Government of Nepal

Ministry of Agriculture and Livestock Development

Nepal Livestock Sector Innovation Project (NLSIP)

Terms of Reference for
Individual Consultant for PPRS

Assignment title	**Designing, Establishing and Managing the PPRS model and its related Database for a robust and sustainable Genetic Improvement.**
Contract ID	**NP-MOLD-300412-CS-INDV**
Assignment duration Contract period	**Sept 01, 2022 to May 30, 2023 (9 months);**
Primary assignment location	**The consultant will be based at National Livestock Breeding Office, Kaski, Pokhara for 75 % of his/her inputs (man months) every month with frequent travels to Livestock Breeding Centre: Lahan, Siraha and Nepalgung, Banke and other appropriate districts. The remaining 25 % of his/her input every month may be based being at PMU for central coordination and other technical collaborations if required.**
Funding source(s)	**IDA-61490 for Nepal Livestock Sector Innovation Project (NLSIP)**
Contracting entity	**Nepal Livestock Sector Innovation Project (NLSIP), Harhihar Bhawan, Lalitpur Nepal.** **Tel: 00977-1-5010001,Fax: 00977-1-5010001** **Website: www.nlsip.gov.np. Email:** nlsipnepal@gmail.com

(Kathmandu, June, 2022)

1 Background/Context

The Government of Nepal has received a credit of USD 55 million for the implementation of Nepal Livestock Sector Innovation Project. The Ministry of Agriculture and Livestock Development (MoALD) is the executing agency. The project development objectives are to increase productivity, enhance value addition, and improve climate resilience of smallholder farms and agro-enterprises in selected livestock value chains in Nepal.

The project with four components (A: Strengthening Critical Regulatory and Institutional Capacity, B. Promoting Sector Innovation and Modernizing Service Delivery, C. Promoting Smallholder Inclusive Value Chains for Selected Livestock Commodities, D. Project Management and Knowledge Generation) is designed to invest in productive assets, livestock services, market infrastructure, capacity building, institutional and regulatory strengthening and so on. A dedicated Project Management Unit (PMU) has been set up under the Ministry for the implementation of the project. Four decentralized-level support units (DLSUs) and National Livestock Breeding Office (NLBO), Kaski have been set up as cost center to support the PMU.

The project is implemented in 28 districts in five states (State No. 1 through 5) of the country. Two hundred thousand livestock producers are the primary beneficiaries of the project. In addition, about 604 small and medium sized agro-enterprises are benefiting from production and post-production value chain support.

Under the subcomponent B, Promoting Sector Innovation and Modernizing Service Delivery, the project aims to improve quality of services provided by the public Sector in the areas of animal health, breeding, nutrition and herd management in the project area.

For the breed improvement program, NLSIP is supporting in establishing the Pedigree Performance Recording System (PPRS), implementing field activities, strengthening capacities of National Livestock Breeding Offices (NLBOs) and DLS with institutionalizing and building capacity of producers' organizations for the establishment and operation of genetic improvement programs of dairy cattle, dairy buffalo and goats. Activities include development of an animal identification and performance recording system, support to breeding services for genetic improvement, selection of breeding stocks following breeding principles and the multiplication of breeding stocks for distribution in regular production programs. The project also supports the production of frozen semen, expansion of artificial insemination services and natural insemination services in areas where AI is not feasible. The focus remains on the selection of mothers from the local herds registered with PPRS and upgrading them by using imported semen for the production of progenies of genetic merit that are adaptive, more productive and resilient to climate change impacts. Upon successful establishment of PPRS in dairy cattle and buffalo, NLSIP further support to DLS will continue to adapt and apply the same systems for selection of both male and female parents through performance recording in native breeds such as Parkote and Lime buffaloes and Khari and Chyangra goats. Implementation of Genetic Improvement Program will follow strategic actions, embodied in the animal Breeding Policy, during its implementation in the field.

2 SUMMARY OF PROGRESS ACHIEVED SO FAR

Between June 2020 and Feb 2022 the NLSIP had hired services of a consultant to initiate the PPRS. During the period "Animal Breeding Policy" has been approved by the cabinet. Animal Breeding Policy is an umbrella policy that will guide animal breeding activities for the project. The implementation of genetic improvement program is following strategic actions, embodied in the breeding policy. Standard operating procedures (SOPs) for PPRS in cattle and buffalo has also been approved by the ministry of Agriculture and Livestock Development (MoALD).

The activities for PPRS is being implemented under the coordination of National Livestock Breeding Office (NLBO), Pokhara with project support. They included; i) procurement of ear tags and applicator, ii) AI equipment and accessories, iii) Semen of Jersey and Holstein Friesian cattle, iv) Milk analyzers, v) and Others

The project has prepared an implementation plan and action plan for PPRS in cattle and buffaloes. The existing herds in cattle are consolidated and strengthened for their recording. Herds recorded are strengthened for their recording at 8 districts (Existing herds and few new herds). A total of 91 herds with more than 3,200 total cattle are being maintained with recordings. In case of Murrah, a total of 239 buffaloes are being recorded. Additional herds and animals for buffalo need to be brought under PPRS.

Three PPRS training for Recorders, AI technicians, Milk analyzers and Supervisors completed in Pokhara, Butwal and Chitwan clusters including a total of 86 participants and 286 client days in FY 2020/21. One PPRS awareness workshop has been conducted in Biratnagar cluster including 72 participants representing farmers, AI technicians, POs, VH & LSC, LSC at local level, Provincial level livestock personnel and the policy makers at the province level. The project had organized one-week training of trainers (TOT) to 14 officers representing VH & LSEC, NARC, LBOs and others in PPRS data management. Similarly, the project had provided AI training to 24 technicians and refresher training to 31 technicians in the F/Y 2019/20. Similarly, AI training to 26 technicians and 25 paravet was accomplished in the F/Y 2020/21. The project has procured AI equipment's, AI consumables, ear tags and accessories required for the implementation of breeding activities in the field. The project has also provided semen straw filling, sealing and printing machine to NLBO Lahan in order to modernize the semen processing facilities.

To advance PPRS activities, NLBO Pkhara has been created as cost center of this project. In addition to AI equipment's supplied in earlier F/Ys 2075/76 (2018/19), the project further supported supplying the additional equipment's and breeding materials to NLBO.

Data analysis is due for the selection of bull mothers. These mothers will go for nominated AI using semen brought from abroad with high genetic worth. Next year, the calves born from these mothers will be brought under AI station at NLBO for semen production and their use for making genetic improvement.

Against this back drop, the projects intends to recruit a national individual consultant capable of providing required services for designing and establishing a robust Pedigree Performance Recording System (PPRS), and database management system, implementing the field activities, strengthening capacities of National Livestock Breeding Offices (NLBOs) and DLS institutionalizing and building capacity of producers' organizations for the establishment and operation of genetic improvement programs of dairy cattle, dairy buffaloes and goats. The consultant will work with NLBOs and POs to achieve the following and handover to NLBO for its continuation after the project period.

Continue the tasks performed by the previous consultant to establish, operationalize and demonstrate a sustainable pedigree performance recording scheme for selection of superior animals of Jersey and Holstein breeds of cattle and Murrah of buffalo in public private partnership model (POs and NLBO as key partners).

3 Objective/Purpose of the Assignment

The objective of the assignment is to offer Technical Support to the Project in all aspects related to Pedigree Performance Recording System, in designing, establishing and managing the database system for Jersey and Holstein breed of cattle and Murrah breed of buffalo for selection of superior animals of those breeds developing a sustainable system and also to offer consultancy services for genetic improvement, selection of breeding stocks following

breeding principles and the multiplication of breeding stocks for distribution in regular production programs. The consultant will also support the production of frozen semen, expansion of artificial insemination services and natural insemination services in areas where AI is not feasible

4 Scope of the work

In consistent with the project Appraisal Document (PAD), Project Implementation Manual (PIM), National Livestock Breeding Policy, 2022 and Aid Memoir received from WB Implementation review and Support Mission, Breeding Strategy, Action Plan, and SoPs developed by the project and other project documents, the consultant shall undertake the following specific TOR that will include, but not limited to:

i. Design an appropriate PPRS system software application for cattle (Jersey and HF) and Murrah buffalo to capture data of all events like identification and registration, AI, pregnancy diagnosis, calving, female calf registration, female calf follow-up for growth, milk recording, body type recording etc. Design database management system/subsystem for genetic evaluation of performance records. The PPRS model developed should be in line with NLSIP Project Implementation Manual and breeding strategy and breeding action plan developed by the project. The consultant will build upon the works that have already been performed by the earlier consultant and carry out remaining activities that are yet to be performed as per the breeding strategy and action plan.

ii. With all performance records and data collected, the consultant will carry out estimation of breeding values of bulls and recorded female's using internally accepted unbiased prediction procedures and dissemination of the genetics as described in Genetic Improvement Framework in the Breeding Strategy.

iii. The consultant will work with the respective IT specialist from the TASP to develop the mobile apps such that data can be entered through smart phones as appropriate.

iv. Since the success of breeding program is heavily dependent on the nutrition of the animals (nutrition being the limiting factor) the consultant will work closely with the respective consultants from Technical Assistance Service Providers and with other departmental sections to make the results more effective.

v. Co-work with NLBO in preparation of specifications, and NLSIP to import and utilize proven/high merit semen for achieving swift genetic progress in PPRS herds for further multiplication and distribution through AI and natural service.

vi. Build capacity and train personnel for assured perpetuation of the breed improvement program.

vii. Pilot herd and individual animal registration by breed categories–register at least 3000 Jersey and Holstein cattle and 1300 Murrah buffalo in total and bring them into the recording system.

Types of herds available would be as the following:

a) Government/NARC farms.

b) Commercial private dairy farms in Terai and mid-hill districts.

viii. Build technical capacity of respective staff of Livestock Section of the Municipality, Veterinary Hospital and Livestock Service Specialised Centre, Government Farms and NARC as appropriate.

a) Specialist level training for data management and analysis for DLS, NLBO and NARC Scientist as appropriate.

b) Mid-skill training for PPRS operation for VHLSEC and municipal technicians, private paravets/inseminators, lead farmers selected by POs for record keeping, milk analysis, data entry, monitoring, data storage, minor data editing and reporting.

c) Together with NLBOs, develop annual work plan and budget for the project interventions for NLBOs- Pokhara, Lahan and Nepalgung. Build incentives to the personals involved in farm and animal registration, tagging of the selected animals, recording of data such as AI, PD, calving etc. and reporting to the LSS. Also, ensure two time (morning and evening) milk recording of all animals that are in milking for every month.

Identify appropriate equipment such as measuring cylinders/jars, sample bottles, measuring tape and sample bags etc and other materials for recording and help NLBOs to procure and dispatch to the field. All required equipment and incentives should be built in the annual work plan budget so that the whole system runs smoothly.

d) All required formats approved by PMU in consultation with the NLBOs should be printed in sufficient numbers and distributed to all participating municipalities and recorders.

e) Provide hands-on training to officers under different tiers of governments to improve fertility and productivity in cattle and buffaloes.

ix. Conduct TOT for producing adequate trainers to run the program at the field level.

x. Assist and mobilize NLBO experts, DLS trainers and TOTs to conduct intensive on site trainings to participating farmers.

a) Performance record keeping and reporting.

b) Milk analysis records.

c) Internal audit system on data recordings.

d) Husbandry practices.

e) Breeding practices.

f) Health care practices.

xi. Select bull mothers on the basis of data analysis and prepare their breeding plans using imported semen of proven bulls.

xii. Establish and operationalize systems in government/NARC farms for production of bull mothers/bulls.

xiii. Coordinate to establish and operationalize system at provincial level semen production units and government farms.

xiv. If required, undertake feasibility assessment to support make decisions on whether to invest for additional semen production laboratories at regional/provincial level. And also look at the feasibility for NLSIP to invest for the production and processing of frozen semen of goats including that of Boer and Chyangra.

xv. Provide expert opinion to determine the quality and quantity of the frozen semen (Jersey, HF of cattle and Murrah buffalo and Boer goat) that NLSIP *should* import. While importing semen, the consultant will support the NLBO regarding the genomics information of the semen consignment in question and in the selection of the semen to be imported on the basis of production and functional traits such as disease resistance and feed efficiency in addition to productivity traits and total production.

xvi. The consultant *will* train in-country specialists and work closely with them to build their capacity for operationalizing the system, demonstrate PPRS system results and produce PPRS manual and training materials.

xvii. Organize central and provincial level progress review workshops

xviii. The consultant will sufficiently train the four livestock Social Mobilizers who are recently recruited, two for NLBO, Pokhara and one each in NLBOs Lahan and Nepalgung and use them for data recording purpose

xix. Any other assignment as requested by the DLS, PMU and NLBO.

xx. Organise national level validation workshop to dessiminate the achievement made and arrange to handover the whole system to DLS for future continuity

5 Expected Outputs & Deliverables

The Consultant will submit the following deliverables as per the time frame indicated in the Table below.

Tasks	Deliverables	Submission milestone
Update PPRS training Manual	2 Manuals	Within 3 months after signing the contract
Submission of the progress reports to NLSIP and DLS	Every 4 monthly (Quadrimester) and annually	(a) Progress report for July 16 to Nov 16 on Dec 15 (b) Nov 16 to March 15 on April 15 and (c) March 16 to July 15 on August 15
Built upon the previous work done and register additional 1,500 Jersey and 1,500 HF cattle to make the total 3,000 cattles each Jersey and HS and bring them in to recording system, the final number will be 6,000 cattle uunder recording system	3000 Jersey and 3000 HF cattle registered and in recording system	June 30, 2023
Similalry built upon the previous work done and register additional 1000 Murrah buffalos and bring them into recording system	Additional 1000 Murrah buffalos registered and in recording system. The total number	June 30, 2023

	will be 1300 buffaloes under registration	
Analyze data, estimate breeding value based on the available data and report to NLBO	Every three months	Evey three months after joining the project.
Organise central level validation workshop to demonstrate the progress and way forward	At least 2 workshops	Every Six Months
Organise national level validation workshop to dessiminate the achievement made and arrange to handover the whole system to DLS for future continuity	System handed over to DLS	On or before June 2023
Final Progress Report	After the end of the Assignment	June 30, 2023
Final Consultant Report	After the end of the Assignment	June 30, 2023

Note: Each report should be delivered in e-copies in memory sticks in addition to the hard copies.

6 Consultant Qualifications and Expertise required

Specifically, the consultant will have:

i. At least a Master's degree in Animal Production and Breeding Systems, Genetics or equivalent.

ii. A minimum of 10 years of work experience in the sector of livestock development, at least 5 years of professional experience in PPRS in different species of animals.

iii. Considerable knowledge and experience in the design and implementation of efficient, effective and sustainable breed improvement programs for cows and buffaloes considering both economic and biological issues.

iv. Proven knowledge on the preparation of specification and evaluation of the proven high merit semen and PPRS database management for achieving swift genetic progress.

v. A high level of interpersonal, management skills, integrity and ability to work with the team.

vi. Experience of working and/or coordinating with government livestock institutions, INGOs, donor agencies and livestock farmer organizations will be an asset.

vii. Strong written and oral communication skills in English and Nepali, demonstrated ability of making effective presentations.

viii. Computer literate and competent in the use of Microsoft Word, Excel and PPRS database using appropriate softwares, liker-package, SPSS, etc. for the genetic evaluation

7 Duration of Assignment

The consultant will be recruited for 9 person months until June 30, 2023.

8 Duty Station

The PPRS Expert shall utilize 75 % his/her input (Man months) every month at National Livestock Breeding Offices, Pokhara, Kaski; with frequent travel to Lahan, Siraha; Nepalgunje, Banke and the appropriate districts to implement, supervise and monitoring the PPRS activities. The remaining 25 % of his/her input may be utilized being based at PMU for central coordination and technical colorations if required.

9 Reporting and Supervision Arrangements

The consultant directly reports to the NLBO at Kaski about its progress, together it will also report to the PMU. DLS, PMU together with Project Technical Expert (Lead) will control the quality of the work.

10 Selection Criteria

The consultant shall be selected based on the selection method of the World Bank's consultant selection guidelines, Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, January 2011 (Revised July 2014). Main criteria for the selection will be relevant work experience and qualifications

11 Payment

The successful consultant shall be paid a competitive, negotiated and agreed amount in a monthly basis which will commensurate with qualification in accordance with the project financing provisions

12 Responsibilities of the Contracting Party

DLS/NLSIP will provide information, and timely technical advice including comments and suggestions of the work done. Therefore, the consultant will need to inform the DLS and present work schedule to them. The Project Management Unit at Harihar Bhawan will request NLBOs through DLS to provide office space and other office logistics required in the process of performing consultants' tasks in the fields. The consultant will be provided 3 desktop computers with printers at the NLBO, Pokhara and one each desktop computer with printer at each location in the NLBO at Lahan and Nepalgung. The consultant will request NLBO for transportation to his regular visit to project districts in relation to his work as applicable.