Component 3 Knowledge Management

3-2 Are the academic and research communities in the country linked to national or local institutions dealing with disaster reduction? If yes, please describe the mechanisms for information shearing and indicate any example of usefulness and effectiveness. Which are the main research an academic institutions dealing with disaster reduction related issues (please list, if available, and indicate how their research work is related to the country's disaster risk reduction needs.).

To make a UNITWIN Programme with International Consortium on Landslides (ICL) and Kyoto University, with an agreement signed by Koichiro Matsuura, Director General of UNESCO on 10 March 2003, Dr. Dimitri Beritze, the Chief Editor of UNITWIN Programme of UNESCO visited Japan, and Makoto Nagao (President of Kyoto University) and Kyoji Sassa (President of ICL) signed the documents for the UNITWIN programme on Landslide Risk Mitigation for Society and the Environment by UNESCO/Kyoto University/ICL on March 18, 2003.

The principal objectives of the Cooperation Programme are to: (1) promote an integrated system of research, training, information and documentation activities in the field of Landslides for the benefit of society and the environment and as a key contribution to sustainable development and the protection of the environment on a global scale; (2) provide advice and experience to all countries, particularly the least developed, with a view to: (i) establishing landslide research and education for landslide risk mitigation, (ii) facilitating exchange of scientists and engineers; (iii) helping members of Consortium in developing methods of global landslide monitoring; (iv) enhancing landslide experiments; (v) permitting development of a landslide database and digital library as well as of a world digital inventory.

The information shearing of the UNITWIN members which are also the main member of International Consortium on landslides are through an electronic ICL newsletter, and inviting landslide researchers to the UNITWIN Headquarter having a training course or conducting joint research. Good practices would be published in the international new Journal of Landslides.

The fifty member organizations of the ICL joined the UNITWIN programme. The following is a list of main research institutes dealing with landslide disaster reduction.

1. Landslide team, Geological Survey of Canada, Canada. Mainly conducting landslide investigation, geophysical landslide exploration.
2. Italian group including European Commission's Joint Research Centre, IPSC / HSU, ISPRA (VA), CIVITA Consortium, Istituto Nazionale Di Oceanografia E Di Geofisica Sperimentale, ENEA (Italian Agency for New technologies Energy and Environment), Univerzity of Firenze, Earth Sciences Department, International Association of Geomorphologists, Modena, and National Council of Geologists (CNG). Mainly conducting technical development of remote sensing, ground laser for landslide monitoring, and disaster prevention in cultural and natural heritages in central Afghanistan, and Machu Picchu.
3. Japanese group including Research Centre on Landslides, DPRI, Kyoto University, Research Institute for Hazards in Snowy Areas, Niigata University, Japan Landslide Society, Tokyo; Faculty of Engineering, University of Tokyo, Flood Section, DPRI, Kyoto University, University of Tokyo, Institute of Industrial Science, Forestry and Forest Product Research Institute, Geographical Survey Institute, Tsukuba, Faculty of Engineering, Ehime University, and Faculty of Engineering of Kanazawa University. Mainly conducting areal prediction of flowslides triggered by earthquake and rainfall, and protection of cultural heritage like Machu Picchu, Huaqing Palace in China, and Bichu-Matsuyama in Japan.

4 Norwegian Geotechnical Institute, Oslo, NORWAY. Conducting global risk landslide disaster hotspots.

5. U.S. Geological Survey, Landslide Hazards Program, USA. Mainly conducting Hurricane-related landslides research, and editing handbook for landslide practice

6. Charles University, Czech Republic and Comenius University, Slovakia. Mainly conducting protection work of cultural heritage from landslides.

7. Russian group including Institute of the Geospheres Dynamics, Russian Academy of Sciences, and FSUGE Scientific Centre "HydGeo", Centre of engineering UESR, JSC, Branch «Institute Hydroproject», Institute of Environmental Geoscience, Russian Academy of Sciences (IEG RAS). Mainly conducting large scale landslide in Tien Shan mountain area.

8 Chinese group including Jilin University, Chongqing Seismological Bureau, Xian Municipal Government, Chengdu Institute of Mountain Hazards and Environment, Chinese Academy of Sciences, Northeast Forestry University, and Shanghai Jiaotong University. Mainly conducted landslide risk evaluation in Three-Gorge reservoir area, and Changbai Mountain area.

9. Iranian group including International Institute of Earthquake Engineering and Seismology (IIEES), Building & Housing Research Center, and Soil Conservation and Watershed Management Research Institute. Mainly conducting investigation on giant landslide in Iran

10. The University of the West Indies, Kingston, Jamaica. Opening a summer landslide school for international students.

All of these institutions are contributing to the national or local landslide hazard assessment and disaster mitigation in different styles.

Contact address of ICL Secretariat
Kyoji SASSA, President of ICL
Research Centre on Landslides
Disaster Prevention Research Institute, Kyoto University
Gokasho, Uji, Kyoto 611-0011, Japan
Phone : +81-774-38-4110, FAX: +81-774-325597
E-mail: jimu@landslide.dpri.kyoto-u.ac.jp
http://icl.dpri.kyoto-u.ac.jp

Component 3.6 - Do you have any national public awareness programmes or campaigns on disaster risk reduction? If available, who are the main players for raising public awareness? How are the mass media and schools involved? Who are the targeted groups and how do you evaluate the programmes?

Yes We have several national public awareness programmes and campaigns on disaster risk reduction, at which Prof Kyoji Sassa has been playing the key role Many mass media, such as NIIK (Japan Broadcasting Corporation), BBC, Chinese Television Stations, etc., had been involved in, and a great number of universities/Institutes from 23 counties and regions all over the world has been involving in through the International Programme on Landslides (IPL), which is an international initiative of the International Consortium on Landslides (ICL). The target of these programmes and campaigns is not only elevating the research level of disaster reduction in global scale, but also raising the awareness of disaster risk for normal people all over the world. Such programmes and campaigns could be outlined as follow.

1. International open lecture on Landslides Hazard Assessment (Xian, China, 13-26 July 1997)

This lecture was held by Prof. Kyoji Sassa, Kyoto University, with the participants of Dr Hideo Noguchi, former Chief for Asia/Pacific & Europe Division of Physical Heritage, UNESCO Sector of Culture, the Governor of the Shaanxi Province, China, and the Mayor of Xian city, many professors from the Universities in Japan, United Kingdom, Canada, Korea, Austria, China, etc., as well as many students from the Chinese universities. This symposium directly led to the performing of landslide countermeasures through a big budget raised by the national and local governments of China.

2. Open Forums on Landslide hazards and the cultural Heritage

Open Forums on Landslide hazards and cultural Heritage have been periodically performing in some areas of Japan, such as Takahashi City near Hiroshima, Kyoto City, Hino City near Tokyo, etc. The main players of these open forums were the researchers from the Research Centre on Landslides, Disaster Prevention Research Institute (DPRI), Kyoto University, and members of the International Consortium on Landslides (ICL) all over the world The target of these forums is to raise the awareness of landside risk of the local residents. Through this forum, local government and residents were impressed the importance of landside risk reduction and protection of cultural heritages. This kind of forum had also been performed in Cusco, Peru, with great number of participants of local residents, where the landslide risk in Machu Picchu was addressed

3 Capacity Building

By now, a series of programmes has been conducting for the capacity building in landslide hazard management and control, establishment of regional network for disaster mitigation, disaster education, and disaster database system, especially for those developing countries. The main players of these programmes are the International Centre for Integrated Mountain Development (ICIMOD) in Nepal, Niigata University and Ehime University in Japan, and University of the West Indies in Jamaica, through the IPL Programmes with the support of the International Consortium on Landslides. The Research Centre on Landslides, DPRI, Kyoto University had also involved in public education on the landslide hazard in China, donating experimental apparatus for landslide study and training landslide researchers for Jilin University as well as Xian Landslide Observatory in China.

Contact address of ICL Secretariat
Kyoji SASSA, President of ICL
Research Centre on Landslides
Disaster Prevention Research Institute, Kyoto University
Gokasho, Uji, Kyoto 611-0011, Japan
Phone · +81-774-38-4110, FAX. +81-774-325597
E-mail jimu@landslide.dpri kyoto-u.ac jp
http://icl.dpri.kyoto-u.ac.jp

Components 6 Call for good practices in disaster risk management

Based on the above analysis and information provided, please provide at least two examples of any successful implementation of disaster reduction activities in your country (could be of local, national or regional scale); any project or community based experience, national policy, interaction between sectors, etc. would be welcome. Provide maximum one page on each example, indicating area of work, institutions and actors involved, duration, impact of the activities, lessons-learnt and if the example have been replicated. You may also kindly direct us to relevant web-based information/organization.

Good practice in landslide hazard Mitigation

One example of the Japan-China Joint Research on Assessment of Landslide Hazard in Lishan, Xi'an, China, which was coordinated by Prof. Kyoji Sassa, DPRI, Kyoto University, could be raised. This research has been carried out since 1991. Through the long-term research, it is made clear that the slope behind the Huaqing Palace (a Chinese Cultural Heritage) had been suspected to a potential large-scale landside, which may fail the Palace and the centre of Lintong County. Monitoring of slope deformation and geological investigation by boring and investigation tunnels during this joint research exposed that this slope was in the precursor rock creep process of large-scale rockslide. The geotechnical test proved that this rock slide mass must travel long like the Frank Slide in Canada and the 1983 Sale landside in China in the undrained loading mechanism onto the saturated alluvial deposit in Lishan. To Prevent or mitigate the coming disaster, two ways of landslide risk countermeasures were suggested and been performed (1) to install automatic monitoring system of slope movement, and (2) to stabilize the creeping rock slope through pile works on the toe of the slope. This is a good example for the prevention of landslide hazards in precursor stage.

Landslide risk management in Cultural Heritage: the case of Machu Picchu, Cusco, Peru

Landslide Risk Evaluation and Mitigation in Cultural and Natural Heritage Sites, as one of the coordinating projects of the International Programme on Landslides, has been performing with the coordinators being Prof. Kyoji Sassa, Kyoto University, and Prof. Paolo Canuti, Florence University. In this project, landslide investigation in Machu Picchu, Cusco, Peru, has been is selected as the key research site with the awareness of importance and urgency for the landslide risk management in this Cultural Heritage. In this project, the landslide risk evaluation has been performing with the cooperation of several research teams from Japan, Italy, Slovakia, Czech Republic, Canada, etc. Through these cooperative researches, it was made clear that Machu Picchu site is suffering landslide risk.

Landslide risk management in densely populated urban area: the Japanese case

To prevent/mitigate the increasing landslide disasters in urban area, a project, "Areal Prediction of Earthquake and Rain Induced Rapid and Long travelling Flow Phenomena" (APERIF), of the Special Coordinating Fund for Promoting Science and Technology of the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) has been raised (Leader: Prof. Kyoji Sassa, Kyoto University), which is also one of the on-going project of IPL. Basing on the new understanding on the slope behavior during earthquake, assessment of landslide risk has been performed on the Nikawa slope area, Hyogo Prefecture, countermeasures for the prevention of landslide hazard during earthquakes were proposed correspondingly and conducted effectively. The assessment of landslide risk on a densely populated urban area near Tokyo has also been performed. Detailed laser scanner-based micro-contour mapping, geological and

geotechnical consideration revealed that this area is also facing the risk of catastrophic landsliding during rainstorm or earthquake. Detailed researches, including the geological features as well as the mechanical behavior of galley-burry fills had been performed. Basing on these research results, the possible landslide hazard area has been predicted.

These above-mentioned good examples in landslide hazards reduction were closely related to the cooperation research and education activities of the Research Centre on Landslides, leading by Prof. Kyoji Sassa, DPRI, Kyoto University. From this point of view, the Research Centre on Landsides, as an international core, is of great importance in landslide hazard mitigation. Therefore, "International Cores for Cooperation and Networking in Disaster Mitigation Research and Capacity Building", which is proposed by ICL in Component 7, must be urgently established in key areas for disaster risk reduction.

Contact address of ICL Secretariat
Kyoji SASSA, President of ICL
Research Centre on Landslides
Disaster Prevention Research Institute, Kyoto University
Gokasho, Uji, Kyoto 611-0011, Japan
Phone : +81-774-38-4110, FAX: +81-774-325597
E-mail: jimu@landslide.dpri.kyoto-u.ac.jp
http://icl.dpri.kyoto-u.ac.jp

Component 7 Priorities you want addressed at World Conference on Disaster Reduction

What do you think are the priority topics to be agreed upon the World Conference to enhance and strengthen national policy and practice to reduce risk and vulnerability to natural and technological hazards ? Please list any other thematic areas or specific topics of discussion that you consider of importance to increase the effectiveness of disaster risk reduction for your country (ICL)

Please also indicate any particular experience or project that your country would like to exhibit or present at the Conference.

A Proposal to establish

"International Cores for Cooperation and Networking

in Disaster Risk Reduction Research and Capacity Building under the auspices of UNESCO"

In the field of landslide disaster risk reduction research, there had been no organization nor mechanism for world-wide landslide information collection until ICL was established in 2002 Different from earthquakes and meteorological disasters, landslide occurrence information is not easy to collect. Earthquakes on the earth are monitored and detected by a limited number of seismographs. Meteorological phenomena of whole earth are monitored by a number of ground meteorological stations and satellites. Effective weather forecast is implemented for almost all of the world Landslides are often triggered by earthquakes and heavy rainfalls However, the automatic global-scale detection system of small to large landslides is not yet established. Effective information collection and dissemination are urgent task for the international community of landslide risk evaluation and reduction. Since Yokohama Strategy was issued. Science and Technology of landslide hazard assessment and risk evaluation has much progressed, however, these achievements have not always been well implemented. In this context, following initiatives were conducted to change the situation; (1) International Consortium on Landslides (ICL) was established in 2002 ICL aims to promote international joint effort for landslide risk reduction, which is supported by UNESCO, UN/ISDR, WMO, FAO, and IUGS. Based upon the 2002 ICL Kyoto Declaration, Research Centre on Landslides (RCL) was established in 2003 in Disaster Prevention Research Institute (DPRI) of Kyoto University to act as the core of ICL, (2) Rapid internet development enables effective collection of recent landslide information from news sites in many countries, national government announcement, and other sites, (3) Recent development of remote sensing techniques, such as satellite and airborne synthetic aperture radars, are believed to contribute to future global-scale landslide monitoring system, (4) Japanese government, especially Japanese Commission for UNESCO and Office for Disaster Prevention Research of MEXT are willing to actively participate in establishing new world landslide information network based on the success of UNESCO-Kyoto University-ICL UNITWIN Cooperation Programme on Landslide Risk Mitigation for Society and the Environment (formal agreement was exchanged in March 2003 and the Headquarter was established in RCL in January 2004). This UNITWIN Cooperation was based on UNESCO-DPRI / Kyoto Univ. Memorandum of Understanding on "Landslide Risk Mitigation and Protection of the Cultural and Natural Heritage as a Key Contribution to Environmental Protection and Sustainable Development in the First Quarter of the Twenty-first Century" which was exchanged in December 1999. Exchanging information and personnel for capacity building among universities and national governments through the UNITWIN Network must contribute very effectively to establish the new global network to reduce landslide disaster risk and presents a good example of disaster prevention education for living with

risk with the international partnership in the first quarter of 21st century, especially through the ICL / UNITWIN network.

The initiative of UNITWIN Cooperation Programme with ICL partnership can be enhanced in a wider frame cooperating other major disaster management units. In this aspect, ICL strongly recommends to establish a new "International Cores for Cooperation and Networking in Disaster Risk Reduction Research and Capacity Building under the auspice of UNESCO" (The "Cores"). This is a new idea to establish research and information cores in most active landslide research organizations in Japan, Canada, Italy, USA, and Norway to develop the system to collect, analyze and disseminate the world landslide information effectively and construct a common database as well as to enhance the research ability through capacity building of personnel from developing countries.

ICL strongly recommends the United Nations World Conference on Disaster Reduction to include the following phrases in the Conference Resolution or Appeal or Declaration through the discussion of the High Level Roundtables : Theme 2) "Education : Living with risk – from knowledge to action."

(The Conference participants) recommend:

- to join all international and national scientific and non-scientific efforts to improve understanding of processes and assessment of landslides and to cooperate on constructing effective landslide information collection system and world-wide landslide database,
- to establish "International Cores for Cooperation and Networking in Disaster Risk Reduction Research and Capacity Building under the auspices of UNESCO,"
- the "Cores" should be established in RCL (Kyoto, Japan) as the headquarter, and also in Geological Survey of Canada, University of Florence (Italy), USGS National Landslide Information Center (Colorado, U.S.), and International Center for Geohazards (Oslo, Norway),
- to recommend MEXT-Japan to enhance RCL/DPRI/Kyoto University in personnel and funding to proceed the Headquarter of the "Cores" to be established in RCL, and to recommend Canadian, Italian, U.S., and Norwegian governments to enhance the "Cores" to be established in each nation,
- RCL consists of three sections of (a) Research Section for Landslide Dynamics, (b) Research Section for Landslide Monitoring, and c) new Research Section for World Landslide Information Analysis,
- to receive official approval for the "Cores under auspice of UNESCO" by the 2005 UNESCO General Assembly,
- the "Cores" jointly with ICL, UNESCO, and MEXT-Japan develop a Research Programme, an Information Collection and Database Construction Plan, a Capacity Building Plan, and a Publication Plan,
- to enhance awareness among worldwide public for the landslide risk mitigation and to demonstrate our abilities to reduce landslide impact.

Contact address of ICL Secretariat
Kyoji SASSA, President of ICL
Research Centre on Landslides
Disaster Prevention Research Institute, Kyoto University
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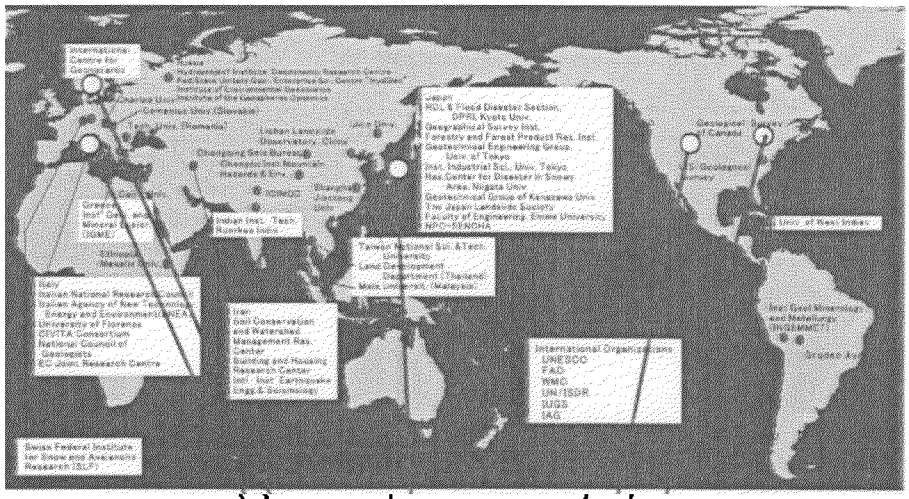
Phone : +81-774-38-4110, FAX: +81-774-325597
E-mail: jimu@landslide.dpri.kyoto-u.ac.jp
http://icl.dpri.kyoto-u.ac.jp

Memorandum of Understanding between **UNESCO and Disaster Prevention Research Institute, Kyoto University** on "Landslide Risk Mitigation and Protection of the Cultural and Natural Heritage as a Key Contribution to Environmental Protection and Sustainable Development in the First Quarter of the Twenty-first Century"	1999
2002 Kyoto Declaration Establishment of an International Consortium on Landslides	2002
Establishment of a UNITWIN Cooperation Programme between UNESCO, Kyoto University, and ICL	2003
Memorial Meeting for Establishment of UNESCO-Kyoto University – ICL UNITWIN Cooperation Programme Headquarter	2004

UNESCO / Kyoto University / ICL Landslide Risk Reduction Network



The "CORES"

UNESCO | **ICL / UNITWIN** | **MEXT/Japan**

Global Landslide Disaster Risk Reduction