



**Laos People's Democratic Republic**  
**Peace Independence Democracy Unity and Prosperity**  
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**Environment Protection Fund**

**PAW/LENS2 Sub-project Application**      No...../FNS, NUOL

**General Instructions:** Please refer to the Project Implementation Manual (PIM) Volumes 1 to 5 for subproject design, implementation and monitoring/evaluation (M&E). In summary:

- Applications should be submitted in both Lao and English to EPF Office. Translating the application is SDA's responsibility. It can be financed by the subproject preparation facility, if such facility has been mobilized, or pre-financed by EPF.
- Applications must demonstrate that the subproject meets the following eligibility criteria: (a) supports a Government of Lao PDR policy, strategy and/or an official plan; (b) contributes to at least one outcome indicator and at least one intermediate outcome indicator from the LENS2 results framework; (d) fits into either the PICE or CBI EPF funding windows; (e) excludes activities from the negative check-list in the PIM, and (f) aligns with project's geographical scope which includes the national/central level and the following provinces: Bolikhamxay, Khammouane, Houaphan, Xiengkhouang, Luang Prabang, Savannakhet, Vientiane and Xaysomboun.
- Applications for protected area and wildlife sub-projects must demonstrate that the subproject meets an additional eligibility criteria: contributes to a regional or global outcome such as cross-border cooperation, knowledge transfer or prevention of illegal wildlife trade.
- Sub-projects are approved for their proposed duration. However, implementation requires the prior annual approval of an Annual Work Plan and Budget (AWPB). EPF has the possibility to cancel an approved subproject if the annual performance is consistently unsatisfactory and the achievement of its objective has become unlikely.
- An SDA can only implement one subproject at a time although additional financing is possible, or per provincial office division, or per faculty or per autonomous institution or partnership is permitted.

*EPFO Sub-project number:*

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| <b>1. Sub-project delivery agency (SDA) (name/address)</b> | Faculty of Natural Science (FNS)<br>National University of Laos (NUOL)<br>Dong Dok Campus<br>P.O.Box 7322<br>Vientiane, Lao PDR  |
| <b>2. SDA focal point (name/function/contact details)</b>  | Dr. Phengxay Deevanhxay<br>Project Director, Lecturer / Assistant to Dean of Faculty of Natural Science<br>Tel & Fax: 021 770173 Mobile phone: 020 9793 6300<br>Email: phengxay@hotmail.com  |
| <b>3. Geographic scope (can be more than one option)</b>   | <input type="checkbox"/> International level<br><input checked="" type="checkbox"/> Central/national level<br><input checked="" type="checkbox"/> Provincial/district level. Please indicate target provinces:<br>National Biodiversity Conservation Area in Lao PDR.<br><input checked="" type="checkbox"/> Protected area. Please indicate (NPA, protection forest, conservation forest and name): Hin Nam Nor NPA (Khammouane), Phou Chom Voy (Bolikhamxay) |
| <b>4. Sub-project title</b>                                | Project for Capacity Enhancement of Laos's Natural Science Related to Environmental Protection   |
| <b>5. Amount requested (US\$m)</b>                         | US\$ 598, 700 ( Five hundred ninety eight thousand seven hundred dollars)  |

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| <b>6. EPF's eligible funding window</b><br><i>(please check only one window)</i>   | <input checked="" type="checkbox"/> Policy Implementation and Capacity Enhancement (PICE)<br><input type="checkbox"/> Community Biodiversity Investment (CBI)   |
| <b>7. Project Development Objective</b>  | <i>To help strengthen selected environmental protection management systems, specifically for protected areas conservation, enforcement of wildlife laws, and environmental assessment management.</i>   |
| <b>8. Sub-project related sectoral and institutional context, challenges and priorities</b><br><i>(Describe role of SDA, current capacity and activities related to PA/wildlife/env. and social safeguards, challenges and priority needs and approach proposed to address priority needs/gaps).</i> | <p><b>Role of SDA:</b></p> <p>The National University of Laos (NUOL) is a tertiary educational institute that plays an important role in providing both high quality and high quantity education within Lao P.D.R.. The Faculty of Natural Science (FNS) was established during the initial establishment of NUOL in 1996. FNS plays a significant role in supplying human resources in natural science for the country. It has 4 primary roles are as follows:</p> <ol style="list-style-type: none"> <li>1) Provide higher education to build human resources with knowledge and skills in science, technology, and innovation, with positive mannerism.</li> <li>2) Conduct scientific research from the fundamental to advanced levels that enhances collaboration with international organizations, enables problem solving, and promotes the socio-economic development of Lao. P.D.R.</li> <li>3) Trains science researchers to become experts who can provide technical consultation and services in accordance with demand of the market place in the developing economy.</li> <li>4) Facilitate development of scientists who have a positive attitude toward preserving and promoting the Lao culture and social customs, and to emulate cultural attributes of other countries.</li> </ol> <p><b>Baseline and current capacity of FNS</b></p> <p>Currently NUOL FNS has 136 staff (107 teachers and 29 administrative staffs). It has 10 associate professors, 12 PhD holders, 78 master's degree holders and 46 bachelor's degree holders. There are 1,856 students in FNS.</p> <p>FNS consists of 5 departments: biology, chemistry, physics, mathematics, and computer science.</p> <p>The Department of Biology has 23 staff, which includes 3 associate professors, 3 PhD holders, 14 Master's degree holders and 2 bachelor's degree holders. The Department of Biology has 2 bachelor's degree programs (biology; biotechnology) and 1 master's degree program in biology. The department educates about 220 students each year. The Department of Biology focuses on education and conducting research on biology, biodiversity conservation, and biotechnology. Biodiversity has important potential in the social and economic development of Lao PDR and plays important roles in good production and poverty reduction of people in rural areas. The loss of biodiversity caused by socio-economic development has an impact on the lives of people in Lao PDR, especially the poor people in rural areas where most of them depend on nature for</p> |

livelihoods. Therefore, it is necessary to design a plan to protect the environment and natural resources, with vastly improved knowledge and scientific research on biodiversity and human resource development. The Department of Biology plays a vital role in the education and development of human resources, such as the development of Lao biodiversity researchers and specialists. The department has a herbarium with the capacity to conduct plant taxonomy and has several networks with some regional and international research institutes.

The Department of Chemistry has 19 staff, which includes 1 associate professor, 4 PhD holders, 10 master's degree holders, and 5 bachelor's degree holders. General chemistry courses have been taught since 1996 and environmental chemistry was opened in academic year of 2012-2013. At presents, there are 306 students that study in 2 bachelor degree programs (general chemistry and environmental chemistry). Even though it is necessary to have industrial factories, mining, and hydro-power plants for socio-economic development, these activities might cause environmental issues if they do not have appropriate management systems. The Department of Chemistry aims to develop human resources and conduct research on general and environmental chemistry to provide knowledge and solutions to challenging pollution issues involving air contamination, water quality, and soil degradation. The Department has already conducted research on analysis of water quality and pesticides in food and the environment. Under the support of the International Science Program, the Department of Chemistry has collaborated with Department of Chemistry of Dhaka University (Bangladesh) and Royal Phnom Penh University (Cambodia) to establish the Asian Network of Research on Food and Environment Contaminants (ANFEC). The staff in this network can organize training seminars for capacity building on techniques in the analysis of pollutants in food and environment.

The Department of Physics has 23 staff, including 2 associate professors, 4 PhD holders, and 19 master's degree holders. The Department of Physics has 4 bachelor's degree programs (general physics; geophysics; material science; and nuclear science) and 2 master's degree programs (general physics and renewable energy). There are currently 225 students. The Department of Physics conducts research in 5 fields, including solar cells, geophysics, material sciences and laser spectroscopy. In particular, geophysics has a close relationship with environmental protection, as it can provide important geological information, especially related to geological structures, and surface and groundwater flow. Research on the utilization of solar energy is also useful to the people in the rural area where the electricity landlines can be expensive and environmentally damaging. Solar energy can be used as alternative energy to reduce the amount of fire wood required.

The Department of Mathematics has 23 staff, including 2 associate professors, 1 PhD holder, 18 master's degree holders, and 11 bachelor's degree holders. It has 286 students. The Department of Mathematics provides technical services to other departments in Lao universities. The Department of Mathematics has 3 bachelor programs (mathematics; statistics, mathematics for economic and business administration) and 1 master's degree program in mathematics. The student can work in various fields in the government and private sectors. The Department of Mathematics focuses on modeling research, especially to evaluate and

forecast the growth rate of animals, plants, and economics.

The Department of Computer Sciences has 23 staff, including 14 master's degree holders and 9 bachelor's degree holders. It has 823 students. The Department of Computer Sciences has 2 bachelor's programs (computer science; website development) and 1 diploma degree course in computer science. In particular, the Department of Computer Sciences has ability to develop databases and has been conducting research on modeling that predicts environmental change to assist in decision-making for the problem-solving in the future.

Currently, NUOL FNS is implementing its strategy for 2013 - 2015 according to the 2nd phase of national education system reform as shown below. The strategy for 2016 - 2025 is being drafted.

*Work plan 1: Upgrade the quality of education.*

*Project 1: Improve curriculum following the national standard.*

*Project 2: Provide equipment, facilities and comfort for teaching and learning.*

*Project 3: Upgrade laboratory to better qualify.*

*Project 4: Organize and implement the teaching and learning process to meet the goal set by ministry of education and sports.*

*Work plan 2: Science research and technical services.*

*Project 1: Promote the ability to conduct science research and researcher in the faculty.*

*Project 2: Develop the capacity among the potential science researchers. in each department to become experts in the specific areas.*

*Project 3: Develop database in science research.*

*Project 4: Develop technical services to be responsive to the needs within pace of the national social development.*

*Work Plan 3: Improve the environment and facilities for the science education and research.*

*Project 1: Improve the office space and staff's break room.*

*Project 2: Improve class room to be conducive for teaching and leaning.*

*Project 3: Build a laboratory for science research including the building of the Dongdok natural science park as a place to study, to conduct research, and experiment.*

### **Challenges and Priority Needs**

Lao PDR still has many limitations in developing and utilizing scientific technology and knowledge in the production of goods and environmental protection. The Ministry of Education and Sports concluded that Lao PDR still lacks technicians, researchers and engineers to work in support of the socio-economic development of the country. Each year, Lao PDR generates approximately 6,000 citizens with science and engineering backgrounds, including those who graduated from vocational school, teacher development and others (graduates from FNS are at about 500 people). By contrast, the field of sociology ( including business management) is very popular and produces about 16,000 trained citizens. The reason that Lao PDR is lacking technicians in natural

sciences is due to a lack of student enthusiasm for science subjects. This is because the subject of science is difficult to understand, hard to study, learn mostly theory, and do not have equipment for experiment. It currently relies solely on imagination to learn the various theorem. The educational institutes are lacking equipment to facilitate in teaching and practical experiment leaving the teachers no option but to teach only theory.

Given this situation, the Ministry of Education and Sports has created measures to promote the development of education and research in science and technology for the nation. However, the implementation of these measures still faces challenges due to budget limitations. In particular, FNS is still lacking scientific tools and equipment for education and research including facilities, methods, and a lack of text books in Lao language, as well as funding to improve the curriculum and means of conducting research. In addition, many expert lecturers will be retired shortly, that will put FNS in much shorter supply of expert lecturers in the near future. FNS has a necessity to build the cadre of successors with knowledge and skills to continue and strengthen the teaching and conducting research for the next generation.

Furthermore, Lao PDR still lacks fundamental scientific knowledge in education and research on biodiversity conservation and environmental protection. Scientific research and its application towards the protection of biodiversity and environment has not sufficiently been performed, which makes it difficult for people to have a good understanding of the importance of science in the protection of biodiversity and environment.

**Approach proposed to address priority needs/gaps**

To achieve the strategic goals of the FNS and to preserve the valuable heritage of the country, to be sustainable for the next generation to study and understand about the importance of biodiversity and environment, it is necessary to build human resources with the ability to utilize science in protection of biodiversity and environment. FNS has foresight into this important issue and seeks to improve its education and research on natural science as related to environmental protection to be on equal terms with those in the region and the world.

To strengthen the capacity of FNS's teachers and improve the educational quality for students on natural science related with environment protection, FNS seeks to improve its curriculum on natural science to be suited with the present social situation through organizing of training seminar for teachers to improve technical knowledge in curriculum development, armed with the fundamental equipment and tools for experiment to support the curriculum, and writing more advanced education textbooks related to environment protection. These are essential and useful for teachers and students. The teachers and students will have access to material for study and conducting research. This will provide student with more chances to study in practical, easy to understand and gain experience in analysis before entering into the real work place.

To respond to social and economic development that demands human resources with technical skills and specialty in various fields, especially in environmental field which is closely related to science and technical

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|  | <p>knowledge, and to strengthen the capacity of teachers and students in conducting research. FNS will conduct a systemic study related to biodiversity conservation and environmental protection in a National Protected Area to obtain fundamental scientific data and also increase the awareness of people in utilizing of science in environmental protection. The survey and research results will be disseminated to the public and could be used as fundamental scientific data to promote an upgrade of a national protected area to create an ASEAN heritage park.</p>  |
| <p><b>9. Sub-project objective</b><br/><i>(only one sentence)</i></p>  | <p>To strengthen the capacity of faculty of Natural Sciences to enhance its academic and research programs in subjects related to biodiversity conservation and environmental protection.</p>   |
| <p><b>10. GoL Policy/Plan/Strategy supported by Sub-project</b><i>(including provincial if applicable)</i></p> | <p><b>The 7th National Socio-Economic Development Plan (7th NSEDP)</b></p> <p>In 7th NSEDP, the Lao PDR government has planned to utilize appropriate technology, and focus on vocational skills development to create good economic conditions to take the country and graduate from least-developed country status (LDCs) in 2020. The policy takes education and human resource development as an essential sector which focuses on continual increase of the educational opportunity and quality. The vision describes the necessity for improvement of the education system to be modernized fully as service to people, and gradually upgraded to the international level. The development of education is considered to be the strong foundation for human resources that is the priority and goals to turn the country into industrial, modern and sustainable. The 7th NSEDP has a measure to supply education infrastructure, tools, experiment equipment, improvement of the laboratory, and application of modern science in teaching, learning, and doing research to help the student see directly and understand easily, to strengthen the capacity of the students to be equal to others in the region and the world. The sub-project is to strengthen FNS by upgrading its curriculums related to environment protection to be equal to those in the region and in the world, which is in line with the 7th NSEDP.</p> <p><b>Vision of Education Strategy to 2020</b></p> <p>Vision of education strategy to 2020 focuses on the development of vocational education, technique and higher education, staff training, technician and specialist in utilizing modern science and technology in the socio-economic development, and upgrade education to be gradually equal with regional and international education standards. The sub-project aims to strengthen skills of teachers, educate and train staff to have knowledge and skills to use modern science and technology related with environment protection. This project will improve the curriculum and strengthen the skills of teachers to educate students to be qualified technical staff and be able to work in sectors related to science and technology, especially in environment protection.</p> <p><b>National Education System Reform Strategy 2006 - 2015</b></p> <p>Higher and university education reform is one of the 7 targets in National Education System Reform Strategy 2006 - 2015. In higher and university education reform, it is indicated that the problems such as a lack of teachers, the needs to strengthen the capacity of teachers and education managers by organizing training, developing technician in line</p> |

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|   | <p>with the country's social and economic structure and improving the university curriculums to reciprocate with those of the region and can collaborate with the international institutes. The implementation of national education reform is designed to analyze the content of curriculum as a policy to create various qualified subjects, suitable conditions and select knowledge criteria, a modern course to teach such as natural science, technology to meet the needs in socio-economic development; to strengthen the capacity of National University of Laos, other university and college to become the center of research utilizing science and technology, especially with focus on research activities in national universities.</p> <p><b>Strategy of NUOL 2011-2015</b></p> <p>In strategy of NUOL 2011-2015, the university aims to develop curriculums, strengthen science research, and provide services to teachers in each department in response to national socio-economic development. It also aims at strengthening capacity of teachers and students to be able to utilize modern science and technology. On the other hand, one of the missions of university is to conduct research and technology development in various field to promote and develop the curriculum, and utilize in socio-economic development of the country.</p> <p><b>National Strategy On Environment Education and Awareness to the years 2020</b></p> <p>The sub-project is in line with National Strategy On Environment Education and Awareness to the years 2020 with target to ensure the curriculum development on environment education in formal and non-formal education, increase the system in development of building awareness on environment to the public. Strengthen the capacity of staff, increasing development of networks, collaboration and cooperation.</p> <p><b>9th party congress to achieve 4 breakthroughs</b></p> <p>The party and government request every organization be proactive to promote 4 breakthroughs and create good conditions to graduate from LDC in 2020. The party aims for the country to become a modern industrialized nation. In particular, NUOL has a mission to develop human resources for the country, which needs a breakthrough improvement in education system to a higher quality, create intelligent workforce, create man power and expertise, and create business-administrative staffs and managers suitable for the market mechanism in development and can be incorporated with international market place.</p> |
| <p><b>11. Sub-project Regional or global outcomes (for protected area and wildlife related sub-projects only: e.g. cross border cooperation, knowledge transfer, prevention of regional illegal wildlife trade)</b></p> | <p>Improving the cross-border knowledge transfer between the Lao PDR and international leaders in biodiversity conservation and environmental protection through a number of outputs:</p> <ul style="list-style-type: none"> <li>- Establishment of networks in education and research on natural science related to biodiversity conservation and environment protection between academics of Laos and neighboring countries facilitating an exchange of knowledge and sharing of experience.</li> <li>- Increased Lao participation in international conferences and Increased regional / international publications on natural science research related to environment protection</li> </ul>  |

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|   | <p>- Undertaking scientific research to assist Hin Nam No NPA to become a ASEAN Heritage Park.</p>   |
| <p><b>12. Sub-project Outcome Indicators</b><br/> <i>Select and list the related outcome and intermediary outcome indicators from the PAW/LENS2 Results Framework and describe additional sub-project specific outcome indicators.</i><br/> <i>Outcome/impact is the longer-term benefit of particular goods or services to a target group.</i></p> | <p><b>LENS 2 Indicators:</b></p> <ol style="list-style-type: none"> <li>1. Increase in the score of functional capacity of SDA's and EPF (annual).</li> <li>2. Direct project beneficiaries (of which women) as measured by additional staff of public and partner institutions having completed basic adaptive training (short courses) (cumulative).</li> </ol> <p><b>Sub-Project Specific Indicators:</b></p> <ol style="list-style-type: none"> <li>1. Improvement of teaching effectiveness of FNS as determined by a third-party analysis (annual).</li> <li>2. Number of students benefitted from upgraded curriculums (cumulative).</li> <li>3. Number of papers / report/ proceeding on natural science research related to environment protection to be published in domestic and international journals / meetings (cumulative).</li> <li>4. Number of NUOL FNS students to co-author published scientific journal articles (cumulative).</li> <li>5. Number of public participants in NUOL FNS scientific awareness raising activities (Dong Dok Campus &amp; local level villages) (cumulative).</li> <li>6. "Deliverables" proposed in the AWPB completed each year (annual).</li> </ol> |
| <p><b>13. Sub-project main outputs</b><i>(Goods or services provided by the sub-project's intervention (supply-driven) e.g. x staff trained; guidelines on x developed)</i></p>   | <ol style="list-style-type: none"> <li>a. 70 teachers in Faculty of Natural Science will be strengthening their knowledge and skills in curriculum development and improvement.</li> <li>b. 200 students per year ( 600 students in the project period) will study in the improved and developed curriculum related to environmental protection.</li> <li>c. 3,000+ people will learn about natural science in environmental protection in awareness raising seminars hosted by NUOL FNS.</li> <li>d. 4 undergraduate's degree and 1 master's degree curriculums related to biodiversity and environmental protection will be improved or developed.</li> <li>e. 18 textbooks subjects on natural science related to environment protection will be published with a quantity of 1,800 copies, which will be useful for teachers and students.</li> <li>f. 100 scientific researchers will have their methods and techniques upgraded through targeted training seminars.</li> <li>g. Large amount of scientific equipment (~\$130,000) for upgrading NUOL FNS teaching laboratories.</li> <li>h. Large amount of scientific research equipment (~\$40,000) for study in</li> </ol>                    |



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|  | <p>the national protected area.</p> <p>i. Scientific data on biodiversity and environmental quality from Hin Nam No National Protected Area will be obtained and contributed to upgrade it as ASEAN heritage park.</p> <p>j. Biodiversity Information Inventories is concrete and detailed information needed for decision-making in biodiversity use and conservation policies</p> <p>k. Lao will have wildlife database that can search and update online</p> |
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**14. Sub-project Components and Activities:**

List the components and main activities to produce outputs above. Do not use more than 5 components.

Details will be in Annual Work Plan and Budget (AWPB) annex attached.

| Component  | Main activities  |
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| <b>Component 1:<br/>Development and<br/>Upgrading of<br/>Curriculums</b> | <p>The main activities are as below:</p> <p>1.1) Evaluate and conduct training seminar to improve and develop new curriculums (3 lecturers x 5 times).</p> <p>For the evaluation, development and improvement of NUOL FNS curriculums, three representative teachers from each selected program will have a training seminar and learn about curriculums in foreign universities that have curriculum and expertise in biodiversity and environmental protection. The evaluation of curriculums for bachelor's degree in biology, environmental chemistry, and master's degree in applied chemistry will be conducted in Thailand. The evaluation of bachelor degree in general physics and geophysics will be conducted in Vietnam.</p> <p>1.2) Improvement of 5 curriculums for bachelor program such as biology, biotechnology, environmental chemistry, physics, geophysics and development of curriculum for master program in chemistry ( 3 lecturers x 5 times).</p> <p>In addition to curriculum upgrading, the sub-project will allow NUOL FNS to be resourced with fundamental equipment for experimentation related to biodiversity conservation and environmental protection to support the curriculum. This will help student better understand the lessons with more opportunities to conduct experiments and ability to use equipment and tools in practice. The equipment includes microscopes, microtomes, high performance liquid chromatography instrument, atomic absorption spectrometer, autoclaves, incubator and others. They also can be used in plant species characterization and upgrade the capacity of the laboratory.</p> <p>There will be about 200 students per year benefitting from these 5 curriculum programs and equipments.</p> <p>1.3) Write and publish the text books for 18 subjects with a total of 1,800 books related to environment protection. These subjects are:</p> <p>Biology : 6 subjects for biology course</p> <p>Chemistry : 4 subjects for environmental chemistry course and 4 subject</p> |

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|   | <p>for chemistry master's degree course</p> <p>Physics : 2 subjects for general physics course and 2 subjects for geophysics courses</p> <p>In the writing of text books, a total of 36 qualified lecturers will be assigned to write on each subject which will be useful for lecturers and students in the project period and will become a heritage for the education in the future.</p>   |
| <p><b>Component 2:<br/>Strengthening<br/>Capacity in<br/>Natural Science<br/>Research</b></p> | <p>The main activities for strengthening NUOL FNS's capacity in scientific research related to environmental protection are:</p> <p>2.1) The following technical seminars will be organized to improve faculty members' and students' technical skills ( 5 days, 20 participants 20 for each seminar).</p> <ul style="list-style-type: none"> <li>▪ Methods and techniques to preserve living things in fauna and flora museum.</li> <li>▪ Methods and techniques in analysis of heavy metals in water and soil by atomic absorption spectrometer</li> <li>▪ Methods and techniques for study of ground water, geological structure, and radiation.</li> <li>▪ Methods and techniques for environmental modeling and simulation.</li> <li>▪ Methods and techniques for management of database</li> </ul> <p>2.2) To conduct research at National Protected Area to collect information and classify the biodiversity which is rarely recorded in Lao PDR. The research will survey the biodiversity, environmental quality, geology and create models to predict the change of environment in the study area. The following research topics will be conducted.</p> <ul style="list-style-type: none"> <li>▪ To study the diversity of mushroom and plants.</li> <li>▪ To study the diversity of animals, especially rare animals.</li> <li>▪ To survey and study the fundamental characteristic of water and soil qualities in national protected area.</li> <li>▪ To study the national protected area geology.</li> <li>▪ To study the solar light intensity to be use as renewable energy to reduce fuel derived from trees.</li> <li>▪ To study environmental change through mathematical modeling.</li> </ul> <p>For additional detailed on how this research contributes to the LENS2 PDO, the equipment needed for each research topic, and the equipment already available to NUOL FNS researchers – please see the table created in Annex 4.</p> <p>2.3) Organize science meetings to report the results of the survey and research each year (4 times in total, number of participants of about 60 people per time from university, ministry, provincial and district officer).</p> <p>2.4) Organize workshops for local staff from district and provincial officers to learn about the fundamental relationship between biodiversity, enviromental quality, and geology in the protected area,</p> |

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|   | <p>and to increase capacity in conducting studies in the protected area (3 times in total, 20 participants per time).</p> <p>2.5) Publish the results in domestic and international journals (14 titles), write and publish technical books about rare and endangered animals in Lao PDR, create and print posters about diversity of mushroom, animals and plant, organize meeting and distribute the posters in the local villages to enlighten and increase the awareness of population estimated at about 3,000 people of the local community will be learning from the posters.</p> <p>2.6) Support the teachers and students to present their research result in the international conference in the regions (7 times, 2 people for each).</p> <p>2.7) Development of Lao's wildlife database to be able to search and update online</p> |
| <b>Component 3:<br/>Sub-Project<br/>Management</b>  | <p>Sub-project administration and management will be performed by following guidelines of the EPF's Project Implementation Manual including financial management, procurement, monitoring, and evaluation. The sub-project implementation committee will be formed. The committee will have mutual understanding between each member and leader, to create an organized structure, define the responsibility and implementation procedure. FNS will recruit administration/accountant staff to support the project's implementation. The sub-project will organize meeting and create a system how to implement sub-project including accountant and monitoring of the sub-project, requesting progress report and summarize report to submit to environmental protection fund every 3 months and 6 months.</p>                                |
| <b>15. Sub-project direct beneficiaries</b>   | <p><input checked="" type="checkbox"/> Governmental staff<br/>Total number (300) of which women ( 120 )<br/><i>Central level ( 110) of which women (50)</i><br/><i>Provincial level ( 70 ) of which women (30)</i><br/><i>District level (120) of which women (40)</i></p> <p><input checked="" type="checkbox"/> Rural communities ( ) Number of people (3000) of which women (1200)</p> <p><input checked="" type="checkbox"/> Students (600 ) of which women (180)</p> <p><input checked="" type="checkbox"/> General public</p> <p><input type="checkbox"/> Private sector ( )</p>   |
| <b>16. Proposed Start Date</b>  | June 1st, 2016   |
| <b>17. Proposed End Date</b><br><i>(duration in years)</i>  | Dec 31st, 2020 ( a 4.5 year project)   |
| <b>18. Co-financiers</b><br><i>(source and amount (US\$) including in-kind contribution; per component if possible)</i> | NOUL in-kind contribution for office space, use of existing equipment and staff time, is estimated at \$ 56,000.   |
| <b>19. Complementary ongoing or planned projects/programs/initiatives</b><br><i>(name/source of funding/linkage)</i>    | None   |

## 20. Implementation Arrangements

- a. Describe the project management structure.  
 b. What additional staffing or technical assistance is needed to successfully complete the proposed project (e.g. M&E officer, accountant,)?

**a. Project Management Structure/sub-project implementation team**

**The sub-project will be implemented by the Faculty of Natural Science, National University of Laos.**

- **Project Director:**  
Dr. Phengxay Deevanhxay, Lecturer / Assistant to Dean of Faculty of Natural Science
- **Project Advisor:**  
Assoc. Prof. Dr. Somchanh Bounphanmy, Dean of Faculty of Natural Science
- **Coordinators:**
  1. Dr. Somsack Inthasone, Lecturer, Department of Computer Science
  2. Mr. Thongsouk Saybounheaug Deputy Head of Research and Academic Service Division
  3. Ms. Innavanh Namkhaluck, Research and Academic Service Division
- **Head of Academic Team:**
  1. Assoc. Prof. Dr. Thongloon Vilaythong, Head of Research and Academic Service Division
  2. Assoc. Prof. Bounthop Praxaysombath, Head of Department of Biology
  3. Assoc. Prof. Lemthong Lathdavong, Head of Department of Physics
  4. Mrs. Sisavart Luoangsisouphanh, Head of Chemistry Department
  5. Mrs. Bounthanh Khampasay Deputy Head of Department of Mathematics
  6. Mr. Amone Chanhthaphavong, Head of Computer Science Department
  7. Dr. Pheng Phengsintham, Lecturer in Department of Biology
  8. Dr. Vanseng Chounlamany Lecturer in Department of Chemistry
  9. Dr. Leesator Leelianoo, Lecturer in Department of Mathematics
  10. Dr. Sounthone Singsoupho, Lecturer in Department of Physics
  11. Mr. Sommid Thoummaly, Deputy head of Department of Computer Science,

**b. Additional Staffing/Technical Assistance (TA)**

The sub- project will be conducted with the cooperation of the faculty's lecturers and researchers. The management committee will assigned a team for the financial management.

**21. Summary Budget**

*Detailed activity plan and budget for total period and year one must be attached in annex. Provide a summary of the budget as part of the proposal. Note that the sub-project will be approved for the entire duration but the sub-grant agreement will be signed on a yearly basis based on previous year performance (and agreed triggers as defined in section 24). For approved sub-projects, a procurement plan will be developed by EPFO.*

| Components(not more than 5 components including project management)  | Subproject US\$ Budget | GoL-kind contribution | LENS2 US\$     |
|--|------------------------|-----------------------|----------------|
| Component 1: Improve and development of curriculums on natural science related to environmental protection | 226,821                | 15,750                | 211,071        |
| Component 2: Strengthen capacity in natural science research related to environment protection             | 309,880                | 22,050                | 287,830        |
| Component 3 Sub-project management   | 57,970                 | 12,600                | 45,370         |
| Price contingencies (Inflation, 5%)  | 29,734                 | 2,520                 | 27,214         |
| Physical contingencies (error in estimate, 5%)   | 29,734                 | 2,520                 | 27,214         |
| Total  | <b>654,139</b>         | <b>55,440</b>         | <b>598,699</b> |

## 22. Sustainability

Please explain how the benefits of the project will continue or be maintained once the sub-project is complete.

This project has been designed with sustainability. The ability and expertise of teachers and staffs in curriculum development, natural science research, and cooperation with other research organizations, the text books, scientific equipment, and scientific data of National Protected Area will be utilized for Lao's education and research needs for years to come after project financing ends.

## 23. Environment and Social Management Plan (ESMP)

Check if an Environmental and Social Management Plan (ESMP) needs to be prepared (see guidelines in the Environment and Social Management Framework (ESMF) to be obtained from EPF website).

The sub-project's primary activities are curriculum development and research, which do not require environmental and social management plans.

However, there are still potential negative impacts from the research activities, that include: (1) research field trips, especially overnight visits, and (2) research collections of living biodiversity from a protected area.

The following mitigation protocols will be embedded into the subproject to ensure that research field trips in Protected Areas do not have an unintended negative impact on fragile habitat and species:

- i) Hunting wildlife for food will be prohibited during field trips (including government staff and local guides).
- ii) Wildlife disturbance will be minimised.
- iii) The establishment of new tracks and access will be based on adequate evidence and after considering alternative options.
- iv) The location of camps will take into account fragile areas and habitats, including minimizing the cutting of vegetation and site clearing.
- v) The number of researchers and guides in protected areas and size of camps will be limited to ensure very large camps are not required.
- vi) Camps of research field trips will be dismantled completely.
- vii) Garbage will be carried out and not discarded within the PPA.

The collection of any wildlife samples will follow wildlife and Aquatic Resrouces Law No. 07/NA, 2008

## 24. Community Engagement including gender issues at community level

Check if compliance with the Community Engagement Framework (CEF) is needed and follow guidelines on steps to be obtained from EPF website.

Please check if CEF applies<sup>1</sup>

<sup>1</sup> Please follow the procedures outlined in the CEF document and ensure that details related to sub-project CEF implementation including implementation arrangements, activities, indicators and budget are correctly included in the sub-project application sections (RF, budget, activities, M&E).

## 25. Gender issues (mainstreaming)

Please explain how the sub-project is compliant with GoL commitment to gender issues under the project.

Currently, the Faculty of Natural Science's student body is approximately 35 % female. With these limitations in mind, the proposed sub-project will be proactive in mainstreaming gender issues to reach or surpass the PAWP gender objectives of at least a 20% female to male gender ratio of beneficiaries. This includes NUOL FNS staff, government staff, outreach activities, and local villagers.

## 26. Agreed Annual Performance Triggers

For information find below the list of agreed targets that must be achieved to trigger approval of next year's funds:

Agreed triggers:

- Compliance with fiduciary and safeguard requirements (at least Moderately Satisfactory in year 1 and Satisfactory in subsequent years)
- Compliance with reporting requirement (number, quality and timeliness) (at least Moderately Satisfactory in year 1 and Satisfactory in subsequent years)
- Year 1, at least 50 % of activities in AWPB completed. Year 2 and after, at least 75 % of activities in AWPB completed
- All outcome targets for current year are measured, evaluated and show progress toward target
- AWPB produced for the new fiscal year cleared by WB and approved by EPF Board

## 27. Document Checklist

Please ensure to attach the following based on templates (excel file) provided:

- Sub-project results framework (entire period)
- Sub-project detailed budget entire period (2a. per component and 2b. per category)
- Sub-project detailed activity work plan per component year 1
- Sub-project Environmental and Social Management Plan (ESMP) if applicable

## Signature

Approved by:  
Dean of Faculty of Natural Science, NUOL

Date:

Submitted by:  
Dr. Phengxay Deevanhxay

Edits to a submitted application prior approval not requiring-submission, accepted by SDA and EPF, are summarized below: (Please list application form reference number (e.g. #20) or annexes and date of EPFO communication on accepted changes to SDA).