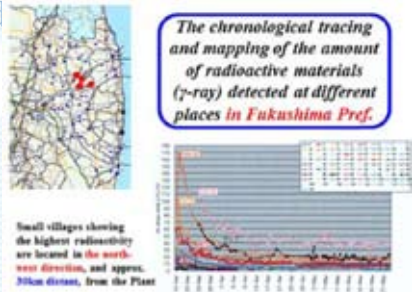


Department of Energy of USA worked on the air zone allocated for each, measured air dose rates on the level of 1 m high from the ground surface, using NaI scintillator radiation detectors on aircraft and helicopter, flying over 150m to 300m high within 80km radius from the Fukushima Nuclear Power Stations. This is a map showing the distribution of radioactivity. The distribution of radioactive materials is strongly influenced by the weather condition including the direction and strength of wind as easily recognized on this map.

### Mongolian Acad

#### 15. Distribution Inside Fukushima

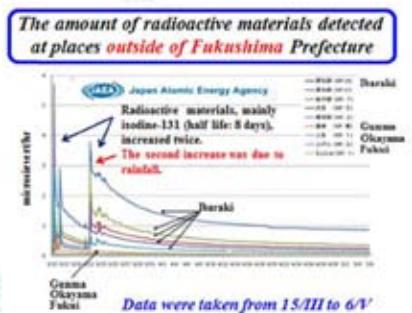
The chronological tracing and mapping of the amount of radioactive materials, mostly gamma-ray emitters, detected at different places inside Fukushima Prefecture was shown here. Chronological data in the right lower panel were started from the day 16th March after the ventilations and hydrogen explosions.



Four places showing higher levels of radioactivity than other areas were plotted in the left side map with red dots. These areas are located in the north-west direction and approximately 30km distant from the Nuclear power plant. The distribution pattern is quite similar to the previous map absolutely independently made.

#### 16. Distribution Outside of Fukushima

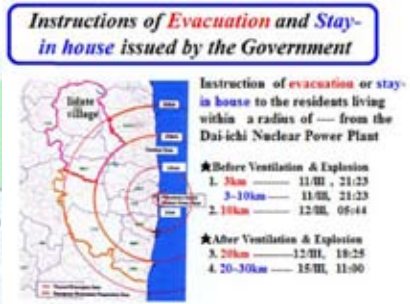
The amount of radioactive materials detected at places outside of Fukushima Prefecture was plotted here. Although the absolute values are, of course, lower than those of the Fukushima prefecture, reasonable amount of radioactivity was detected in Ibaraki Prefecture, located at the next door to and more than 200km apart from the Fukushima Prefecture. Radioactive materials were mostly iodine



131 whose half life is 8 days. It is noteworthy that the rainfall increases the amount of radioactivity on the ground.

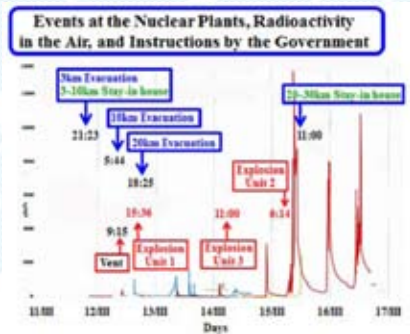
### 17. Instructions of Evacuation

In order to protect people from the attack of radioactivity, it is necessary to issue Instructions of Evacuation or Stay-in House by the authorized organization such as the government. The first Instruction was issued at 7 hours after the earthquake. Evacuation for the residents living within a radius of 3km, and Stay-in house for the residents within 3 to 10km. In the early morning of the next day, Evacuation was expanded to the residents living within a radius of 10km. Interestingly, these measures were taken before the ventilation or hydrogen explosion occurred.



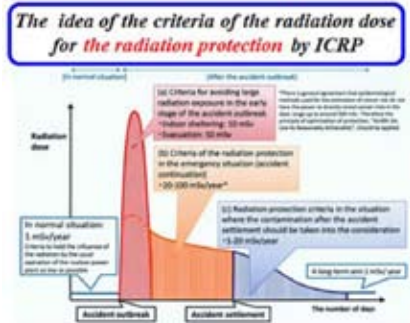
### 18. Events at the Plants, RI and Instructions

This slide contained three related factors. The first is a series of events happened at the Nuclear Power Plants shown in red boxes, such as ventilation or hydrogen explosions. The second is a series of measured values of radioactivity in the air around the Nuclear Plants. These data are the very first time to be published from the government. The third is a series of Instructions by the Government.



It is noteworthy in this figure that even after the ventilation or the hydrogen explosion the radioactivity around the Units was not very high.

In addition, it is easily understood that the most of Governmental Instructions were issued before the ventilation or hydrogen explosions occurred.



### 19. International Commission on Radiological Protection

Although the International Commission on Radiological

Protection, ICRP in abbreviation, does not normally comment on events in individual countries, ICRP made recommendation for “optimization” once again to the Fukushima Accident. Accordingly, in the normal situation, criteria to hold the influence of the radiation by the usual operation of the nuclear power plant as low as possible, namely 1mSv/year. After the accident outbreak, the criteria of the radiation protection in the emergency situation in which the accident is still on-going will be 20-100mSv/year. Honestly speaking, we are now in this phase. If in near future the accident is settled down, the radiation protection criteria should be considered to be goes down again to 1-20mSv/year. Furthermore, the long-term aim will be 1mSv/year again.

## 20. Food Safety

As the final topics, I would like to talk briefly about the food safety in terms of radiation contamination. On 13th March, 2 days after the Nuclear Power Plants accident occurred, the Ministry of Health and Welfare temporarily determined the regulation value of 5mSv/year of radioactivity for foods. In fact, nearly a week after this decision, contaminated vegetables and milk by the radioactivity were found in Fukushima and Ibaraki Prefectures. Responded to this event, the Ministry of Health and Welfare asked opinions of Food Safety Commission belonging to the Cabinet Office. The answer was rather confusing, but a few days later, the Prime Minister declared the shipment ban of agricultural products including spinach etc of Fukushima Prefecture and other 3 Prefectures. However, within a couple of weeks afterwards, the area of shipment ban was narrowed based on the following data.

### Regulation of Radioactivity for Food Safety

- ★On 13/III: Ministry of Health & Welfare (MHW) temporarily determined the regulation value of 5 mSv/year of radioactivity for foods.  
On 19/III ⇒ Contaminated vegetables and milk were found
- ★On 20/III: MHW asked opinion of Food Safety Commission, and FSC sent back a rather confusing comment that 10 mSv/year is enough to keep safety of food.  
On 21-23/III ⇒ Shipment ban of agricultural products
- ★On 4/IV: Area of shipment ban was narrowed from prefecture level to a local area level because of decreased contamination.
- ★On 10/V: Area of shipment ban was further narrowed to a part of Fukushima and northern Ibaraki

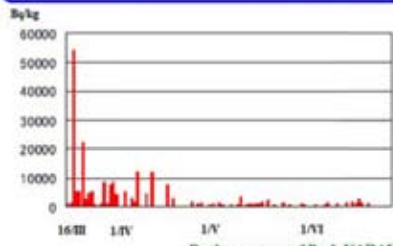
By the courtesy of Prof. KARAKI

## 21. Data of contamination

This is a graph showing the transition of the levels of contaminated radioactive substances, mostly iodine and cesium, in foods. As indicated previously, indeed, the contaminated levels were lowered and lowered, day by day.

As I mentioned above, the

### Levels of contaminated radioactive substances (iodine and cesium) in foods



By the courtesy of Prof. KARAKI

Ministry of Health and Welfare of Japan uses the value of 5mSv/year for food safety. Judging from level of natural radiation we receive, for example cosmic rays, to be 2.4mSv/year in average, the level of 5mSv/year is reasonable.

## 22. Food Safety in Japan

Thus, foods circulating in market are safe because regulation is very strict, indeed. Once again, I should say, that contaminated foods are not shipped to the market.

## 23. What we should do next

Finally, I would like to touch with the issues what we should do next.

Firstly, we should take steps forward to COLD SHUTDOWN of the Nuclear Power Plants Units 1 through 4.

Secondly, we should take steps forward to RECONSTRUCTION of the INSTRUCTIONS of Evacuation zones and Environs.

Thirdly, we should take steps towards reconstruction of the North-East Japan based on the GRAND DESIGN.

Finally, we should take steps forward to RE Disaster.

## Closing

I would like to mention that there is no question that this nuclear accident was mostly caused by the natural factors such as the extraordinary huge energy of the earthquake and the sequenced big tsunami. However, we should receive sincerely the criticisms that a part of the accident may be caused by human factors such as too much confidence in the safety of nuclear plants and too less estimation of the danger of the loss of electric power to the plants.

At any event, we hope that we could reach to the point of settlement of the nuclear reactors as soon as possible and we could report such good news in near future.

### **Food Safety in Japan and Exports**

★ MHW uses the value of **5 mSv/yr** for food safety, which is the level two times higher than natural radiation we receive (**2.4 mSv/year**), and smaller than the amount we receive during a Chest X-Ray computed tomography (**6.9 mSv/scan**).

★ Therefore, foods circulating in market are safe because regulation is very strict as shown above, contamination levels are low and **contaminated foods are not shipped to the market.**

By the courtesy of Prof. KARAKI

### **What we should do next**

1. Steps toward "**Cold Shutdown**" of the Nuclear Power Plants in Fukushima
2. Steps toward "**Reconstruction of the Instructions**" of Evacuation Zones and Environs
3. Steps toward Reconstruction of the North-East Japan based on the "**Grand Design**"
4. Steps toward "**Re-evaluation**" of what we did after the Disaster

### Acknowledgements

On behalf of the Science Council of Japan, I would like to express our heartfelt thanks to Prof. Enkhtuvshin, the President of Mongolian Academy and his colleagues for their perfect organization of this 11th SCA Meeting and warmest hospitality they gave us at every moment.

Moreover, I would like to express our special thanks to the Mongolian government, particularly the Deputy Prime Minister Mr. Enkhbold who is here, and the Mongolian people as well. It is because the Mongolian government persuaded the Mongolian public servants to donate an amount of salary for one-day, in order to support the victims of the disaster happened in the North-East Japan. The extraordinary action of the Mongolian government was introduced through newspapers or television services and other medias. Therefore, Japanese people deeply appreciated the kind support of the Mongolian people.





**Policy and steps by the Mongolian  
Government to combat land  
degradation and desertification**



## Policy and steps taken by the Government to combat land degradation and desertification in Mongolia

Sciences Council of Asia

**Dr. L. Gansukh**

*Minister for Environment and Tourism of  
Mongolia, Mongolia*

Ladies and Gentlemen!

First of all, I would like to take this opportunity to offer my gratitude to you to be present here in Mongolia to share your ideas and experience regarding the global problem of land degradation and desertification.

As you know, the global climate is warming  $0.75^{\circ}\text{C}$  within the last 100 years and the consequential negative impacts on socio-economic development and environment are likely to rise. Greenhouse gas emission resulted from the energy consumption with regards to ever increasing global population, urbanization and infrastructure development, is one of the major causes of climate change.

The serious consequence of anthropogenic and climate change impacts on environment is land degradation and desertification. In response to this, the countries approved and are implementing the UN Convention on Severely Affected Countries in order to mitigate the damaging impacts on ecosystem and their scope and speed. Mongolia became signatory to this convention in 1996 and is actively working towards the targets.

### **Current status of desertification in Mongolia**

According to the definition of UN Convention, about 90% of Mongolia's land is vulnerable to desertification and land degradation.

As our researchers studied and defined, the mean air temperature rose by  $2.1^{\circ}\text{C}$  within the last 70 years and in relation to this, area covered by water resources, perpetual snows, steppe and forest decreased by 36.0, 31.0, 28.0 and 8.0% respectively, and on the contrary, area with sand and desert steppe grew 46.0 and 68.0% each.



A recent Mongolian reports estimate that 70% of Mongolia's territory is already affected by land degradation, out of which 5% is very severely, 18% severely, 26% moderately and 23% is weakly affected.

### **Causes and effects of desertification in Mongolia**

It is important to define which one out of natural and anthropogenic factors dominantly causes land degradation in Mongolia and take responsive policy and measures.

Natural factors include following:

- Geographical location of Mongolia: Mongolia's climate is harsh continental in connection to landlocked mountainous terrain and high altitude. It is characterized by high moisture deficit, low humidity and high temperature fluctuations annually and diurnally. There is a vast desert and desert steppe to the south and southwest of the country.
- Global climate change: Mongolia's mean air temperature rose by 2.1°C between 1940 and 2007, which is followed by sudden temporary increase of air temperature in warm season and decreasing rainfall leading to drought and land degradation.

Effects of land degradation and desertification are witnessed by drying water resources, increasing sand and dust storms, declining rangeland biomass and salinization of soil and water. Sometimes drought and occur in two or more consecutive years. For instance, compared to the 1960s, days with sand and dust storm increased 3-4 times in steppe and Gobi regions while dust storms occur 61-127 days per year in Gobi and Great Lake areas. Thus, sand movement and desertification expands.

Anthropogenic factors are as follows:

- Overgrazing: Grassland vegetation deteriorates due to continued use without resting and rotation. Livestock herds increased after the privatization for the recent years. It is estimated that Mongolia had about 50 million Sheep Forage Units (SFU) in 1990, which became 70 million SFU equivalent to 43.2 million head of livestock at the end of 2008. As official reports revealed, pasture carrying capacity is exceeded by 32.5% equivalent to 16 million SFU compared to 1999-2004. So it is the major cause of rangeland degradation. On the other hand, herd composition

changed a lot with dramatic increase of goat population with 19.9 million that account for 46% of the total herd.

- Consumption of saxaul and other shrubs for fuel wood: Households as well as some local organizations use trees and shrubs for fuel.
- Improper mining activities and absence of rehabilitation: As in the MNET surveys of 2009-2010, some 20000 ha area is used by mining companies and about 4000 ha has to be restored currently.
- Multi-tracking: Soil productivity and vegetation deteriorate by reason of multi-tracking and resultant dusts due to poor infrastructure and increased transportation.

### **Government policy on coping with desertification**

A number of policy documents, including the Government Policy on Ecology, the Comprehensive National Development Strategy, the Mongolian Action Programme for the 21<sup>st</sup> Century, environmental legislations, National Programmes for Water, Forest and Climate Change, 'Green Wall' National Programme, National Action Plan to Combat Desertification, prioritized wide-range goals and measures to address land degradation and desertification.

Government of Mongolia approved and implemented the National Action Plan (NAP) to Combat Desertification in 1996 and 2003. The plans focused on building national capacity to combat desertification and forming legislative environment through the establishment of National Committee to Combat Desertification and Center for Desertification Studies under the Academy of Sciences. The Center works to assess the status of desertification and its impacts, and develop scientific basis of implementing policy and measures.

Some progresses have been witnessed on restoration as a result of developing natural resource management and improving legal environment.

In 2010 Government approved the updated NAP in line with the new 10-year strategy of UNCCD. Within the framework of the updated NAP, we are working towards the policy and management reforms through the long term integrated policy to prevent from the adverse causes triggering desertification and cope with land degradation and desertification, proper inter-sectoral planning and management, and strengthening national capacity.

Government policy documents prioritize strengthening national capacity to combat desertification, improving legal environment, enhancing science and technology transfer, raising advocacy and public awareness, encouraging investment and increasing budget allocation. At present, expenditure for coping with desertification accounts for 10% of the minister's package.

Government policy focuses on to strengthen multilateral cooperation to cope with desertification and has achieved some progress on implementing international donor projects and programmes, and collaborating with countries and organizations signatory to UNCCD. Within the scope of combating activities done by Asian countries, Mongolia hosts "Mitigating impacts of drought, and strengthening capacity to combat desertification". In addition, Mongolia collaborates jointly with international organizations as GEF, UN agencies, GTZ, SDC, Japan Green Resources Agency etc. in order to combat desertification and mitigate its adverse impacts.

Through multilateral cooperation, we have focused on strengthening capacity of national institutions to combat desertification, introducing new and innovative management concepts of natural resource management, and moderating its negative impacts on socio-economic development.

Moreover, we established northeast Asian monitoring and evaluation network of dust storm in order to evaluate this phenomenon, plan and implement the proper activities in collaboration with international domestic research institutions.

### **Urgent issues**

There still are issues of priority concern that are needed to improve. They are:

- policy, legal and economic environment;
- inter-sectoral management;
- planning, use and management of agricultural land;
- lack of funding;
- local capacity to combat desertification;
- monitoring and evaluation, and assessment of desertification;
- initiatives from community, entities and local stakeholders;
- relevant technology;
- Government and community control over illegal use of natural resources and
- ecology education of common public.

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## **Measures taken to cope with desertification**

As in the relevant policy documents, Government is working to implement following actions:

- Ensure realistic inter-sectoral planning and management for coping with desertification and climate change adaptation, strengthen national capacity to combat and prevent from natural disaster.
- Identify means and technology of rehabilitation on the basis of level, location and degree of land degradation, and develop implementing mechanisms
- Raise public awareness, support initiatives of planting and caring trees and shrubs, and replicate international best practices of preventing sand movement and establishing windbreaks
- Develop and implement integrated management plan of river basins consistently with intensifying protection works of water resources, and proper use water and other natural resources
- Replant local species in severely affected areas, harvest snow and rain water, establish ponds
- Expand rehabilitation of saxaul forests, and protect oases in desert region
- Increase participation of community, entities and NGOs in combating activities, enhance their ecology education.

These goals can be implemented through efficient use of science and technological achievements. In relation to this, we prioritize launching nation-wide monitoring network, conducting environmental and socio-economic baseline survey of the affected areas, spread science and technological achievements and traditional knowledge, and establishing technology transferring centres. To accomplish these, we need to apply experience and potential of domestic and international researchers and organizations.

Government of Mongolia views that it is of great significance for Mongolia to host “Coping with Desertification in Asia”, the 11<sup>th</sup> Conference of the Asian Science Council. We pay attention to this conference since we are going to consider the recommendations and conclusions for our further measures.

I wish the success for the conference!



## Special Protected Area development in Mongolia



**Dr. A. Namhai**

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Mongolia*

### **Protected Areas of Mongolia and Strategies & Challenges**

This summary defines the types of special protected areas (SPA) in Mongolia and outlines their classification system and basis for related legal frameworks that have been established since 1990. It then details physical make up and human resources that construct the governing organs of SPAs, noting that financial investments as well as the size of areas included in the scope of SPAs have been increasing in recent years. Mongolia's SPAs are becoming increasingly well-known on an international scale, and most projects supported by international organizations have focused on establishing SPA networks, and expanding, protecting, and developing SPA buffer zones. One of the most important activities carried out in SPAs is research and study. This is undertaken by scientists, national university professors and students, and institutions supported by international projects. The second part of the summary outlines the measures taken to address the main issues concerning the management of protected areas. The material base of SPA administrations have been increased, while the area of territory under one arm of administration has been reduced. Over 20 new buffer zone management plans have been updated and implemented over the last two years. Local communities have also been extensively involved in these tasks, and have been cooperating with park rangers to reduce the threats to natural resources caused by poaching, illegal logging and mineral mining.

#### **ONE. BASIC INFORMATION**

##### ***1. Types of Special Protected Area in Mongolia***

One of the typical ways of wide-ranging nature protection activities, such as rehabilitating natural resources, keeping the environment pure,