United Nations
International Strategy for Disaster Reduction
Secretariat, Geneva

Palais des Nations
1211 Geneva 10
Switzerland
Fax: (+41 22) 917 0528
E-mail: isdr.vacancies@un.org

Consultancy Vacancy with UNISDR	
Date of issue: 26 September 2011	**1SDR/C/23/2011**

Post Title:	Consultant (Project Actuary)
Duty station:	Consultant is not required to work on UN premises
Duration:	Two months
Deadline for applications:	02 October 2011
Assignments start date:	31 October 2011

United Nations Core Values:
Integrity ● Professionalism ● Respect for diversity

Background:

UNISDR is the secretariat of the International Strategy for Disaster Reduction. It was created in December 1999 and is part of the UN Secretariat with the purpose of ensuring the implementation of the International Strategy for Disaster Reduction.

Governments around the world have committed to take action to reduce disaster risk, and have adopted a guideline to reduce vulnerabilities to natural hazards, the Hyogo Framework for Action (HFA) 2005-2015. Its thrusts are: to make disaster risk reduction (DRR) a priority; know the risks and take action; build understanding and awareness; reduce risk; and get prepared and ready to act. The work of UNISDR supports those objectives, by helping obtain commitment from public authorities to implement disaster reduction policies and actions; stimulating partnerships across disciplines and sectors to expand risk reduction networks; advocate, support public education about risk and risk reduction and stimulate the increase of scientific knowledge about risk and disaster impacts.

The implementation of the ISDR is supported by a secretariat lead by the Special Representative of the Secretary-General for Disaster Risk Reduction. The secretariat main functions are policy coordination, advocacy and information management, at the international and regional levels, to ensure synergy between disaster reduction strategies and those in the socio-economic and humanitarian fields.

Although Southeast Europe is highly vulnerable to natural disasters, over the last few years there has been a gradual reduction in the ratio of outward reinsurance to the gross volume of insurance premiums written in the country. Despite the rapid growth of the property segment of the non-life insurance market, which is highly exposed to the risk of earthquake, today very few insurance companies buy catastrophe excess of loss reinsurance protection. Whereas those companies that do buy the reinsurance coverage, typically only buy an insufficient limit of the coverage, or transfer the risk to reinsurers without financially reliable international credit ratings. As a result, in spite of the fact that local insurers have been reducing the credit risk of reinsurers' non-payment by increasing the minimal size of their own solvency margin for the sum of the transferred insurance premiums, they can incur substantial losses in case of a default of a single reinsurer because the volume of the transferred responsibility exceeds considerably the sum of the transferred premiums.

Objectives and targets

Today, the country regulators in Albania, Serbia and FYR of Macedonia do not have the technical capacity to adequately assess companies' risk exposures to earthquake risk nor can it evaluate the adequacy and credit quality of their reinsurance programs. Hence, their main interest in the project is based on the expectation of receiving world-class technical assistance in the assessment of underlying catastrophe risk exposures of insurers as well as in the consequent risk-based supervision of their catastrophe risk transfer practices (reinsurance).

In this context, UNISDR is seeking the services of an experienced non-life actuarial consultant to assist the project team with the analysis of the risk data produced by the modelling consultant as well as with the design of a software tool for the SEEC insurance regulators.

1. Specific Tasks

The main tasks of the Project Actuary will be
(i) To provide quantitative estimates of probable maximum loss potentials at the portfolio level based on the inputs received from the modeling consultant.
(ii) To develop estimates of reinsurance cost at the portfolio level based on the underlying risk exposures and cost structure inherent to the international reinsurance market.
(iii) Design a regulatory software tool that would enable regulatory authorities to analyze companies' reinsurance programs from the point of their risk management adequacy and price as well as their impact on the companies' solvency margin.
(iv) A software presentation to the market regulators and training of staff. A more detailed description of these tasks follows:

<u>I. Quantitative estimates of PML at the portfolio level for EQ risk:</u>

The consultant will be expected to develop a mathematical algorithm for estimating the aggregate portfolio PML from exposures assumed by an insurer in different seismic zones from different classes of property business. In estimating the aggregate portfolio PML for a given return period, the consultant will account for correlations that may exist between loss potentials for different classes of property and between different insured locations. In performing this work the Project Actuary will work closely with the Risk Modeling Consultant.

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9-11 Rue de Varembé CH 1202, Geneva, Switzerland
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Postal Address: Palais des Nations, CH-1211 Geneva, Switzerland

II. Develop estimates of reinsurance cost at the portfolio level based on the underlying risk exposures and cost structure inherent to the international reinsurance market.

Based on the estimates of PMLs and average annual losses (AALs) for risk aggregates in different risk accumulation zones, the consultant will develop overall reinsurance cost estimates for the required reinsurance program. The outcomes of this work should be presented in the form of a simple computational tool that would enable FSA to estimate the reinsurance cost of specific reinsurance programs placed by insurers both at the portfolio level and at the level of specific risk aggregates.

III. Development of a reinsurance program scoring tool for insurance regulators

Based on the work performed in Modules I & II, the consultant will then develop a software tool that would enable the regulators to automate the analysis of companies' reinsurance programs from the point of view of their risk management adequacy, cost efficiency and their impact on the companies' solvency. The main outputs to the program should be insurers' sums insured in specific risk accumulation zones separately for residential, commercial and industrial classes of construction, and structures of companies' reinsurance programs, the main outputs of the program should be the overall portfolio PMLs for any given return period, PMLs for specified risk aggregates as well as the estimated reinsurance coverage shortfall and its impact on solvency (the estimates of shortfall will also account for the credit quality of reinsurance program).

The inputs and outputs of the software tool will be as follows:

Inputs per geographic grid cell (zip code, cresta zone, or property address)

1.1 Sum insured residential with deductible d1
1.2 Sum insured residential with deductible d2
1.3 Sum insured residential with deductible d3

2.1 Sum insured commercial with deductible d1
2.2 Sum insured commercial with deductible d2
2.3 Sum insured commercial with deductible d3

3.1 Sum insured industrial with deductible d1
3.2 Sum insured industrial with deductible d2
3.3 Sum insured industrial with deductible d3

2. Tangible and measurable outputs of the work assignment

1. Portfolio loss exceedance curves (PML curves) for residential, commercial, industrial and combined. The curves will include all desired PMLs (for any required return period) and will fully take into account the correlations between different geographic locations for any given insurance portfolio.

2. Portfolio annual expected loss for residential, commercial, industrial and combined.

3. Annual expected loss for desired geographic locations for residential, commercial, industrial and combined.

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4. Estimate of solvency adjusted for the level of retained catastrophe risk exposure by an insurer (e.g. based on the examination of the reinsurance placement size and structure, its credit quality, and insurer's own surplus capital).

Competencies:

Professionalism – demonstrates professional competence and mastery of subject matter; is conscientious and efficient in meeting commitments, observing deadlines and achieving results; is motivated by professional rather than personal concerns

Planning and Organizing - Demonstrate effective organizational skills and ability to handle work in an efficient and timely manner.

Technological Awareness - Keeps abreast of available technology; understands applicability and limitation of technology to the work of the office; actively seeks to apply technology to appropriate tasks; shows willingness to learn new technology.

Managerial competencies:
Leadership; vision; empowering others; building trust; managing performance; judgment/decision-making

Qualifications:

Education: Advanced university degree (Master's degree or equivalent) in mathematics or a related discipline. A first-level university degree in combination with qualifying experience may be accepted in lieu of the advanced university degree.

Experience: A minimum of five years of progressively responsible experience in reinsurance or related areas.

Language: Fluency in oral and written English.

Other: Practical experience in setting insurance premiums, reserving requirements, risk-based solvency calculations and reinsurance treaty pricing. Knowledge of the work of the United Nations Secretariat, Funds or Programmes.

How to apply

Please email the following documents to the ISDR secretariat at: isdr.vacancies@un.org:

1. Cover letter, explaining why you consider yourself qualified and motivated for this particular assignment.
2. Completed personal history profile form (The P11 form can be downloaded from http://www.unisdr.org/who-we-are/vacancies).
3. It would be appreciated your stating your full name and the ISDR vacancy notice number **(ISDR/C/23/2011)** as the subject in your e-mail of application.

Please note that applications received after the deadline will not be accepted. Applicants will be contacted only if they are under serious consideration.

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