REQUEST FOR PROPOSAL (RFP)

UNDPAFG/2010/0088

PROVISION OF TECHNICAL SERVICES

TO DESIGN AND FACILITATE NATIONAL TRAINING ON RISK ASSESSMENT FOR UNDP AFGHANISTAN

Express Train
inspire. energise. transform

To: UNDP Procurement Unit,
        C/- Shad Mahmood Ghazi Watt,
        Kabul,
        Afghanistan

From: Express Train Afghan Co. Ltd.
        Ghulam Destageer Hadari,
        Khushal Khan Mina, Char Rahee Qamber, School Street,
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        Kabul,
        Afghanistan.

AFGANISTAN PROJECT

B - Offeror's Experience

Assignment name: **Training on Assessment and Risk Reduction of Natural and Man-Made Disasters and Environmental Hazards in Afghanistan**	Approx. value of the contract (in current US$): $30,000 Travel Included)
Country: Afghanistan Location within country: Kabul	Duration of assignment (months): Two month preparation: 10 days in Afghanistan (including travel

Name of Offeror: Express Train Afghan Company Limited	Total N° of staff-months of the assignment: 2 months (including preparation/development of training materials specific to Afghanistan)
Address: Khushal Khan Mina, Char Rahee Qamber, School street, Opposite Abu Zer Ghaffari high School, Kabul, Afghanistan.	Approx. value of the services provided by your firm under the contract (in current US$): $ 25,000 plus $5,000 for travel and per diem for ten days).
Start date (month!year): Completion date (month!year):	N° of professional staff-months provided by associated Offerors: 2 months (including preparation/development of training materials specific to Afghanistan)
Name of associated Offeror: Dr. George Pararas-Carayannis	Name of senior professional staff of your firm involved and functions performed (indicate most significant profiles such as Project Director, Coordinator, Team Leader: Dr. George Pararas-Carayannis

Narrative description of Project:

Training on Assessment and Risk Reduction of Natural and Man-Made Disasters and Environmental Hazards in Afghanistan (see the following detailed description)

Description of actual services provided by your staff within the assignment: (see the following detailed description)

Offeror's Name: **George Pararas Carayannis - Express Train Afghan**

Narrative description of Project (continued):

Introduction

Afghanistan is a country prone to natural hazards. By the index of disaster risks, they relate to countries with medium and high-level risk. So natural disasters in Afghanistan have to be considered as a standing negative factor in the country's sustainability and economic recovery. There is a need for more active actions to be undertaken by using all possible means in order to reduce the risk of natural disasters at each level and to maintain the sustainable economic development of the country. Gaps in the system of documenting natural disasters, their variety and poor predictability, the absence of a strong theoretical basis for mechanisms of occurrence of various natural disasters and their complex interaction with environment, geophysical, geological and other processes, cause considerable deficits in current knowledge. Thus, assessing the risks of natural hazards is the first step in mitigating their impact. The main goal of the proposed project is to train human resources in Afghanistan and enable them to assess accurately the risks of widespread natural disasters in the region, namely the risks of earthquakes, landslides, avalanches, floods, mudflows, droughts, storms and other hazards. The methodology of assessing the risks is not the same for all types of disasters or hazards.

The Problem

Afghanistan is a country vulnerable to natural disasters, such as earthquakes, flooding, drought, landslides, and avalanches. The mountainous topography of the country and the remoteness of most villages, towns and cities, increase the likelihood of losses of lives and destruction of property whenever an earthquake, landslide, mudslide, avalanche, or flooding occurs. In the last six years Afghanistan has also been suffering from a prolonged drought, which affects over 6 million people, mainly in the southern and eastern regions. Other common hazards include

urgent need for an improved   disaster management system in the country.

Earthquakes: Afghanistan is located in a zone of high-seismic activity. Earthquakes are relatively frequent, more so in the northern parts of the country and often trigger destructive landslides and avalanches. Since 2000, there have been about 9 major earthquakes resulting to about 1,223 deaths, (http://earthquake.usgs.gov/activity/past.html). The latest earthquake to strike the region was an M6.2 event on October 22, 2009. Fortunately the quake had a deep focal depth and struck a remote and sparsely populated area northeast of Kabul, so it did not result in any serious damage. However there is a potential for greater shallow earthquakes to strike populated areas.

Floods: Flooding and mudslides are common, particularly in the spring when snow begins to melt and rainfall is heavy. According to the EM-DAT: The OFDA/CRED International Disaster Database, (www.em-dat.net), about 2,000 people have been killed, and a total of 79,800 made homeless due to the yearly flooding since 1954

Landslides & Avalanches: Landslides and avalanches have had similar destructive impacts on the inhabitants of Afghanistan. Extreme winter conditions and avalanches are frequent events in the mountainous areas that make up approximately 63% of the country. According to EB-DAT, since 1954, a total of 799 people have been killed, 64 injured, 110 made homeless, and 400 affected. The latest avalanche disaster occurred on February 8, 2010 at the Salang pass in northern Afghanistan. Hundreds of people travelling through the Salang tunnel were trapped and many others on the open road were swept away. A total of 175 people lost their lives and many more were injured.

Man-made disasters: Several decades of war and civil conflict, as well as environmental degradation and high level of deforestation, have contributed to increasing vulnerability of the Afghan people to natural disasters. Assessments by humanitarian agencies have revealed significant shortcomings in post-disaster recovery in the areas of water, sanitation, health, security and natural resource management. Furthermore, the high level of poverty, lack of livelihood and income generating opportunities, chronic health problems, and poor state of the infrastructure, add to the burden of natural disasters on the people of Afghanistan.

In brief, seventy five percent of the population of Afghanistan live in a region that suffers from natural disasters such as earthquakes, floods, hurricane, drought and other hazards. Though it is not possible to completely avoid the impact of natural disasters, potential human suffering can be minimized through programs of public education that create awareness of the likely disasters and their impact by developing suitable early warning systems, disaster preparedness plans and effecting disaster management programs which incorporate the application of information technology tools. There is a need to integrate such information tools across many disciplines, organizations, and geographical regions in the country.

Percentage of reported people killed by disaster type
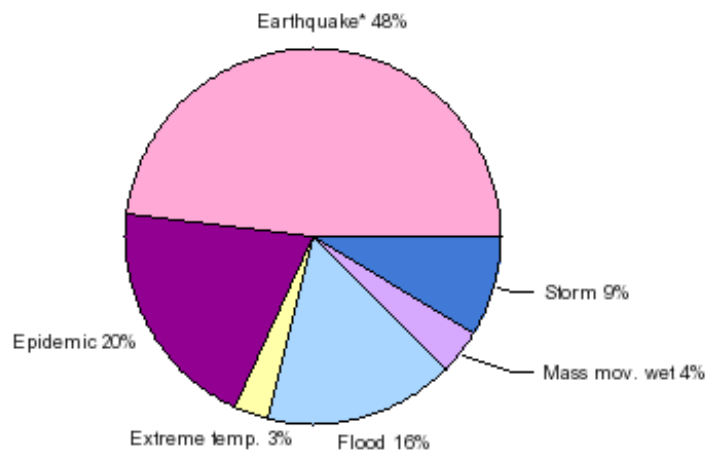
The high level of natural disasters in Afghanistan makes necessary to implement international programs and strategies for disaster mitigation. United Nations Development Program (UNDP) and International Strategy of Disasters Reduction (ISDR) have supported programs and projects aimed at mitigating the impact of natural disasters risks and losses. The World Conference aiming at reducing natural disasters, conducted by the UN in Japan in 2005 (prefecture of Hyogo, Kobe), obtained the Hyogo Framework for Action 2005– 2015: Building the Resilience of Nations and Communities to Disasters. The following concept was emphasized in this program:

"*it is essential to make efforts for formation of a system indicating vulnerability and multiple risks of different disasters for each country and its particular regions. This will enable the managing agencies to carry out the effective policy of reducing natural disasters risk. With an increase in the frequency of disaster, there is an urgent need to address the knowledge gaps that are preventing the effective application of science to averting disasters*".

Most recently International Council for Science launched major international research program on natural disasters «Integrated Research on Disaster Risk» to provide an enhanced capacity around the world to address hazards and make better decisions to reduce their impacts.

Based on the above international resolutions and programs – emphasized by many international organizations – we believe that what we propose is relevant to UNDP's lead role in meeting these objectives for Afghanistan and that our training will help establish programs that will help mitigate effectively the risks from natural disasters at each level in order to maintain a sustainable economic development of the country.

Solution of the Problem

Averting losses in Afghanistan, reversing adverse trends and achieving stability and sustainability, require proper governance – which can then be defined as a participatory, multi-task approach to policy making, which mobilizes all existing resources within the country for such development (Pararas-Carayannis, 2003 Keynote presentation PIM, Kiev, Ukraine). However, policy making requires the collection of good and reliable data for making proper decisions. Thus, the end result of proper sustainability and governance becomes the implementation of policies and programs and an action plan that results in the development of sustainable resources and favorable environmental conditions that will protect the inhabitants of the country.

This of course is the ultimate desired objective, which the project suggests but which needs to be implemented in properly synchronized sequence. In principle, therefore, the project identifies properly the initial desired goals and addresses adequately the technical matters. The necessary first step towards meeting these long-term objectives is the training of human resources within the country, who can then carry and sustain a disaster mitigation plan through programs of civil preparedness, education, early warning systems, public awareness and effective post-disaster recovery.

Our Training Team

Our team consists of highly qualified international experts in the field of natural hazards and risk assessment who have considerable experience and deep knowledge in related scientific fields (See Form 5). The team is capable to solve all of the expected tasks and to ensure that the training will help participants understand methodologies that they can put in practice.

What is our objective?

The main goal of our proposed training will be to provide guidelines for the effective risk assessment of various natural hazards to which Afghanistan is particularly vulnerable. We intend to emphasize the need for assessment of multiple risks due to natural disasters, and hence the outcome of the training will help promote innovative research that fits well and promotes international efforts on integrated studies of disaster risk assessment. Based on this training we believe that further research will be stimulated that will result in the establishment of early warning systems and effective policies by disaster management agencies in the country, to reduce and mitigate the risks from natural disasters and hopefully from man-made hazards.

In support of long-term objectives of the project, we must also add that development and sustainability of the country precludes the integration of economic growth and environmental protections as interdependent components

becomes the necessary prerequisite for improving the quality of human life and improving the safety and security of human activities, by mitigating the effects of natural and man-made disasters.

What we propose to do?

Our proposed training project aims for the solution of practical problems. For example, we intend to provide the necessary guidelines for the development of comprehensive electronic databases about the natural disasters that have occurred in Afghanistan in the past. Such databases will help specify the energetic-spatial-temporal recurrence frequencies of disaster phenomena and the need to fill gaps in current knowledge. The results obtained by the developed methodology for the assessment of multiple risks which we intend to include in our training, will enable government agencies in each region of Afghanistan to assess and evaluate the type of risk and the means by which adverse impacts could be eliminated, or at least mitigated through proper remedial actions.

In this sense, our proposed training can play an important role in the determination of the principal direction that governmental efforts must focus to reduce the economic and life losses due to disasters. Our training will be particularly useful to central and local government and will also be of great help to insurance companies that offer hazard protection to national and international companies doing business in Afghanistan. The main goal of our training will be to provide guidelines for the effective risk assessment of various natural hazards to which Afghanistan is particularly vulnerable.

Significance of our training.

The proposed training is intended to stimulate further studies within Afghanistan which will help solve practical problems related to the impact of disasters. We plan to emphasize the need and the methodology by which reliable electronic databases must be created in documenting the natural disasters which have occurred in the past. The subsequent results that will be obtained by using the methodology we will instruct on, will be extremely useful in the assessment of multiple risks that threaten the country and will enable administrative officers and other government officials to better assign levels of risks and estimates of possible losses, as well as the means by which disaster impact could be mitigated and inhabitants could be better protected. The significance of our goals corresponds to the previously stated priorities established by UNDP, the Hyogo Framework and the Millennium Development Goals (MDGs). Additionally, in addition to contributing towards the solution of a national problem, our training will familiarize local participating scientists with available databases and resources and help promote their integration into the international scientific community.

How will our training be additionally useful and applicable?

Additionally, our training will provide guidelines on how proper risk assessment of natural hazards could help the financial development of the country.   One of the many commercial benefits of proper risk assessment will be obtaining estimates of maximum probabilistic losses which may be caused from different natural disasters. In terms of insurance, this is net-premium. On the basis of this, the tariff premium of insurance or gross- premium is formed – thus proper disaster risk assessment and determination of disaster recurrence frequencies is of great interest to insurance and reassurance companies.

Having comprehensive electronic databases on natural and man-made disasters and reliable disaster risk analyses results in great economic benefits to insurance companies and businesses operating in Afghanistan. Insurance companies provide protection for damages due to natural hazards. Insurance can only be provided if it is based on correct scientific estimates of risks. Businesses cannot operate without proper insurance protection. Lack of coverage would deter local or international companies from investing in Afghanistan. The establishment of correct insurance tariff rates appreciably defines the successful activity of insurance companies and assures protection of local and international companies investing in developments in the country. Therefore all insurance and reinsurance companies (as for example, Munich Re, LRG, Swiss Re, AIG, VIG, etc.) definitely depend on having good risk assessment studies in ensuring local and international companies investing in projects in Afghanistan. Unfortunately, and to the best of our knowledge, there is no existing wide system of insurance from natural hazards in Afghanistan at this time. One of the main reasons is the absence of scientifically proven system in estimating the probability of various disasters and associated risks.

What will be the principal tasks of our proposed training?

In view of the above, and in order to achieve the required goal of facilitating an effective national training on Risk

environmental disasters that threaten the nation of Afghanistan. Indeed as we documented, this is a region of the world that is highly vulnerable to natural and man-made disasters, where there is not adequate data at the present time. The ultimate goal of the project will be the collection of such data and to properly instruct on its interpretation for the purpose of mitigating future disaster impacts, thus insuring the safety of people and the protection of property – which are basic needs for economic development and future sustainability of Afghanistan.

To accomplish the tasks we need to provide guidance on how to first assess in general the multiple risks due to natural disasters in Afghanistan – such as the risks of earthquakes, landslides, avalanches, floods, mudflows, droughts and extreme weather as well as those from potential man-made disasters. Although the general requirement of the RFP is simply stated as national training on risk assessment, for such training to be ultimately effective – as already stated – it must be succeeded by detailed, quantitative assessments of specific disaster risks. This represents a somewhat tall order, because of the diversity of hazards and natural disasters in the region. Thus, as we will emphasize in our training program, subsequent work must be carefully conducted by those trained, to assure completeness and statistical significance in establishing disaster recurrence frequencies and in separating impacts of seasonal disasters (i.e. floods, droughts, hurricanes, etc.) from those of infrequent recurrence (earthquakes, landslides, mud volcanic events). Parenthetically, and in order to support the need for proper methodology in assessing the potential risks that threaten each specific region of Afghanistan, we must also add the following comments, which will be significantly expanded in our proposed training program.

Proper methodology for disaster risk assessment requires adequate understanding of the physics of each type of disaster, a good and expeditious collection of historical data of past events and an accurate interpretation of this data as to what future impacts will be. Since each type of disaster results from different sources, the risk assessment methodology must vary accordingly. Each type of environmental disaster will require separate treatment and analysis. It is outside the scope of this proposal to comment in detail on the specific methodology, but there are some general principles and fundamental perspectives that apply to the risk assessment of all types of disasters, with emphasis on techniques that must be used in assessing risks, on mitigation, preparedness, as well as public education. We plan to address all these issues in providing the required national training. Although our present proposal does not specifically elaborate in any detail on the specific methodology of data collection and interpretation that must be utilized in disaster risk assessment, based on the good credentials and expertise of the people in our staff, we can assure that such procedures will be greatly emphasized within our training to support the eventual successful completion of the project's objectives – which are the mitigation of future disaster impacts, thus insuring the safety of people of Afghanistan and the protection of property.

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Description of actual services to be provided within the assignment:

We propose to provide comprehensive training of human resources on Risk Assessment of natural and environmental disasters that threaten the nation of Afghanistan. The training will familiarize participants with: 1) development of comprehensive methodology for the collection of such data and the establishment of interactive national electronic database; 2) Proper interpretation of data collected for the purpose of mitigating future disaster impacts, thus insuring the safety of people and the protection of property – which are basic needs for economic development and future sustainability of Afghanistan.

We are open to suggestions that will help us tailor our proposed training to the specific needs of Afghanistan. These needs are best known to officials in the country who are more familiar with specific operational problems they deal with on a daily basis or when disasters struck Afghanistan in the past. Thus, we welcome any additional input that may help us formulate a more effective program that will maximize the benefits of our proposed training. The principal tasks for the proposed training at this time will provide instruction on:

1. Development of comprehensive methodology for the collection of data and the establishment of interactive, readily available national electronic databases of natural disasters. More specifically on how to develop interactive electronic databases on the most significant of disasters that Afghanistan is vulnerable (i.e. earthquakes, landslides, avalanches, floods, mudflow, droughts, storms, etc). These databases must include various parameters of collateral hazardous phenomena.

2. The use of mathematical models and algorithms for multiple hazard risk assessment taking into account the specific regional conditions in Afghanistan (e.g. specific hazard, exposure and vulnerability). This part of the

3. On quantitatively energetic and spatial-temporal recurrence frequencies of the extreme natural hazards in the region. Specifically we will provide an overview on the magnitude scale of the large disasters and explain how new scales of magnitude can be applied to past events (i.e. assignment of earthquake magnitudes or establishing seismic accelerations from interpretation of felt intensities).

4. The statistical methodology for establishing recurrence frequencies of natural disasters in Afghanistan.

5. Proper interpretation of data collected it for the purpose of mitigating future disaster impacts, thus insuring the safety of people and the protection of property – which are basic needs for economic development and future sustainability of Afghanistan.

6. The methodology of assessing the risks of specific natural hazards : earthquakes, landslides, avalanches, mudflows etc.,

7. The development of appropriate hazards maps and on maps of microzonation of hazards that can be of operational significance in engineering studies of infrastructure development (i.e. building codes) or for policy decision on land use management, such as creation of potential hazardous regional maps for each kind of natural disaster, catalogues and hazardous maps which may have good commercial potential in the economic growth and sustainability of Afghanistan.

8. How estimates of integrated vulnerability of people and environment can be attained for individual administrative units within Afghanistan.

9. How to assess multiple natural disaster risks for each administrative unit of the country and how to obtain estimates of maximum probabilistic losses due to natural disasters.

10. Specific disaster exercise workshop – with interactive trainee participation – on the development of realistic disaster scenarios in Afghanistan and on potential problems that may arise, as well as on the timely and effective remedial responses (we will interact with trainees for their active participation and will provide specific assignments for completion).

When finished with the training, we intend to issue "Certificates of Completion and Proficiency" to participants.

Form -3 DESCRIPTIONS of Approach, Methodology and Work Plan for Performing the Assignment

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We will prepare educational materials for distribution to participants at the time of training. Thus a considerable effort and time (estimated at 40-50 days) will be devoted in preparatory work prior to holding the training session (5 days). These educational materials will be distributed to all participants to serve as a manual during the training session and as future reference in subsequent implementation. The materials will include an overview of fundamental principles of Risk Assessment with specific emphasis on hazards that are unique to Afghanistan. Included in this manual will be guidelines for the development of preventive measures for reduction and management of risk of natural disasters, as well as for obtaining estimates of specific situations and tendencies in a changing environment. We will further expand on these fundamental principles during the training to make them more specific to local needs and potential problems in Afghanistan. To accomplish this goal more effectively, we plan to have the aforementioned interactive sessions with active participation of the trainees in developing potential disaster scenarios unique to Afghanistan, in participating in assigned exercise roles, and in providing input problems and possible solutions on which we will subsequently perform group evaluations. Our technical approach will include in greater detail the following.

1. Instruction on principles needed for the creation of electronic databases of natural disasters. This particular section of the training will elaborate on the techniques that need to be used to assure thorough searches of historical and archival records, to resolve controversies of time and impact, to elaborate on validity of sources and, finally, to create chronological catalogues of natural disasters in Afghanistan and uniform databases that can be electronically created and readily available to users.

2. Elaboration of the methods for estimating risks from individual or multiple natural hazards. We will provide full review of the information related to the methods of estimating specific and multiple risks from a variety of hazards. This part of the training will involve instruction on construction of models and algorithms used for individual and multiple risk assessment of hazards. The section will include a state-of-the-art review of the scientific literature, as well the methods used internationally for disaster risk assessments.

3. We will provide specific instruction on quantitative investigations of disaster recurrence frequencies and on methodology for converting narrative observations and comments on past events into reasonable specifications of magnitude scales and intensities (i.e. Earthquakes, storms etc.), which we can then be integrated in the statistical analyses.

4. We will expand on the methodology for creating potential hazard maps for each kind of natural disaster and for each unit area of Afghanistan where they occur. In this part of the training we will further elaborate on assignment of scales of risk *from* natural disasters by magnitude and intensity. We will comment extensively on partial distribution, recurrence frequencies and the physical parameters of probable natural disasters that are likely to impact Afghanistan in the future. In connection with this segment of the training we will comment extensively on the preparation of hazard maps for each kind of natural disaster that could impact Afghanistan. Our instruction will include guidelines for the development of microzonation mapping for engineering and land use applications, as well as for the establishing safer building codes.

5. Evaluation of people and environment vulnerability**.** This is a critical segment of our training that needs to be explained in great detail during the training as it pertains to expected maximum

probabilistic losses, evaluation of integrated vulnerabilities of separate administrative regions of Afghanistan and the safety of their population. Thus, we intend to elaborate on short and long term environment vulnerabilities and collateral impacts of natural disasters for each administrative unit of the country (i.e. epidemics following a major disaster). In that regard we will emphasize the need of obtaining values of relative total vulnerability of each corresponding area, and for that we may need input from participants in the training who may have knowledge of infrastructure deficiencies.

6. Estimation of the multiple risks of natural disasters for each administrative area of Afghanistan. Comparison by level of risk and degree of potential losses. Estimation of expected maximum probabilistic losses for important infrastructure facilities.

Methodology

We will instruct on the methodology used for creation of databases of natural hazards, as that of databases control system (DCS). It is the most convenient and simple in understanding as it is based on relational (tabular) system which is connected with GIS system. DCS has two regimes: the regime of projection and the regime of consumption. The first regime is intended for creation or change of the database structure. The second regime involves the filling a database with information or the retrieval of data.

In our training we will explain how material in a database must be organized by natural hazard and by a territorial attribute. Also on how cartographical information in GIS should be stored in the form of thematic layers of a multilayered database of natural hazards that may allow carrying out various mathematical actions and logic operations with these layers.

We will expand on the technique for the creation of catalogues, based on the double step models. The first stage includes the gathering and ordering of data and the creation of databases in chronological order. We will explain the second stage which is the analysis of collected data, which will be estimates of basic disaster parameters with the most probable values for each phenomenon and evaluation of accuracy. Success of similar approaches as the ones we will expand on, have been confirmed during the creation of many database catalogues (i.e., New Catalogue of Strong Earthquakes... 1982. NOAA, USA).

Also, to provide a full review of multiple risk assessments of natural hazards, we will reports on projects, programs, instructions and scientific findings from the CIS countries in Europe, USA, Japan, and elsewhere – where concerns about disaster reduction have been addressed in protecting their populations. Thus, we will propose the adaptation of similar techniques.

On specifications related to the estimation scales of size, magnitude and intensity, we will instruct on relevant classifications for all kinds of natural hazards in terms of physical or standard units, qualitatively and quantitatively (when possible) and on effects (qualitative gradation), in terms of description of damages and losses. We will emphasize the need to include the derived intensity and magnitude scales into corresponding columns of catalogues.

The instruction on natural hazards frequencies and estimates of recurrence will include statistical principles in the use of correlation, regressive and fractal analysis. The use of similar statistical analysis will be used in the training to explain adverse disaster impacts and potential public vulnerabilities.

Finally, the methods on natural hazards mapping construction will include instruction on satellite altimetry, remote imagery and GIS technologies. It is possible to assume, that the method of natural hazards multiple risk assessment will be based on GIS technology.

As previously mentioned and in order to provide meaningful and effective training for a subsequently sustainable effort in mitigating the impact of disasters in Afghanistan, the project will require time and effort to prepare and create an instructional manual specific to the needs of the country. At least two months will be needed for such preparation. The actual training could be conducted subsequently over a four or five day period by breaking down the individual segments of the training and allocating specific time limits to each modular training unit. At least one day should be devoted to a workshop with trainee participation. The training could be concluded with a summary statement of findings and a declaration with resolutions on how a program of risk assessment could be expanded in Afghanistan, as well as a proposed timetable for the recommended actions.

The final document will be the instructional manual which may include an organizational plan for recommended implementation by scientists in Afghanistan.