CIRAD) in collaboration with FAO and the World Bank. It is based on a methodology developed by FAO and the World Bank in the context of the “Livestock, Poverty and Growth Initiatives”. Over the last years, the LSIPT has been extensively used by the Investment Center of FAO (DPI/FAO) and the World Bank for conducting technical assessments and socio-Economic and Financial Analysis (EFA) of livestock production systems and value chains in the context of sector analysis and investment projects’ preparation and implementation. It has been used, with the support of the International Livestock Research Institute (ILRI), to assist a number of countries (Ethiopia, Rwanda, Tanzania, Uzbekistan, and India [Bihar]) to prepare their Livestock



Master Plan (LMP) and used by Government to advocate for further investment towards sustainable livestock development. Finally, it is also used by some institutions (e.g. FAO, CIRAD and ILRI) as a support for training including in Masters' Program (CIRAD).

The main objective of the toolkit is to help increase responsible and sustainable public (and private) investment in the livestock sector. The toolkit does this by assisting countries and development partners to generate quantitative and qualitative evidence to evaluate the current and potential contribution of livestock to poverty reduction and equity, economic growth, and food security and nutrition, and, together with GLEAM-i, a tool developed by FAO, estimate Green House Gas (GHG) emissions and mitigation potential in the livestock sector. Based on these evidences, the LSIPT helps make strategic choices regarding the future development of the sector, and is used to prepare Livestock Sector Strategies (LSS) and Road Map for Investment. Additionally, due to the participatory way the tool is introduced, it also leaves lasting capacities amongst the stakeholders involved while building among stakeholders a coalition for change, an alliance to advocate for the sustainable development of the sector overall.

Objectives and deliverables of the Global Allocation

Over the past years, governments and donors' interest for the livestock sector has increased as witnessed by the increasing requests from countries for conducting sector analysis and for livestock investment projects. In many cases, the LSIPT has been used by the World Bank, FAO, ILRI or CIRAD to respond to these demands.

In order to accompany further development and dissemination of LSIPT, an amount of USD 125,000 has been allocated under the Global Allocation of the FAO-World Bank Cooperative Program (FY19) to support "Capacity development for the LSIPT". This amount was covering three main tasks.

A. The preparation of training material:

- (i) Learning package for three to four-day training workshop targeting Government officers in charge of livestock and planning to introduce LSIPT and GLEAM.
- (ii) A short presentation to support a 1 to 2 hours sensitization and information session targeting policy makers, donors, partners and project managers (TTLs/CPM). As part of this dissemination package, a 2-page brochure will be also prepared.
- (iii) In addition to the above material: the short presentation (ii) was to be used to organize a sensitization session to a group of WB TTLs and project teams.

B. Organization of a Consortium meeting (FAO, ILRI, CIRAD and World Bank) to discuss a draft Memorandum of Understanding (MoU) and its operationalization.

C. Feasibility study for the LSIPT Transfer: Preparation of technical design, steps and estimated costs for the transfer of the toolkit to a web-based user-friendly platform.



Overall, it was agreed between DPI and the World Bank that the following deliverables will be produced by the end of the Fiscal Year FY19:

Deliverable 1: The sensitization / training material described in (i) and (ii)

Deliverable 2: A brief Implementation Report with the following annexes:

- (i) Minutes/Report of the Consortium Meeting (B);
- (ii) Draft Memorandum of Understanding between the Members of the Consortium (B);
- (iii) Feasibility study for the transfer of the LSIPT to user-Friendly Platform (C);
- (iv) Summary of the sensitization session with TTLs and project teams (A.3).

3. IMPLEMENTATION PROGRESS

Despite the late confirmation (March 2019) of the allocation for the "Capacity Development of LSIPT", all expected deliverables have been produced, thanks to a team of dedicated staff from FAO, CIRAD and ILRI and the collaboration of experienced and motivated communication and designer specialists.

3.1. Preparation of training material

The task has been shared and implemented under the overall coordination of DPI through Letter of Agreement with ILRI and CIRAD and Secondment Agreement within FAO and, each institution being responsible for the production of specific learning material. LSIPT's experts from these institutions received the support of two communication specialists and a designer to assist in converting concept into images. Key materials produced included:

- **Visual Identity for LSIPT.** A Visual identity for LSIPT was developed by the communication specialists and the designer. The visual identity aimed to reflect the following – learning, finance/investment, livestock, data, analysis, progression of stages using data, information collation. This reflects what the tool is and does, and the purpose of the communications (training, sensitization, awareness, and advocacy).
- **Promotional materials:** a short presentation (15 minutes) targeting policy makers, donors, partners and project managers (TTLs/CPM) that provides an overview of the toolkit for promotional and advocacy purposes was produced and used during a sensitization session (webinar) to a group of WB TTLs jointly organized on June 18th, by FAO and the World Bank (WB) Global Agricultural Practice. The summary of the Webinar session is provided in [Annex 1](#).
- **Brochure.** As part of this dissemination package, a draft 2-page brochure was also prepared, which, when finalized, will be available in hard and soft copy for advocacy purposes. The visual identity and all promotional materials will be used to form the basis of the website that will be constructed.
- **Learning materials for a standard workshop:** A standard four-day participatory workshop targeting Government livestock and planning officers have been designed to introduce LSIPT and GLEAM with the objective of equipping and motivating participants to advocate and



discuss the tools with their governments and decision makers. In addition to presentations, interactive sessions and guided exercises have been designed and integrated as part of the workshop to encourage participant's engagement and enables them to apply their learning and develop capacity in policy setting and investment decisions. Overall, the learning package consists of: (i) a workshop outline and guidance slides for facilitation of a stand-alone workshop, (ii) 14 interactive learning sessions, (iii) 15 presentations and 10 learning exercises. Being too heavy to be annexed to this report, the learning materials has been shared with the World Bank through files exchange.

3.2. Consortium meeting

The meeting of the Consortium took place between 20 and 21 June 2019 with the participation of representatives from the World Bank, FAO, CIRAD and ILRI. The draft minutes of the meeting is provided in [Annex 2](#).

Overall, the objectives of the meeting have been achieved:

- The draft MoU shared with the participants before the meeting has been reviewed, amended and agreed upon. It will be finalized by FAO and shared with partners in order to be discussed and approved internally by each institution before being signed. The draft MoU is provided in [Annex 3](#).
- The learning, communication and promotional material, the feasibility study for the transfer of LSIPT on a web-based platform and all products produced under the global allocation have been reviewed.
- The future development activities of the toolkit have been agreed together with a preliminary program of activities for the consortium.

3.3. Feasibility study for the transfer of the toolkit

The feasibility study for the transfer of the LSIPT into a web-based platform in order to improve the accessibility and the usability of the toolkit has been conducted by the Information Technology Division of FAO (CIO). The findings and recommendations of the study have been presented and discussed during the Consortium meeting, which endorsed the main conclusions and recommendations of the study.

After an analysis of the current version of LSIPT, needed changes to migrate the application to a modernized web-based application have been identified. A mission to CIRAD in Montpellier, France, was conducted to discuss with the developers and the IT manager of LSIPT the evolution of the toolkit, with particular focus on the reasons behind the current conceptual and technological choices. All these steps were required to have a full picture of the current LSIPT, develop a detailed roadmap for the development and testing of the web-based platform, and estimate the related budget.

The feasibility study provided in [Annex 4](#) details the results of the current LSIPT analysis, highlighting the motivations for developing a web-based platform, the new products and services that will be included and how CIO technological approaches guarantee the success of the proposed new solution.



4. NEXT STEPS: THE WAY FORWARD

Individually, each institutions of the Consortium has been using elements of LSIPT in its work to respond to demand from countries for more evidence-based data and analysis and to improve and increase the design of sustainable livestock investments that positively impact economic growth, poverty reduction and food security and nutrition, while significantly reducing GHG emissions. However, never before, those elements have been brought together into a common vision of the toolkit. Therefore, in addition to the products developed under the global allocation, the development of this common vision is probably one of the key result of the work achieved.

The learning and promotional materials produced will continue to evolve and be improved. The consortium will continue to raise awareness about the tool and provide trainings to potential users. A four-day training workshop for the Asia region is scheduled in Bangkok end November and other promotional activities such as the organization of webinars or presentations to introduce the toolkit to high level deciders to engage policy dialogue will be conducted in the coming months. The consortium will also continue its support to countries in the preparation of their Livestock Master Plans (Nepal, Kenya, etc.). It will assist the Government of Ethiopia in the institutionalization of the toolkit in the Ministry of Agriculture and work with the Information Technology Division of FAO the transfer of the toolkit on a new web-based and user-friendly platform.

The transfer of the toolkit to a new platform will also offer opportunities to propose and develop new concept and ideas in order to extend the range of domains that could be address using the toolkit, reinforce certain aspects, or enhance the robustness of certain analysis. This transfer will be done in two phases: (i) develop a modernized web application that used the best tools to support livestock analysis and that is maintainable in the long term; and (ii) continue the improvements of the toolkit by upgrading existing modules and adding new ones. In the short term, the priority is the transfer of the toolkit to the modernized web-based application. Among priorities to be further developed, additional emphasis will be given to: (i) the distribution of work between gender and youth including the issue of children's labor in livestock production systems; (ii) value chain analysis, including multi-markets analysis; (iii) seasonality and variability of price in analysis; (iv) s scenarios setting and simulation tool to better understand trade-offs between options, including the automatization of the national feed and forage balance tool to better integrate the use of natural resources in prospective analysis.

Annex 1

Summary of the organization of the webinar on LSIPT for World Bank Task Team Leaders

On June 18th, a webinar on the Livestock Sector Investment and Policy Toolkit (LSIPT) was jointly organized by the Food and Agriculture Organization of the United Nations (FAO) and the World Bank (WB) Global Agricultural Practice. The aim of the Webinar was to raise awareness of the WB Task Team Leaders (TTLs) on the benefits and applications of the LSIPT. The Webinar lasted for one hour and was attended by nine TTLs and five officers from FAO.

Louise Scura, Manager of the WB Global Agricultural Practice, officially opened the Webinar. In her remarks, Louise highlighted the concern of the underperformance of global food systems mostly regarding natural resources use, nutrition and environmental outcomes. She reminded the audience of the rising demand for animal source food because of the growing human population; and the need to change the trajectory of productions systems, taking advantage of this toolkit and other tools available to set pathway in influencing decision-makers particularly during livestock project design and implementation.

The main objectives of the Webinar were to inform TTLs on:

- How can LSIPT together with GLEAM-i, a tool developed by FAO to assess Greenhouse Gas (GHG) emissions and mitigation potential in the livestock sector, can support the design and the implementation of livestock investments plans and projects that effectively tackle poverty reduction, economic growth, food security and nutrition while reducing GHG emissions;
- How LSIPT can be used to assist Governments and donors to increase and improve policies and livestock investments supporting the Sustainable Development Goals.

A general presentation was given by Marc Moens (Senior Livestock Investment Officer at FAO) in which he presented the six modules of the toolkit that lead to a comprehensive analysis of the livestock sector to identify priority areas of investment. He stated that LSIPT is a resource tool to rely on for comprehensive poverty-focused decision making to correctly identify and maximize responsible investments in livestock sector according to both short-term and longer-term needs and the sustainable development goals. The presentation highlighted numerous benefits of the toolkit, which include among others the support to the preparation of the LMP and the Economic and Financial Analysis of investment project. In addition, the toolkit offers solid foundation and evidence for advocacy and streamlining livestock investments within Country Program Framework and Projects. Additionally, due to the participatory way the tool is introduced, it also leaves lasting capacities amongst the stakeholders involved. Marc concluded his presentation by a call for action, to TTLs to spread the word and help identify country needs in developing project designs and/ or Livestock Master Plans.

The presentation was followed by a 15-minute Q&A session. Questions emphasized TTLs interests to learn the process and coordination between partners for the implementation of the preparation LMPs and policy analysis. The FAO team has compiled full response to questions and is organizing follow-up discussions to respond to immediate country needs in LSIPT applications.

The Webinar was recorded for future use and is available at the following link:

<http://fao.adobeconnect.com/p54agzibmodu/>

Annex 2

Minutes of the Consortium meeting held on 20 21 June, 2019 (draft)

Livestock Sector Investment and Policy Toolkit – LSPIT

Consortium meeting 20-21 June 2019

FAO HQ, Rome, Italy

Draft

Attendees

CIRAD

- Alexandre Ickowicz
- Véronique Alary

ILRI

- Isabelle Baltenweck
- Karl Rich
- Sirak Bahta

FAO

- Badi Besbes
- Marc Moens
- Anne Mottet
- Clarisse Ingabire
- Aimable Uwizeye

For specific sessions on the training materials for the forthcoming workshop in Bangkok and transfer to user-friendly web-page

FAO :

- Barbara Cintoli
- Eduardo Machado
- Bronté Jackson

World Bank

- Pierre Gerber

The main objectives of the meeting are:

1. To discuss and agree on the draft Memorandum of Understanding (MoU) shared with the participants before the meeting. This MoU specifies the areas of mutual interests and modalities of collaboration including the roles and responsibilities of each member of the Consortium;
2. To review the deliverables of the activities conducted under the FAO-CP Global allocation including the feasibility study for the transfer of the LSIPT to a user-friendly web-based platform, the short presentation to introduce LSIPT to policy makers, donors, partners and project managers (TTLs/CPM) and the communication and training material for a three to four-day standard training workshop targeting Government officers in charge of livestock and planning to introduce LSIPT and GLEAM ;
3. To agree on future development and activities;

Main decisions of the meeting

1. Draft Memorandum of Understanding

- a. On Thursday 21st (9-11h30) and Friday 22nd (9h30-12h00, 14h30-15h30), the participants reviewed the draft MoU prepared by FAO. The objectives was to discuss and agree on the areas of mutual interest and the modalities of the collaboration among the parties. On day 1, the participants reviewed the preamble, the purpose and scope and defined the areas of mutual interest. On day 2, the focus was on the areas of the mutual interest, the modalities of the collaboration, resources, use of logo and intellectual properties.
- b. The areas of mutual interest agreed upon are:
 - i. The development of LSIPT and related tools to conduct livestock sector analysis in all three dimensions of sustainability: social, economic and environmental.
 - ii. Use of LSIPT and related tools to conduct Livestock Master Plans (LMP) as defined by the consortium in the annex of the MoU.
 - iii. The capacity building at national and regional level on livestock sector analysis and strategic planning for the sustainable development of the sector.
 - iv. The raising awareness about the use of LSIPT and related tools for livestock sector planning and investments.
- c. All the parties agreed on the following modalities for collaboration under this MoU:
 - i. All Parties are committed to regularly inform the consortium on progress on all four areas of mutual interest (section 2), to coordinate future developments and raise awareness of LSIPT through the focal points for each organization.
 - ii. The consortium seeks to develop a user-friendly and accessible toolkit and agrees on its public and free nature.
 - iii. When a request for support to design an LMP is made to one of the Parties, this Party should inform and involve the other Parties in coordinating and agreeing within the consortium on best institutional arrangement to respond to this request, based on the comparative advantage and resources of each Party.
 - iv. The roles and tasks of each Party in the preparation of LMP will be decided jointly within the consortium and will be specified in separate agreements.
- d. Regarding the use of the logo, two options were proposed:
 - i. Option 1: Parties agree to use their logos on training and communication materials developed within the framework of this agreement.
 - ii. Option 2: The use of the Parties name, logos, trademarks or other intellectual property is specifically prohibited without prior written approval from the Parties.

The first option will be presented to the legal and communication teams of each institutions for approval. If not accepted, the second option will be considered.
- e. The detailed draft MoU is in the annex of this document.
- f. CIRAD, FAO, and ILRI agreed to develop a detailed definition of a Livestock Master Plan to be added in the annex on the MoU. The following activities have been agreed as priorities for the next months:

- i. Develop a web-based user-friendly LSIPT version, based on CIO proposal, and monitor this work through monthly follow-up meetings;
 - ii. Improve the toolkit in the short term in two domains: modelling price variability and improving feed balance;
 - iii. Think and refine sustainability criteria
 - iv. Work jointly to support countries in developing their LMPs
- g. It was agreed that the consortium would have regularly meetings every 6 months to review the progress and plan for future activities under the MoU.

2. LSIPT transfer to user-friendly platform

- a. The IT division of FAO (CIO) has conducted a study to define the modality of the transfer of LSIPT to a new user-friendly web-based platform. The findings were presented by Barbara Cintoli and Eduardo Machado.
- b. The presentation detailed the current state of the LSIPT and focused on modalities for, and future status after, the transfer to a web-based platform. It highlighted the new architecture with new features such as:
 - i. Collaboration of many users on one project
 - ii. Support decision making across the analysis
 - iii. Support of comparison between studies
 - iv. A repository of all on-going projects
 - v. A database of the on-going projects and the main country statistics and parameters
 - vi. Separation of different modules for a better update and management
 - vii. Validation of the data
 - viii. Better accessibility
 - ix. User provision and management
- c. The limitations and benefits of the current LSIPT and the new platform were discussed. It was emphasized the need to establish a close collaboration between IT team and technical team to ensure to limit risks of error.
- d. The transfer would be done in two phases: (1) migration of LSIPT retaining the original models and logical structure and ensuring continuity of data management from livestock systems up to national GDP, and (2) improvement of existing modules, integration of new ones, and links to other platforms.
- e. The budget of the transfer of LSIPT is estimated at 191k USD. This budget does not include staff costs of the technical team to work with IT team.
- f. FAO, CIRAD and ILRI agreed on the transfer mechanism. To follow-up on the transfer, focal points were nominated:
 - i. FAO: Clarisse Ingabire
 - ii. CIRAD: Veronique Alary
 - iii. ILRI: Sirak Bahta

3. Review of the structure and training materials for a four-day standard training workshop on LSIPT and GLEAM targeting Government officers in charge of livestock and planning

- a. The communication officer, Bronté Jackson, presented the structure and the developed training materials for the standard workshop.

- b. It was agreed to split the presentation of the Livestock in the national economy in two presentations: (1) Contribution of the livestock to the national GDP (Day 3- before lunch) and (2) the contribution of the livestock to poverty reduction (Day 3 – after lunch);
- c. Three presentations, initially not included in the FAO-CP Global Allocation are still under development:
 - i. Use of LSIPT in the investment project
 - ii. Livestock population dynamics using DYNMOD
 - iii. Monitoring and Evaluation

4. Future development of the LSIPT

- a. The future development of the LSIPT would keep the multi-criteria approach for the understanding and development of the livestock sector. While the original focus was on poverty reduction, growth and food security, additional emphasis will be given in the future to environment (including through GLEAM). Other short term priorities to be further considered and developed: (i) gender and youth including the issue of children's labor in livestock production systems; (ii) automatization of Value Chain analysis; (iii) introduce seasonality and more possibility of variability of price; (iv) enhance the scenarios setting and simulation tool to better understand trade-offs between options, including the automatization of the national feed and forage balance tool to better integrate the use of natural resources in prospective analysis.
- b. Further development would reinforce the links between different scales, reinforce the multi-periodicity (seasonality), and add the Environment dimension. CIRAD plans to do this through a new H2020 project (DESIDERA CASSECS)
- c. The addition of the multi-functionality of the livestock sector, which is relevant for smallholder farmers.
- d. The addition of multi-markets analysis to improve the value chain component of the LSIPT. This development would include the impact of the investment on markets and trade, labor opportunity, the link of multi-functionality to the value chains, impact of the technology change and economic change and the coupling of LSIPT and other tools.
- e. Develop tools for the post-LMPs.

5. Deliverables for the World Bank under Global Allocation

- a. Marc Moens summarized the progress in deliverables for the World Bank. Overall, all deliverables are finalized or in the final stage of achievement.
- b. Pierre Gerber suggested to consider adding a presentation in the beginning of the workshop in order to provide an overview of the livestock sector, trends and perspectives of the region / country where the workshop is conducted. The suggestion was well received by the participants.

Annex 3

DRAFT

MEMORANDUM OF UNDERSTANDING (MOU)
BETWEEN THE
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO),
THE
CENTRE DE COOPÉRATION INTERNATIONALE EN RECHERCHE AGRONOMIQUE POUR LE
DÉVELOPPEMENT (CIRAD)
AND THE
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE (ILRI)

Preamble:

Considering that the Food and Agriculture Organization of the United Nations (hereinafter referred to as "FAO") is a Specialized Agency of the United Nations system, established in 1945 to raise levels of nutrition and standards of living for all people in FAO member countries; to secure improvements in the efficiency of production and distribution of food and agricultural products and to contribute toward expanding world economy and ensure humanity's freedom from hunger.

Considering that the Centre de coopération internationale en recherche agronomique pour le développement (hereinafter referred to as "CIRAD") is French public establishment working in the global South to generate and pass on new knowledge to support agricultural development, putting its scientific and institutional expertise at the disposal of policymakers in those countries and global debates on the main issues concerning agriculture.

Considering that the International Livestock Research Institute (hereinafter referred to as "ILRI") is a CGIAR research centre working for better lives through livestock to improve food and nutritional security and to reduce poverty in developing countries through research for efficient, safe and sustainable use of livestock.

Acknowledging that livestock contribute around 35 percent of agricultural GDP globally and are the primary source of food and livelihood for over 700 million of people but that there has been historically under-investment in the livestock sector in the developing world by comparison to the other agricultural sub-sectors, .

+ add on demand for ASF, bad press, existing tool and long lasting collaboration (Isabelle)

Recognizing that there is a growing need and demand from donors, governments and private sector for evidence based strategies and plans to support the sustainable development of and responsible investments in the livestock sector in low- and middle-income countries. Specific focus is on allowing the livestock sector to play a full role in achieving the sustainable development goals, and particularly economic growth, poverty reduction and employment, one health, food security and nutrition, gender and social equity, natural resource use and climate change.

Recognizing the lack of data about the livestock sector and the need for sound analysis to support these evidence based strategies and plans, which requires appropriate tools.

Acknowledging that the Livestock Sector Investment and Policy Toolkit – LSIPT- was developed by CIRAD based on an approach developed by FAO and the World Bank, with components developed by ILRI, CIRAD, and FAO, and is used by ILRI, FAO and CIRAD to increase sustainable and responsible investment in the livestock sector by supporting countries in developing their capacities to prepare and implement evidence based and result oriented livestock sector analyses and subsequent investment plans and projects. + emphasize the participatory process as part of the tool (not only data). that the toolkit is not a series of button press tools, but proposes a quanti-quality process of analysis of the sector

Considering CIRAD’s technical expertise on (i) developing tools to model livestock herds dynamic, to analyze the role of livestock in household income and to conduct economic and financial analysis; and (ii) applying these tools in countries to support decision making processes. ++

Considering ILRI’s technical expertise on (i) conducting livestock sector and value chains analysis, (ii) formulating Livestock Master Plans and (iii) developing tools for value chain analysis. ++

Considering FAO’s technical expertise on (i) conducting livestock sector analysis and formulation of investment plans and strategies; (ii) developing tools and conducting technical, economic and financial analysis of investments, and (iii) developing and using tools for the analysis of livestock’s impact on the environment and the climate; considering FAO’s mandate to support member countries in developing policies, programmes and projects for the sustainable development of the livestock sector.

Recognizing that FAO, CIRAD and ILRI have established a long lasting a collaboration on the development of the livestock sector and have jointly contributed to a variety of projects in a diversity of countries.

Recognizing that FAO, CIRAD and ILRI have identified the need to formalize their collaboration to leverage their knowledge and capacities for the planning, monitoring and evaluation of sustainable livestock development investments and strategies, particularly in low, middle-income and emerging countries.

Recognizing their complementarity in skills and in mandate, FAO, CIRAD and ILRI have agreed to form a consortium whose vision is that the livestock sector reaches its potential to support the achievement of the SDGs.

+ why do we want to work together (Alex)

Conscious of the prospects of a mutually beneficial relationship and of the need to establish working arrangements within the framework of their respective rules and regulations.

FAO, CIRAD and ILRI (hereinafter referred to as "the Parties") have agreed to the following:

1. Purpose and scope of this MoU

The purpose of this Memorandum of Understanding is to lay out terms and conditions of the consortium for collaboration between the Parties on the development and use of the LSIPT and related tools (including GLEAM-i and multisector models) for livestock sector analysis, development of strategies and investment plans and projects (including Livestock Master Plans), with the overall goal of supporting sustainable livestock development.

2. Areas of mutual interest and collaboration

FAO, CIRAD and ILRI will collaborate in the following areas:

- 2.1. Development of LSIPT and related tools to conduct livestock sector analysis in all three dimensions of sustainability: social, economic and environmental.

- 2.2. Use of LSIPT and related tools to conduct Livestock Master Plans as defined by the consortium in annex. (process from baseline - diagnostic (including specific thematic areas) - livestock sector strategy to roadmap for evidence-based investments) for economic growth, poverty reduction, food security and nutrition and environmental impact (GHG emissions) as defined in the annex x. LMP requires LSIPT
- 2.3. Capacity building at national and regional level on livestock sector analysis and strategic planning for the sustainable development of the sector.
- 2.4. Raise awareness about the use of LSIPT and related tools for livestock sector planning and investments.

3. Modalities for collaboration

- 3.1. FAO, CIRAD and ILRI agree to collaborate according to the following modalities: All Parties are committed to regularly inform the consortium on progress on all four areas of mutual interest (section 2), to coordinate future developments and raise awareness of LSIPT through the focal points for each organization.
- 3.2. The consortium seeks to develop a user-friendly and accessible toolkit and agrees on its public and free nature.
- 3.3. When a request for support to design an LMP is made to one of the Parties, this Party should inform and involve the other Parties in coordinating and agreeing within the consortium on best institutional arrangement to respond to this request, based on the comparative advantage and resources of each Party.
- 3.4. The roles and tasks of each Party in the preparation of LMP will be decided jointly within the consortium and will be specified in separate agreements.

The Parties will develop a work plan – annexed to the MoU and that will constitute an integral part of it - outlining specific areas of co-operation and activities. The plan will be jointly reviewed and renewed on a yearly basis through meetings between the Parties. Amendments to the work plan will be made, upon mutual agreement, through exchanges of letters between the Parties.

Specific joint activities to be undertaken will be detailed in separate agreements between the Parties to be developed within the framework of this MoU and the annexed work plan. The terms of such agreements shall be subject to the provisions of this MoU unless otherwise provided.

4. Resources

The activities foreseen under this MoU are subject to the availability of staff and financial resources, and the MoU implies no financial commitment by any Party.

5. Cooperation and Management

- 5.1. To foster cooperation, the Parties will communicate to:
 - a. Provide overall strategic guidance for the implementation of the MoU and explore options for coordinated interventions as deemed appropriate.
 - b. Take stock of progress made in the implementation and the results achieved, exchange views on the lessons learned, identify outstanding matters, and areas for future possible collaboration, and agree on appropriate follow-up action at the relevant levels of intervention.
- 5.2. Any future collaboration between the parties beyond the scope of this MoU will be by mutual written agreement.

6. Use of Logos

Option 1: The use of the Parties name, logos, trademarks or other intellectual property is specifically prohibited without prior written approval from the Parties.

Option 2: Parties agree to use their logos on training and communication materials developed within the framework of this agreement.

7. Intellectual Property Rights

7.1. Intellectual property rights, in particular copyright of material such as statistical information and analysis, made available by either of the Parties to be used to carry out the activities under this MoU shall remain with the originating Party. Intellectual property rights over materials developed jointly by the Parties must be addressed in separate written agreements concluded under this MoU before any such materials are developed.

7.2. The Parties agree that intellectual property rights cannot be provided to one of the Parties without being established in writing that this Party have complete rights to use such data or information.

8. Duration of the MoU and entry into force

This MoU is valid for three years and shall take effect on signature by all three Parties. In the event that signature takes place on different dates, the MOU shall take effect upon the date of the last signature. The MoU may be extended by mutual written agreement between the Parties beyond the three-year period upon a joint evaluation of the results and impact of their collaboration.

9. Amendments and early termination

This MoU may be amended by mutual written agreement between the Parties.

This MoU may be terminated by either Party upon six-month written notice given to the other Party. In that event, the Parties will agree on measures required for the orderly conclusion of ongoing activities and in consideration of ongoing obligations vis-à-vis third parties.

10. Notifications and correspondence

All correspondence regarding the implementation of this Agreement, including notifications made pursuant to this Agreement, will be addressed to:

For FAO:
For CIRAD
For ILRI

IN WITNESS WHEREOF, the duly authorized representatives of the Parties affix their signatures below.

***For the Food and Agriculture
Organization of the United
Nations (FAO)***

***For the Centre de coopération
internationale en recherche
agronomique pour le
développement (CIRAD)***

***For the International Livestock
Research Institute (ILRI)***

[Name], [Title]

[Name], [Title]

[Name], [Title]

Signature:

Signature:

Signature:

Date:

Date:

Date:

Work plan:

- Develop an user-friendly LSIPT version with a monthly follow- system;
- Improve the toolkit at short term in two domains: modelling price variability and improving feed basket approach;
- Think and refine collectively on sustainability criteria
- Work jointly and support the full integration from LSIPT diagnostic to LMP

Annex 4

Draft feasibility study for the transfer of the LSIPT to a web-based platform

FEASIBILITY STUDY
MODERNIZATION OF THE
LIVESTOCK SECTOR INVESTMENT AND POLICY TOOLKIT - LSIPT
AND TRANSFER TO A WEB BASED PLATFORM

CIO
BARBARA CINTOLI
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

JUNE 2019

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5. EXECUTIVE SUMMARY

The Livestock Sector Investment and Policy Toolkit (LSIPT) was developed by the French Agricultural Research Centre for International Development (CIRAD) in collaboration with FAO and the World Bank. It is based on a methodology developed by FAO and the World Bank in the context of the “Livestock, Poverty and Growth Initiatives”. Over the last years, the LSIPT has been used, with the support of the International Livestock Research Institute (ILRI), to assist a number of countries (Ethiopia, Rwanda, Tanzania, Uzbekistan, and India [Bihar]) to prepare Livestock Master Plan. It has been extensively used by the Investment Center of FAO (DPI/FAO) and the World Bank for conducting technical assessments and Socio-Economic and Financial Analysis (EFA) of livestock production systems and value chains in the context of the preparation and implementation of investment projects. It is used by some institutions (e.g. FAO, CIRAD and ILRI) as a support for training including in Masters’ Program (CIRAD).

This study of feasibility was commissioned to transfer the LSIPT into a web-based platform in order to improve the accessibility and the usability of the toolkit.

The emphasis is on expanding the number of countries using the toolkit and improving the quality of the analysis, to demonstrate through evidence the importance of the current and potential role of livestock in poverty reduction, food security and nutrition and national economic growth.

The study of feasibility has been conducted through different phases with a top down analysis approach, from a high-level preliminary analysis of the application to a deep investigation of the LSIPT main areas.

During this study, CIO collected existing documentation and worked closely with relevant FAO staff to have a clear understanding of the usage of the toolkit, which is to assist a multidisciplinary team in preparing livestock sector analysis and strategy.

After collecting feedback, CIO started the identification of the needed changes to migrate the application to a modernized web based application. In addition, a mission to CIRAD was undertaken to discuss with the developers and the IT manager of LSIPT the evolution of the toolkit, with particular focus on the reasons behind the current conceptual and technological choices.

All these steps were required to have a full picture of the current LSIPT, to develop a detailed roadmap for the development and testing of the web-based platform, and to estimate the related budget.

Although the current toolkit is structured around six modules, the feasibility study focused on the Diagnostic Phase that consists of modules 3 and 4, and on part of the Planning and Monitoring Phase that includes module 5.

Improvement of the quality of the analysis starts with a better management of the underlying data. Therefore, key features are designed to assure a solid data storage. This new approach will offer numerous benefits, first of all, the visualization and the control of the accuracy of the data by the user.

Furthermore, in the new application the user will be able to share its analysis either with all the users or only with the administrator.

This feasibility study report details the results of the current LSIPT analysis, highlighting the motivations for developing a web-based platform, the products and services that are included in the latter, and how CIO technological approaches guarantee the success of the proposed solution.

6. RESULTS OF THE ANALYSIS

Even if the main objective of the toolkit remains the same, that is to assist in preparing livestock sector analysis and strategy, it is necessary to reconsider its structure to take advantage of the new IT developments. CIO concluded that the transfer of the current LSIPT to a user-friendly web-based platform is absolutely feasible, and it will result in huge improvements in its adoption and use by countries.

The creation of a customizable platform will support the end users in running their analyses by providing a user-friendly interface and a high performance data storage system. Furthermore, the presence of a real web application will allow to overcome any issues regarding environment installation, slow load time, data and information security, and it will improve sharing and monitoring capability.

The key factor for the improvement of the quality of the analysis, and consequently the decision making process, consists in a better description of the current situation. This is translated into the search of: i) the best tools that can suit the LSIPT work, and ii) the best method for data validation.

CIO guarantees that the new system provides the same data, information and results as the current LSIPT version. In addition to this development, and if needed, a Test web application version will be provided, besides the first one, to implement and test new features, changes and improvements in a controlled environment. Once the Test web application version is fully tested and validated, it can replace the first one.

7. DESCRIPTION OF SERVICES

The main purpose of the new application is to support information sharing, to improve the quality of the analysis, to facilitate monitoring of the end-user activity, and to make the usage of LSIPT more intuitive through a simpler interface that follows the user and supports him.

This section is organized in two subsections describing the two versions associated with the new application development:

- LSIPT V.2.1: resulting from the transfer of the current LSIPT version
- LSIPT V.2.2: resulting from subsequent improvements of LSIPT V.2.1

LSIPT V.2.1

The new web-based application of LSIPT is designed considering a modular structure in order to maintain and reinforce the current toolkit approach. Each module relates only to a specific step of the analysis, is considered atomic and at the same time is connected to the other modules. This atomicity guarantees a self-contained component that accepts input, produce output and provide an engine of calculation. In this way, the whole system is composed of a series of interconnected modules that are part of the analysis chain, and each of them can provide a step of the whole analysis as well as a complete analysis. The user can follow the entire modules chain or focus only on a specific module.

Furthermore, the new application is designed to overcome the main drawback of the current toolkit; its complexity. This complexity is partly due to the amount of information that the user has to insert in each file, making it difficult for him/her to stay focused on one action at time.

In order to improve the readability and the usability of the toolkit, the new design provides:

- a better organization of the toolkit sections,
- a customization depending on the specificities of the country; in this way, the visualized information is strictly customized to the country identity,
- automatic customization of the toolkit interface based on the user selection, which for example could depend either on a specific situation or data availability.

The main idea is to avoid any redundant information and to request manual data insertion only when it is strictly necessary. To reinforce this aspect, the toolkit calculation engine will show the user only the result and the formula corresponding to each computation, without requesting his/her direct intervention. As a consequence, the number of human errors is significantly reduced.

Other features of the new design are described below.

The user is the main actor of the analysis process and the web application follows his/her action showing clearly the objective of each component and giving him/her a transparent perspective of the status of his/her analysis through graphical indicators.

The creation of data management and storage system improves the access to data, the clarity of the analysis, and ensures better quality of the system because the data can be

monitored and inconsistencies easily identified. In addition, the new storage system provides a better framework for enforcement of data privacy and security policies. Such effective data management guarantees a better transparency and mitigates the risk of breaching regulations. In addition, the new application provides automatically updated summary that is always visible to the end user and highlights the module(s) associated with the specific calculation. With this approach, it is more intuitive to discover the root cause of possible error.

The user management component (user store) guarantees the security of the system managing user's authorization to access secure resources, and serves as repository of identities that can be used for tracking and supporting the user activity. This efficient user management service will encourage Government staff to use the toolkit and consider it as a working platform, where the user can easily create, save, edit and delete either a partial or a complete analysis. In this context, the application manages the simultaneous activities of several users on the same analysis.

A critical issue with the current version of the toolkit is the lack of data validity checking. To reduce the probability of errors, two services are introduced: a user-friendly interface to insert data manually with specific graphical components and an upload data service including a validity checker. The upload data service has two advantages: reducing the manual data insertion that could cause errors, and improving the tool usability by reducing the effort and time spent in data insertion. In addition, the user can opt for a default set of data that can be used as source for his/her analysis.

Support background documentation both on the modules and on the meanings of the LSIPT terms is available in different sections of the application in order to facilitate the analysis process.

Automatic management of the data related to commodities' value chains. The information produced in this part will be integrated in the rest of the analysis.

An offline option is proposed to overcome the problem of intermittent internet connection. It guarantees the data and analysis step saving in case of system crash.

Finally, the web application is conceived to include a multilingual feature.

LSIPT V.2.2

The analysis of the current LSIPT version considered also the identification of improvements that need to be addressed during the modernization process, as detailed below.

Firstly, the new application provides the possibility to compare different analysis elements highlighting trends and gaps that can help the decision making process. The comparison section shows innovative and customized graphs steered by user's selections.

Secondly, the livestock production analysis should consider the impact on the following sustainability indicators: food security and nutrition, economic growth, poverty reduction and climate change adaptation and mitigation. Currently, the toolkit does not cover the last aspect, but the new design will fill this gap by providing a link with the interactive version of the Global Livestock Environmental Assessment Model (GLEAM-i) to exchange information about Climate Change and Green House Gasses Emission.

Finally, a new service will create the analysis report, showing the user's conclusion regarding his/her analysis, and facilitate the Evaluation and Monitoring phase.

8. TECHNOLOGICAL CONSIDERATIONS

The technological decision process started with the analysis of the current toolkit structure in order to design a solution that addresses its limitations. In particular, the LSIPT structural analysis shows that the toolkit is organized in six interrelated modules. Each module is composed of sub-modules, structured in activities, and steps. Specific tools enable for an allocation of tasks and for the division of the workload between teams. These tools are organized in Microsoft Excel spreadsheet containing:

- Cells for manual data insertion
- Formulas to provide the calculation based on the data inserted by the user
- Visual Basic for Application (VBA) functions to cover the following functionalities: file generations, language translator, import and export data between the files.

The modules included in LSIPT are used for demographic projection, technical-economic performance's assessment, cost-benefit analysis, competitiveness analysis, organizations, policies, legislations and institutions (OPLI) analysis.

The toolkit is not dedicated to data collection, and the inserted data are based on expert knowledge, literature review, survey questionnaires, etc. and are provided to support the implementation of each activity.

In establishing the best tools towards the desired solution, this section of the feasibility study takes into account the needs of the end users and the technological limitations of the current version, which are:

- The difficulty to work in a team due to the lack of a system allowing more users to act on the same analysis, in a collaborative scenario;
- The absence of a system to track the user identity and his/her activity;
- The lack of monitoring and notification of changes;
- The absence of a real time data and information sharing tool;
- Huge efforts and time for toolkit maintenance;
- The lack of information security.

The new web application does not eliminate the theoretical LSIPT complexity but creates an efficient workflow for better analysis' performance. As result, the new platform is composed of three main parts:

- A really intuitive, attractive and simple user interface
- A logic that is the bridge between the end user and the data storage
- A storage mechanism.

The new structure offers also a user management system that regulates the access to the information and the behaviors of each user, guaranteeing information security. In addition, the new application will be universally and always accessible.

The web application works in a dynamic way; all information is constantly up-to-date, and any change is instantly available to all authorized users who will receive email alerts to notify them whenever data is modified.

The interface is composed of a series of web forms (editors) that enable the users to quickly insert their data or to update existing information. Consequently, the results of the analysis are displayed in real time.

9. TECHNOLOGICAL PROPOSAL

9.1. THE PROPOSAL IN BRIEF

The technical proposal intends to develop the new LSIPT following a two-phase approach; 1) develop a modernized web application that used the best tools to support livestock analysis and that is maintainable in the long term; and 2) continue the improvements of the toolkit by upgrading existing modules and adding new ones.

The first phase involves the migration of LSIPT retaining as much of the original models and logical structure. During this phase the new web application will keep the LSIPT features to cover the following areas: Livestock Systems, the Households Structure, the Value Chains Analysis, the impact of Livestock at National Level, and the scenarios setting.

The second phase introduces improvements to the current LSIPT in order to address the identified structural and methodological changes needed for more complex and robust analysis. Some of these improvements will consider better description and analysis of the Value Chains, and inclusion of, or links with, Climate Change adaptation and mitigation modules and tools.

Prior to the second phase, there is a need for extensive research and development to understand the logical structure of the new modules. Such an approach will guarantee consistency of data and information analyses.

9.2. ARCHITECTURE

CIO technical proposal for the new LSIPT web application is based on the following four architectural components:

- The Front end component
- The Backend component
- The Database
- The Application Hosting

The CIO proposal is focused on online Cloud-based servers hosting, which uses virtual technology to offer powerful, reliable and secure IT operations that are highly adaptable to business demands. The Cloud infrastructure offers advantages such as a lower energy and resource costs because it is based on a payment on-demand without the challenge of a big initial investment. In addition, the system will monitor the requests load and adjust the resources accordingly (scalability).

The detailed architecture that CIO proposes as a Cloud based solution is the following:

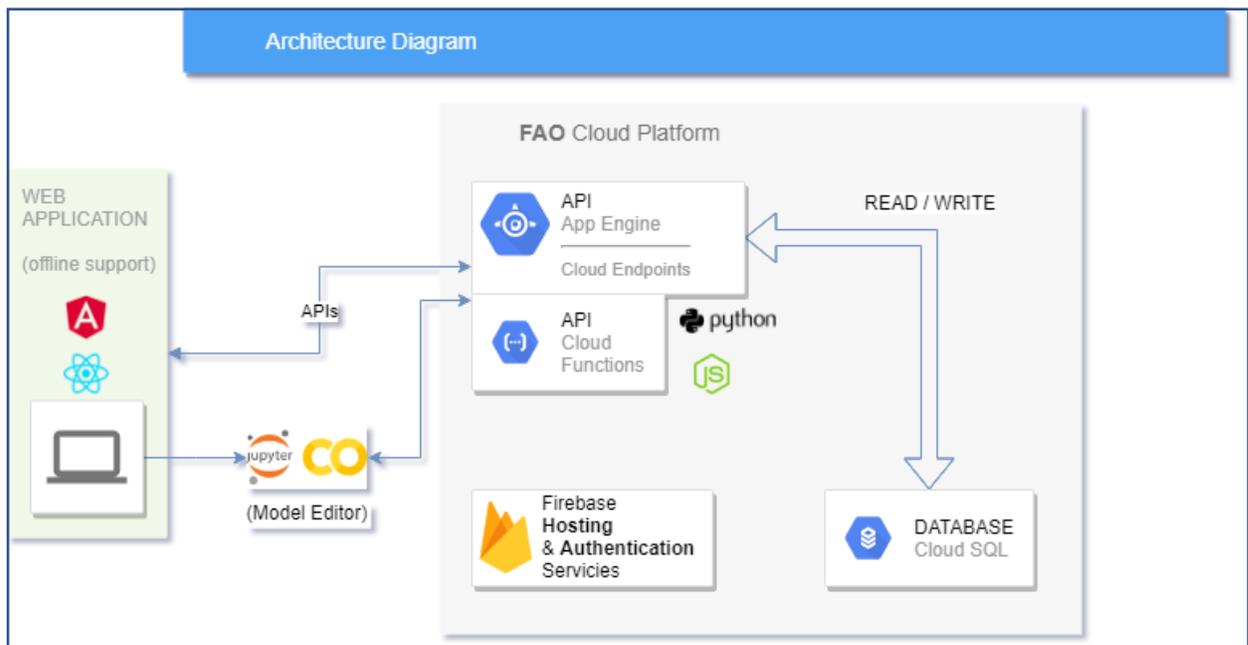


Figure 1: Cloud based Solution

On the front end part, CIO proposes the currently used frameworks: Angular and React that are both based on JavaScript technology. These technologies allow the offline support, which is one of the feature of the new LSIPT web application.

On the Backend side, the proposal considers a very centralized structure to allow FAO the control of the system.

The core characteristics of the architecture is the Servless services, where the applications are hosted by a third-party service. This eliminates the need for server software and hardware management by the developer. With this software design pattern, the development can be focused on the logic behind the application and not on the infrastructure. In particular, the solution is built using the services offered by FAO Cloud

Platform such as API creation using APP ENGINE or the FAO Cloud functions that can be easily used by the software embedded in the front end component as Backend layer.

Regarding the programming languages, the solution considers Python and Node Js, which are particularly useful for the calculations required by LSIPT. But if required, other programming languages can be added.

Another great advantage of this modular structure is that, it is easily and quickly enlarged with the usage of third-party software or external components.

As detailed in the feasibility study, the solution provides the usage of a real relational Database linked to the backend area that manages it, guaranteeing secured and controlled access to the stored data and resources.

The last important aspect shown in this architecture section is the hosting of the front end part of the application. The proposal considers the usage of Firebase hosting because it belongs to FAO Cloud based solution, as a container of services such as Cloud functions and hosting. The strength of this approach is the delegation of server management using the features of a robust infrastructure.

As described before, the creation of the LSIPT analysis models is a great challenge because of the complexity of each model and the necessity to update it. To face these limitations, CIO recommended approach is to separate the model management from the web application components and to consider a multiple purpose analysis engine. An example of this approach could be the usage of Google Earth Engine as a development environment for LSIPT models, where the models are managed and exported in order to be incorporated as part of the application that use them as box to which send and receive data.

Due to the fact that Google Earth Engine is more related to GIS solution, another useful tool for LSIPT can be Phyton Panda, which is a data analysis library providing high-performance, easy-to use data structure and data analysis tools for the Python programming language. However, the CIO proposed solution is mainly focused on another tool that seems to suit very well the challenge and the requirements of LSIPT: The Jupyter Notebook. In particular, by using Google Collaborate, a Google Cloud Jupyter notebook implementation, it will be possible to fully integrate the model editor with the Servless backend layer composed by Cloud Functions/App Engine.

Independently of the type of library in charge of the specific model, the proposal offers a highly adaptable architecture in order to assure the correctness of the created models. In this way, the leadership in the management of the models will be delegated to authorized experts. This will reduce the probability of modelling errors and protect the web application.

This approach allows also an adaptable solution, both for the model improvements and to the specific software used in the model creation.

All other features described in the feasibility study, such as the multi-users management and the multilingual support are guaranteed by the logic implementation of each component.

9.3. FINANCIAL ESTIMATION

The solution, that CIO is proposing, identifies the following expertise to realize the First Phase of the LSIPT transfer.

- The Business Analyst and Product Owner that will follow the detailed analysis of each LSIPT module and will produce the documentation containing the technical requirements specification. This document will be used to start the development of the new LSIPT.
- The Full Stack Developer that will be in charge of the front end side.
- The Data Analyst and the Backend Developer that will work on the data storage and on the backend side
- The Project Manager

To this list, it has to be added the cost for the IT Infrastructure of the new solution. The table below provides details on the estimated costs for each voice. The total cost is estimated to 191,975 USD.

	Type	Unit	Qty	Unit Cost	Allocation
Business Analyst & Product Owner	NSHR	Month	11	5,375 USD	59,125.00 USD
Full Stack Developer	NSHR	Month	11	5,375 USD	59,125.00 USD
Data Analyst/Backend Developer	NSHR	Month	11	5,375 USD	59,125.00 USD
Project Manager	NSHR	Month	11	1,000 USD	11,000 USD
Infrastructure	NSHR	Year	3	1,200 USD	3,600 USD

Figure 2: Financial Estimation