

International Symposium on Future Asia

13-14 December 2012, Kyoto, Japan

Panel 2.1: Sub-regional potentials and initiatives.

Cases from Central Asia: Mongolia

**Dilemma between costly adaptation and
sound harmonization.**

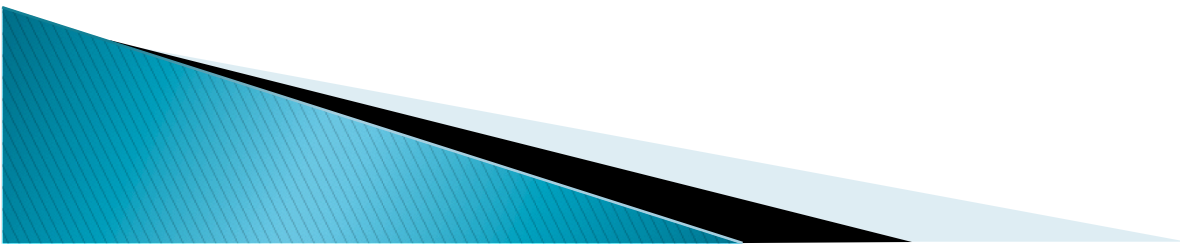
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Introductory remarks


Mongolia is not key player in Asia due to its tiny size of population, modest economy development and limited political activities. But certain unique position of Mongolia urged it to be more active at the international arena for own benefit and for mutual and common benefits engaging in cooperation with neighbor and other countries in the region.



General remarks related to topics for discussions at this event

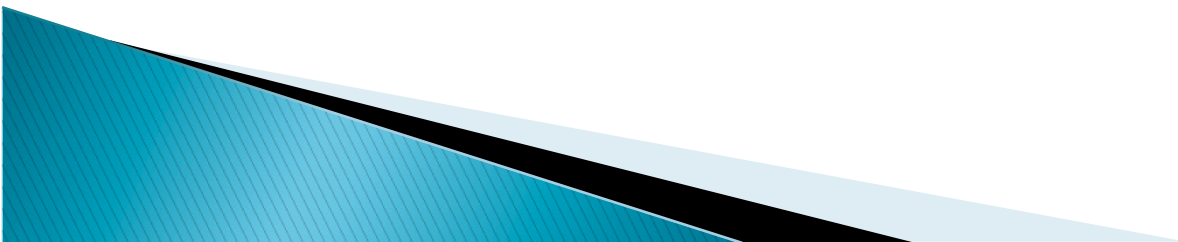
- ▶ Current sustainable development concept, mostly based on macro economic performances like the GDP and related social welfare and environmental standards, workable within individual nation states, is not able to create a mechanism which would be fully consistent with the strong limitation of the planetary boundaries. Therefore an issue of regionally and globally balanced development could be a core topic for the next stage of international development agenda to cope with key and emerging challenges facing global community in respect of the Earth System. The related global governance architecture would need a network of channels and interfaces for free flow of information, knowledge and capacity building components in inclusive ways, not suppressing, but reviving indigenous practices tested by life dynamism for hundreds of years of the human history. Shock effects from possible extreme events and unavoidable transformation in socio-ecological systems can be absorbed with less harm for the most vulnerable segment of the global community through well maintained risk sharing mechanisms.
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Indicator of global change

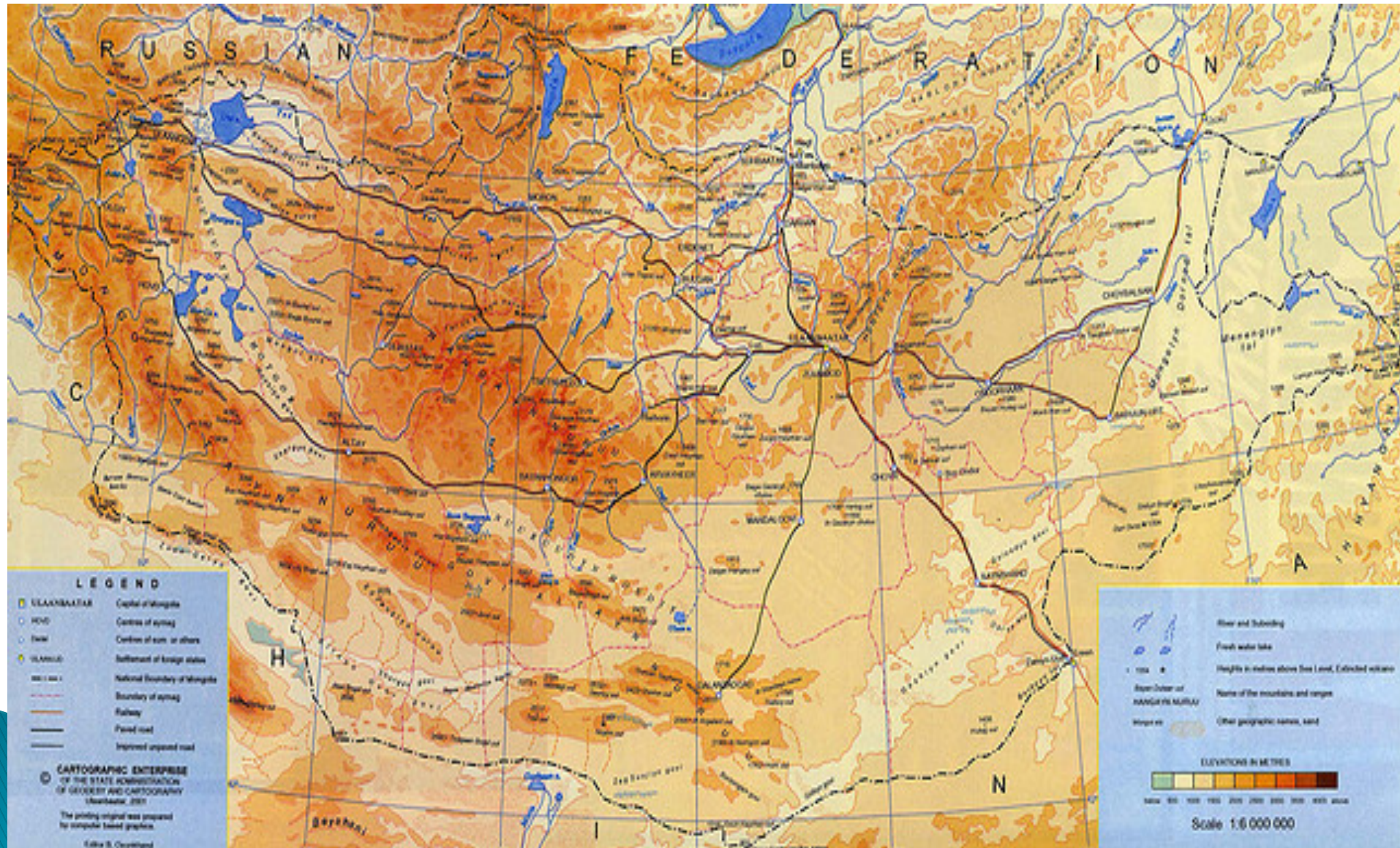
- ▶ Mongolia is one of the sparsely populated country in the world surviving the extreme continental climate condition with its high amplitude fluctuations of meteorological parameters , excersising most exposed to natural hazards life style based on pastoralism.
 - ▶ Balanced vulnerability and inherited resilience capacity of all biological species, including human beings, could serve a perfect indicator of response to external factors like global warming and globalization.
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Two extremes in short distance


- ▶ The world northernmost tip of desert reaches 50.18' north latitude in western Mongolia. This is almost parallel with the southern part of Canada, or the south coast of Gudzon Bay in the Arctic Ocean.
- ▶ The southern verge of permafrost in the Northern Hemisphere is in Erdenetsogt Soum of Bayan-Hongor Aimag, at 46.17' north latitude which is in parallel with the northern coast of Mediterranean Sea.
- ▶ There is no other place in the world where desert pushes forward far north and permafrost pushes forward far south.



Map of Mongolia



Mongol–Siberian high

- ▶ The highest atmospheric pressure center in the Northern Hemisphere established over the northwest of Mongolia, over the Great lakes depression, during winter season. The atmosphere pressure reaches 1,055hPa in January in Ulaangom, centre of Uvs Aimag.
 - ▶ Lowest temperatures were recorded as -55.7°C in Zuungobi somon of Uvs aimag, similarly in neighbor Zavkhan aimag (-52.9°C at the Tosontsengel station in January 1969 and -51.9°C at the Bayantes station in January 1977).
- Longest heating season, temperature inversion, air pollution around sources of emission.
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Past and present nickname of Ulaanbaatar

Coldest capital in the world (lowest recorded temperature in Ulaanbaatar area is -49.0°C at the Buyant ukhaa station in December 1954),

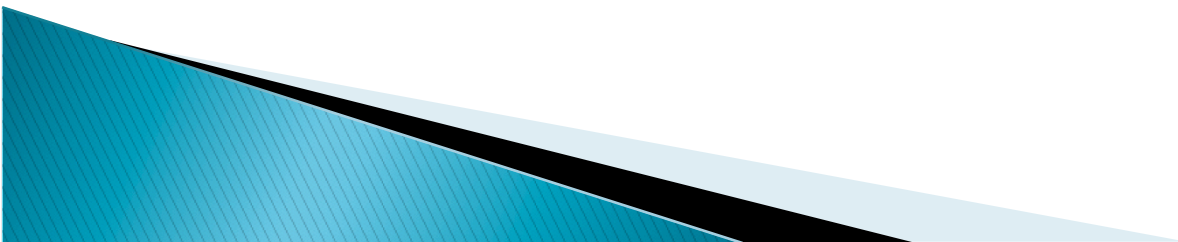
“White queen” in Asia (until 1970th),

At present UB is called as city with most polluted air (second in the world by PM10, fifth by combined air pollutants, WHO)

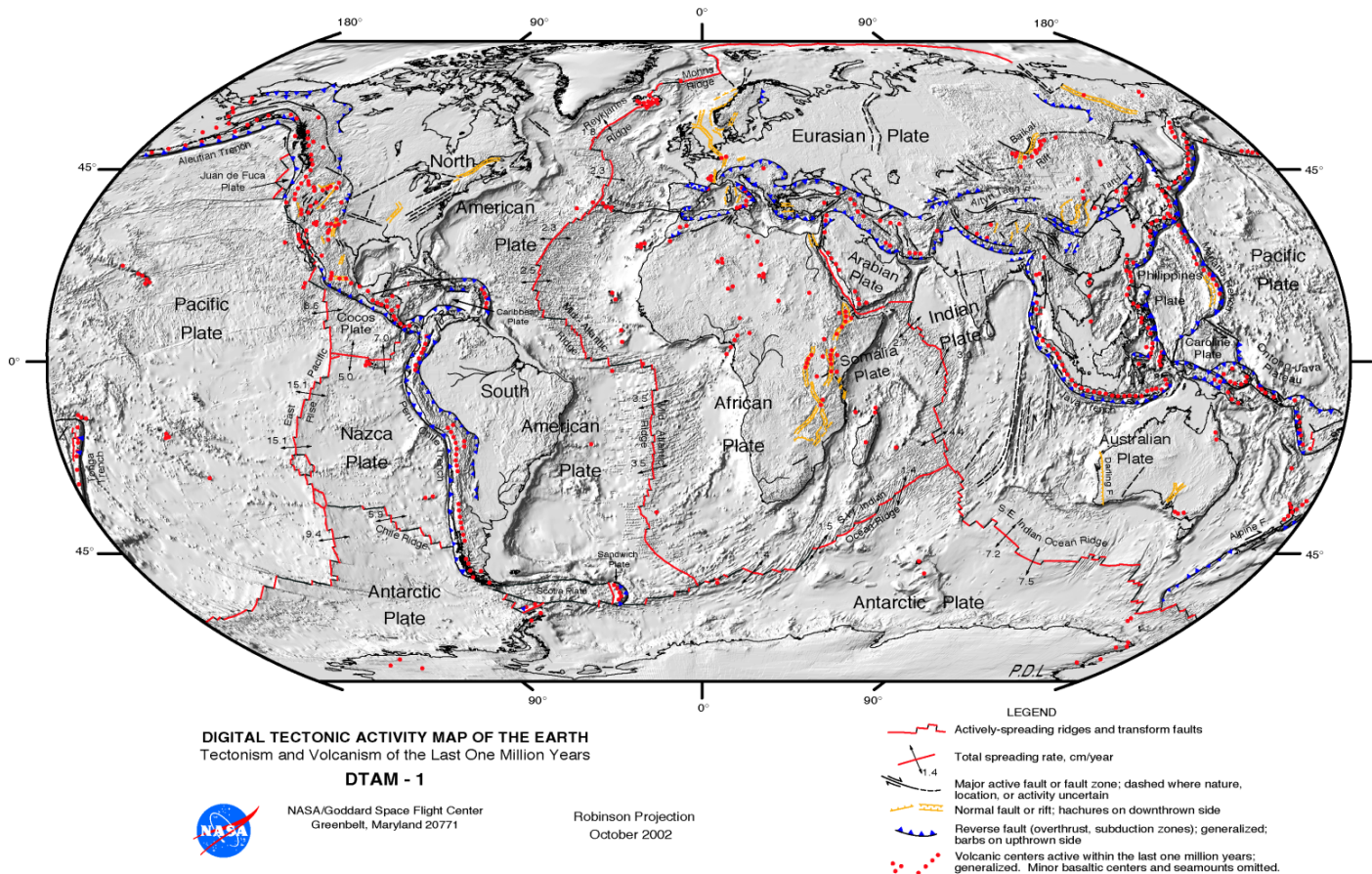


Mongolia is one of tectonically active areas, located far from the so called “Pacific Ring of Fire”

- ▶ The longest earthquake fault line can be traced for 350 kilometers from near Lake Sangyin Dalai in Huvsgul Aimag west to the source of Khangiltsag River in the Khan Khukhii Mountain Range. The open fissures or cracks were 60 meters deep and 10 meters wide in some areas.
- ▶ Earthquake with magnitude of 8.3–8.5 occurred in Bulnainuruu area on July 23, 1905.



Generalised map of volcanic centers active within the last one million years (red dots). Source: NASA



Happy location but unhappy burden

- ▶ Mongolia is an upstream country . The peak of Tsogt Chandmana Mountain at the end of the Khentii Mountain Range (altitude 1845 meters) is the watershed of three world drainage basins: the Arctic Ocean, Pacific Ocean and the Inland Basin of Central Asia .
- ▶ The Selenga is the primary contributor of water to Lake Baikal, the biggest and deepest fresh water lake in the world, and its tributaries drain approximately 80 percent of the lake's watershed. Lake Baikal is a **World Heritage Site** and wetlands of the Selenga River delta are designated as a **RAMSAR Site**.
- ▶ Sediment transport from Selenge River formed unique giant delta that buffers lake Baikal from external influences. The Selenga Delta is home to unique ecosystems, including more than 70 rare or endangered species of plants and animals. It provide valuable habitat for more than 170 species of birds



Landsat 5 image of the Selenga River Delta

Source: US Geological Survey



Concern without proposed alternative solutions

- ▶ Waters of the Selenga River are used for agricultural irrigation, community water supplies, industry, mining, recreation, tourism and transportation from both side of state border. Many of these activities degrade the quality of the water, limit downstream availability, and produce ecological impacts.
- ▶ Mongolia and Russia share an international effort to manage the Selenga River to improve water quality and sustain the water resource.



Agreement between Mongolia and Russia

- ▶ The agreement made between the governments of Mongolia and the Russian Federation in 1995 on the protection of transboundary water resources has more extended coverage of areas including over 100 small rivers and streams located in the different part of the country. It does not included the explicit restriction of water use (in contrast to the previous single body, namely, river Selenge related agreement, signed before 1990th) but added new commitment for both sides on monitoring of water quality , exchange of information for prediction of flood and others.



Economy versus environment

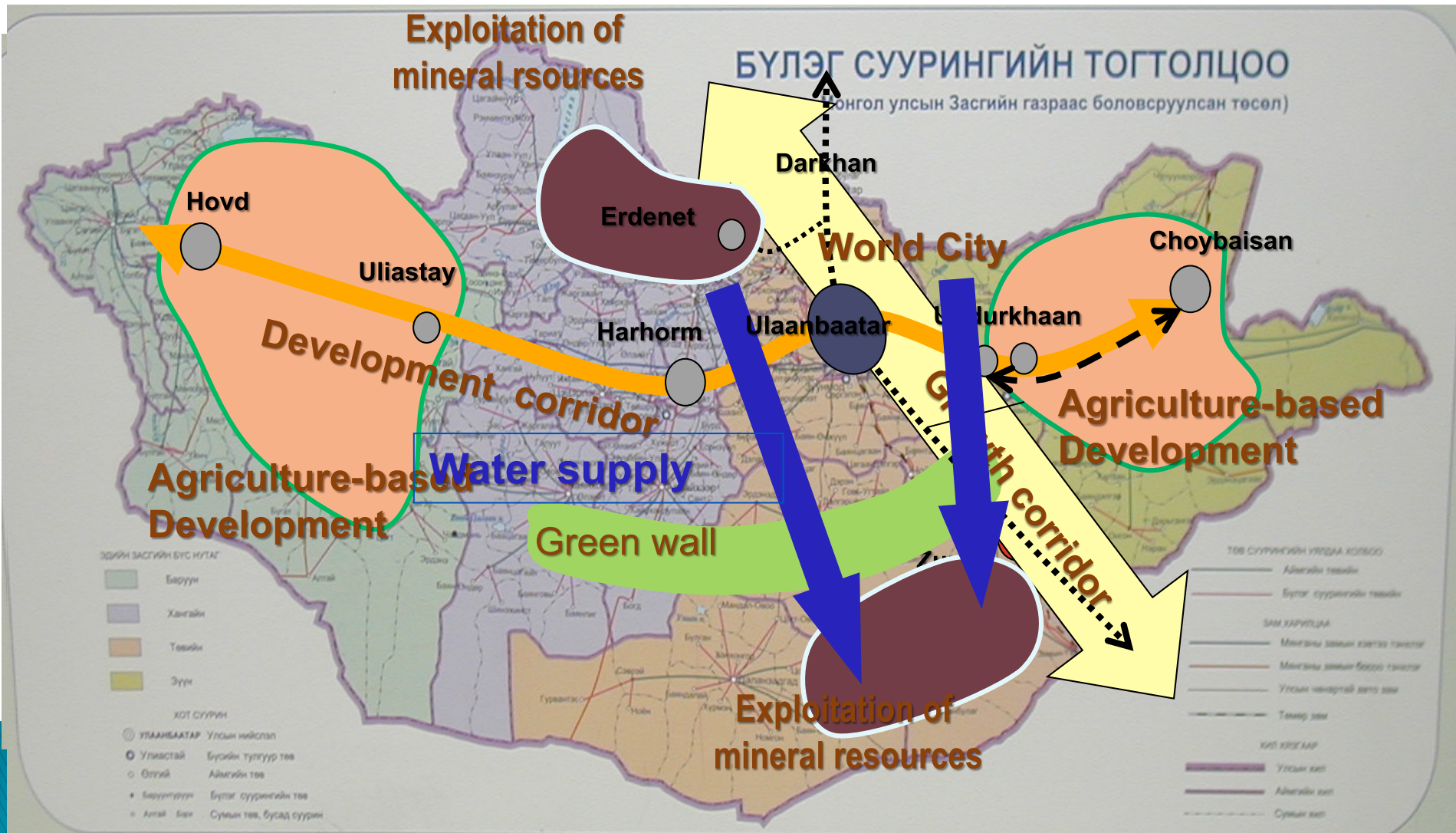
- ▶ Recently two working groups were formed in Mongolia under the Mining Infrastructure Support Project (MINIS), and they are preparing for the feasibility studies for the **Shuren Hydropower dam** on the Selenge River and another dam on the Orkhon River to support **Orkhon–Gobi water conveyance project**. The issue is becoming source of “tension” between Mongolia and Russia, with growing concern in parliaments, multiple agencies and scientific institutions of two countries. Some international environmental groups like Earth Island Institute, Greenpeace, WWF and others have voiced also their concern.





Proposed centers of economic development

Source: Dalai

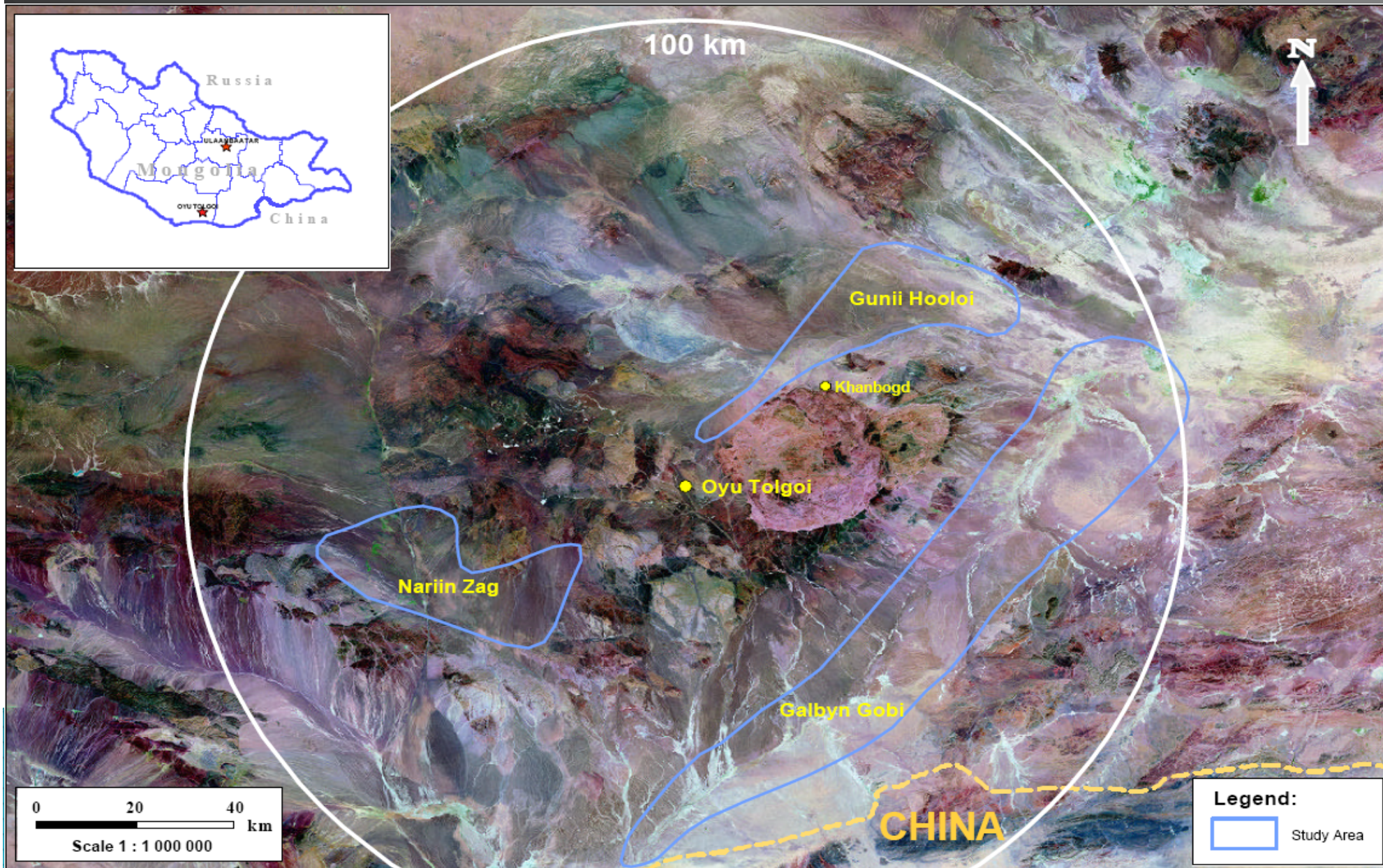


People still do not realize that in near future a drop of water in this area could be more expensive than this piece of oxidized copper in hand of worker at the mine [Oyu Tolgoi in Mongolia](#), one of the world's largest copper mines.



Ground water resource investigation for Oyu Tolgoi. Source: Dalai

Source: Dalai



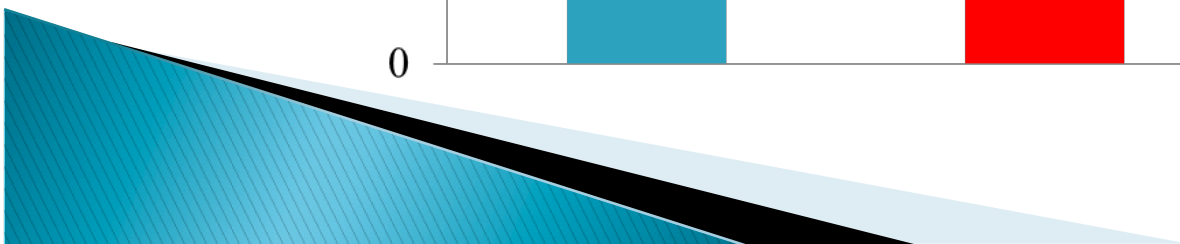
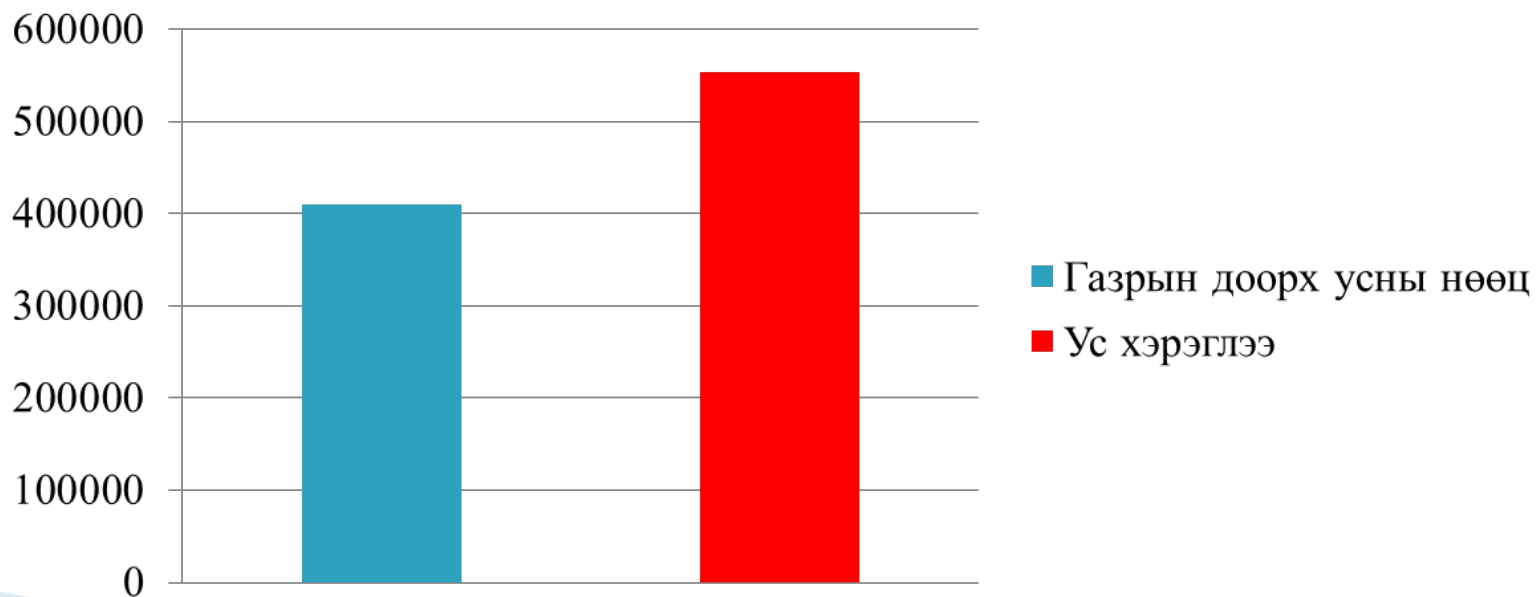
Ground water resources and demand in South Gobi

Source: Dalai

Estimated ground water resources (Blue box) - 409 thous. m³/day
(20-25 years)


Water consumption demand (Red box) - 554 thous. m³/day

Deficit - 145 thous. m³/day




Monitoring data prevented the possible dispute between Mongolia and China.

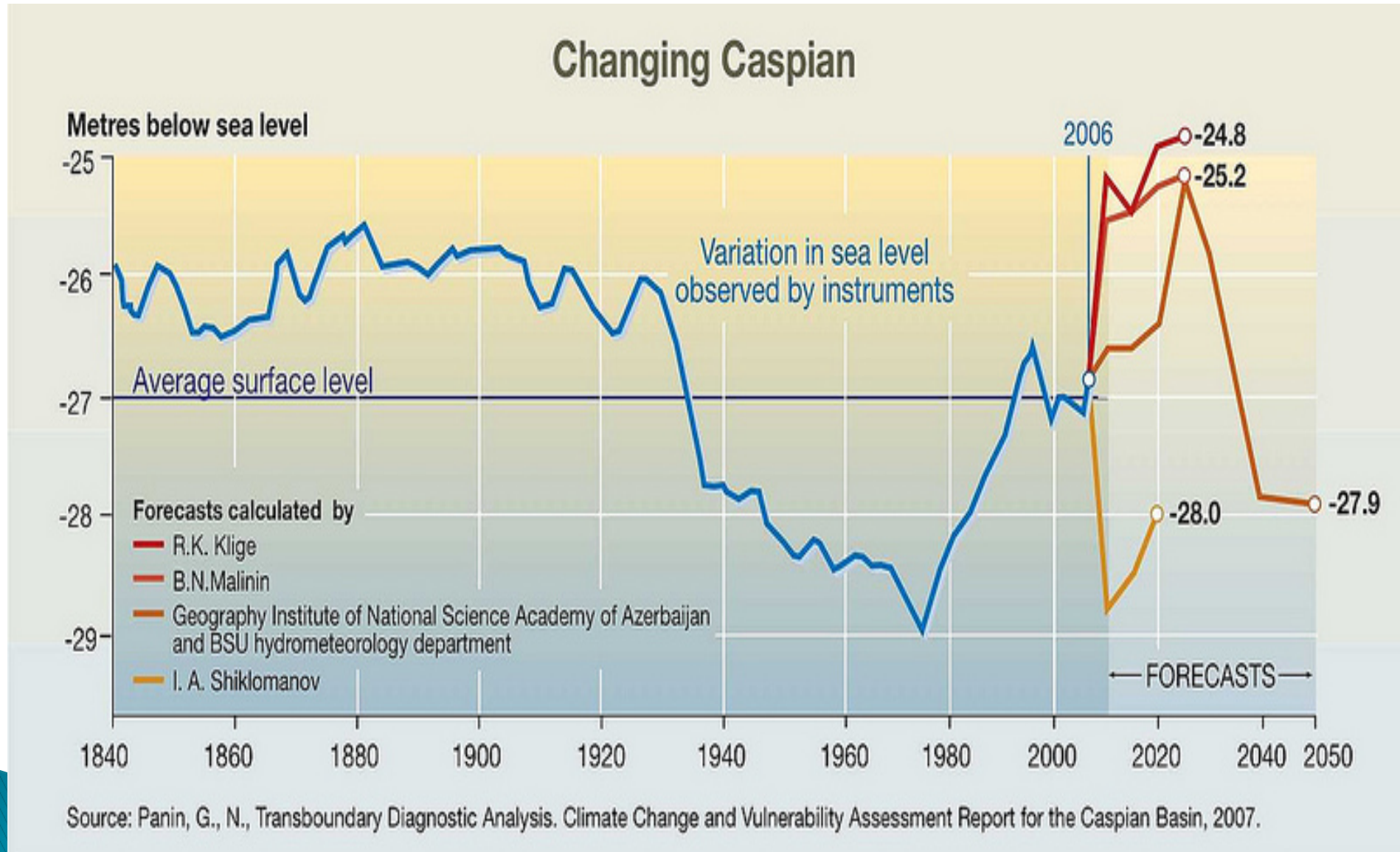
In 1994, an agreement was signed between Mongolia and China on the protection of transboundary water resources concerning Lake Buir, the Kherlen, Bulgan, Khalkh rivers, and 87 small lakes and rivers located near the border. Currently the Chinese side is expressing a concern about diminishing recharge of the Dalai lake from Buir lake through Sharilj river. But the past record have shown that the size of Dalai lake was around 230 km² in 1934 and since that increased up to 2210 km² (almost 10 times increase). During this period of time the size of the Buir like was decreased from 1050 km² to 630 km² and its water level dropped by 1.5 meters leading to change salinity and other water quality parameters. This example illustrated an importance of science based monitoring of the hydrological regime not only for practical water use exercises, but also for transboundary water share issues.



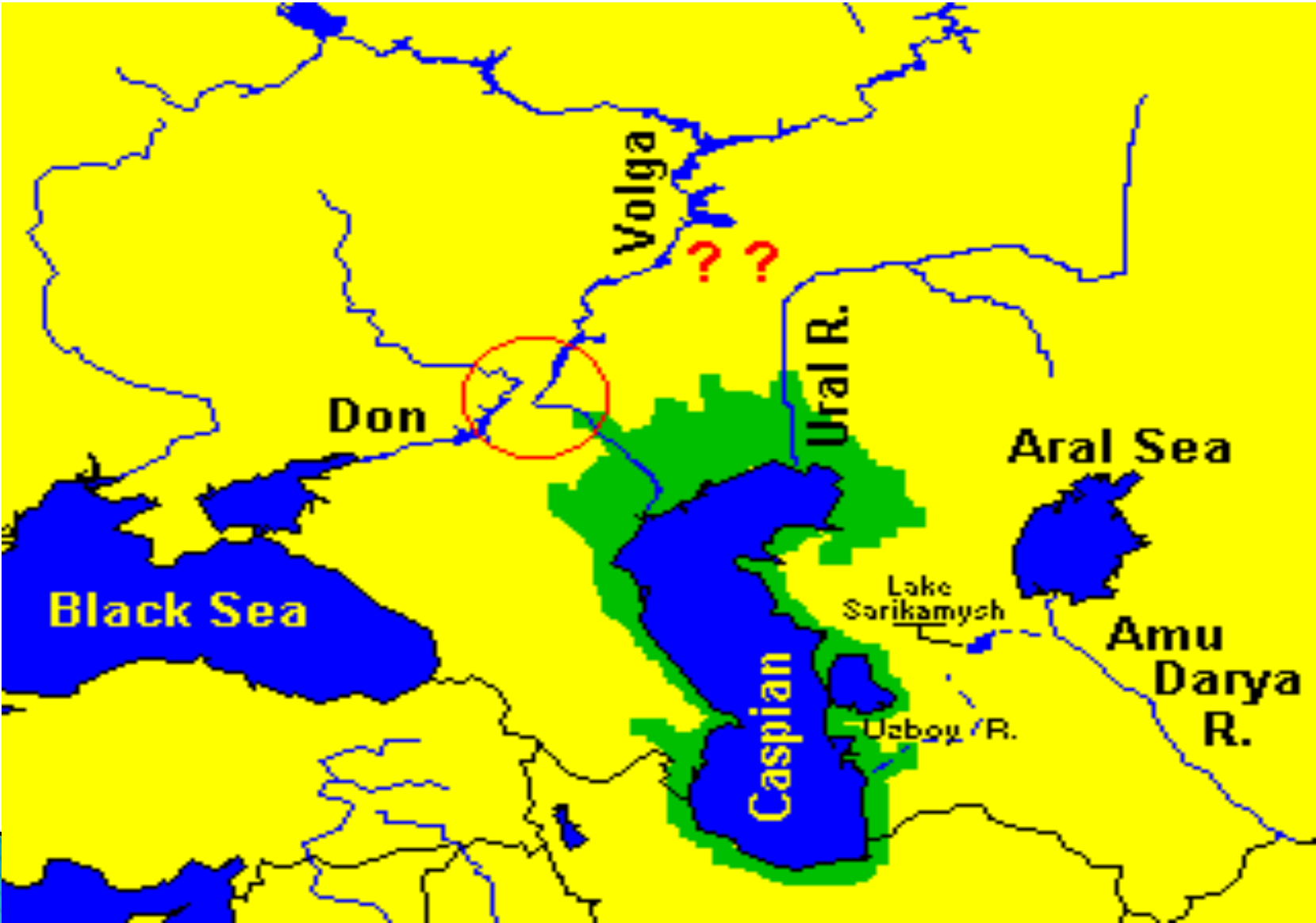
Lesson learnt by scientists

- ▶ The salty Caspian Sea is the world's largest land-locked body of water (78,700 cubic kilometers).
 - ▶ Between 1930–1977, the sea level fell dramatically—more than 3 meters. By 1977, it was 29 meters below sea level, the lowest level ever recorded in the previous five centuries. However since 1978, the situation has reversed itself and the Caspian is rising at the rate of 15–25 cm per year. In the last two decades it has risen more than 2.5 meters. Scientific communities in all countries concerned were not able to predict this phenomenal, mostly nature driven, event. The cost of damage from water level rise could be doubled if the Nature itself does not change its “mind” just in time reversing the trend.
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Caspian sea level variation

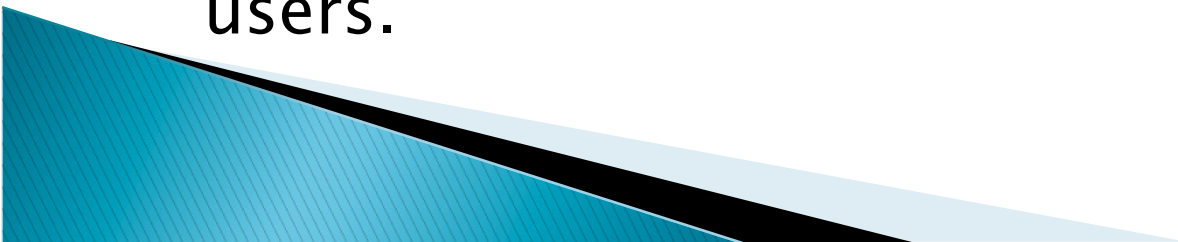


Driven factors for sea level change ???

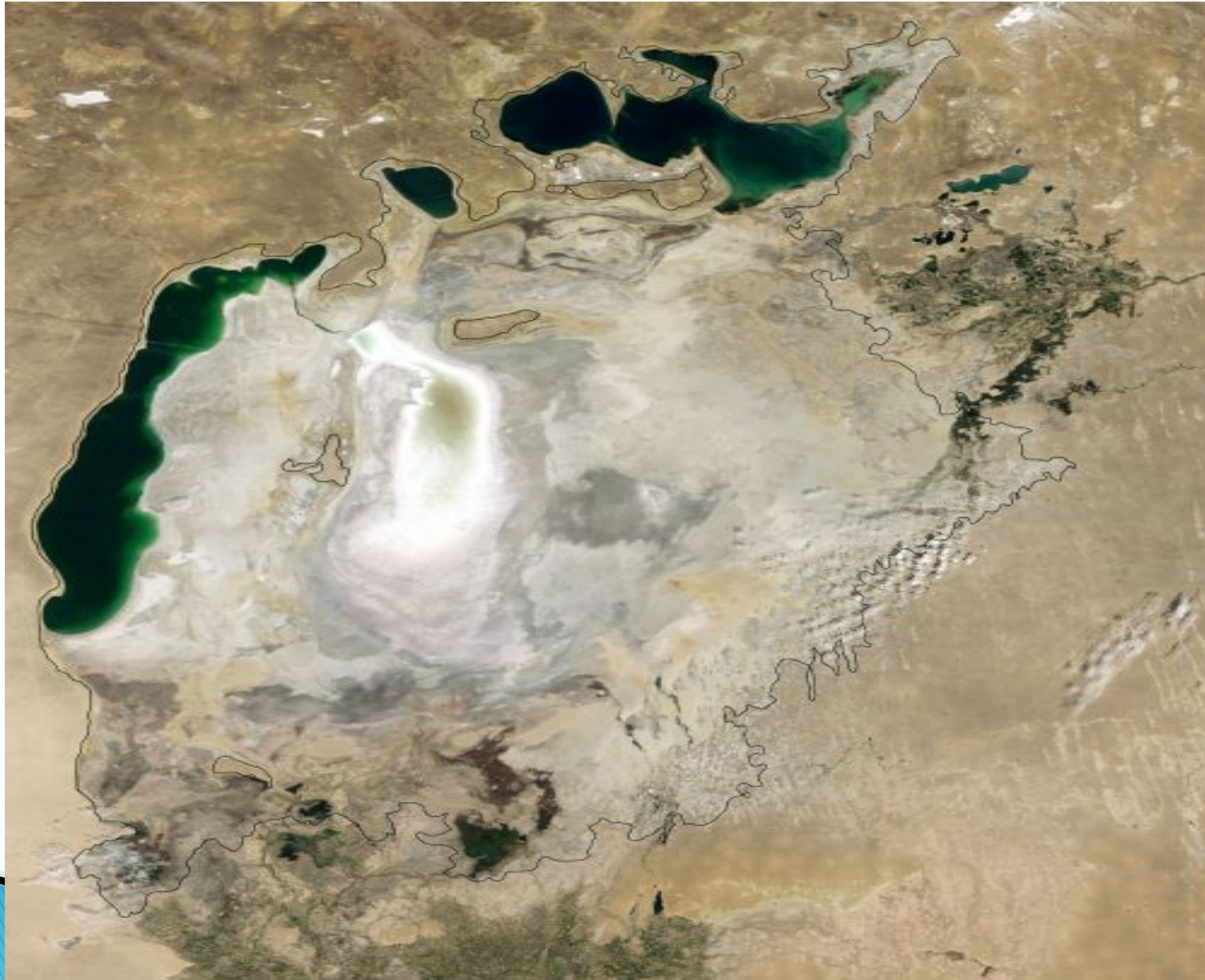


Lessons have to be learned by decision makers

- ▶ Due to intensive water use for irrigation, the water loss of Aral sea exceeded the limit of natural water level variation by 1970. In the desiccation period, water level dropped by in arange of about 21–57 cm/year. Totally the water level of the Aral sea has dropped more than 20 meters since the onset of its primary sources of water being diverted.
- ▶ The Aral sea, the fourth largest lake in the world, died because of human negligence and lack of will for productive cooperation among water users.



Current situation with formerly the world's fourth largest lake, the Aral

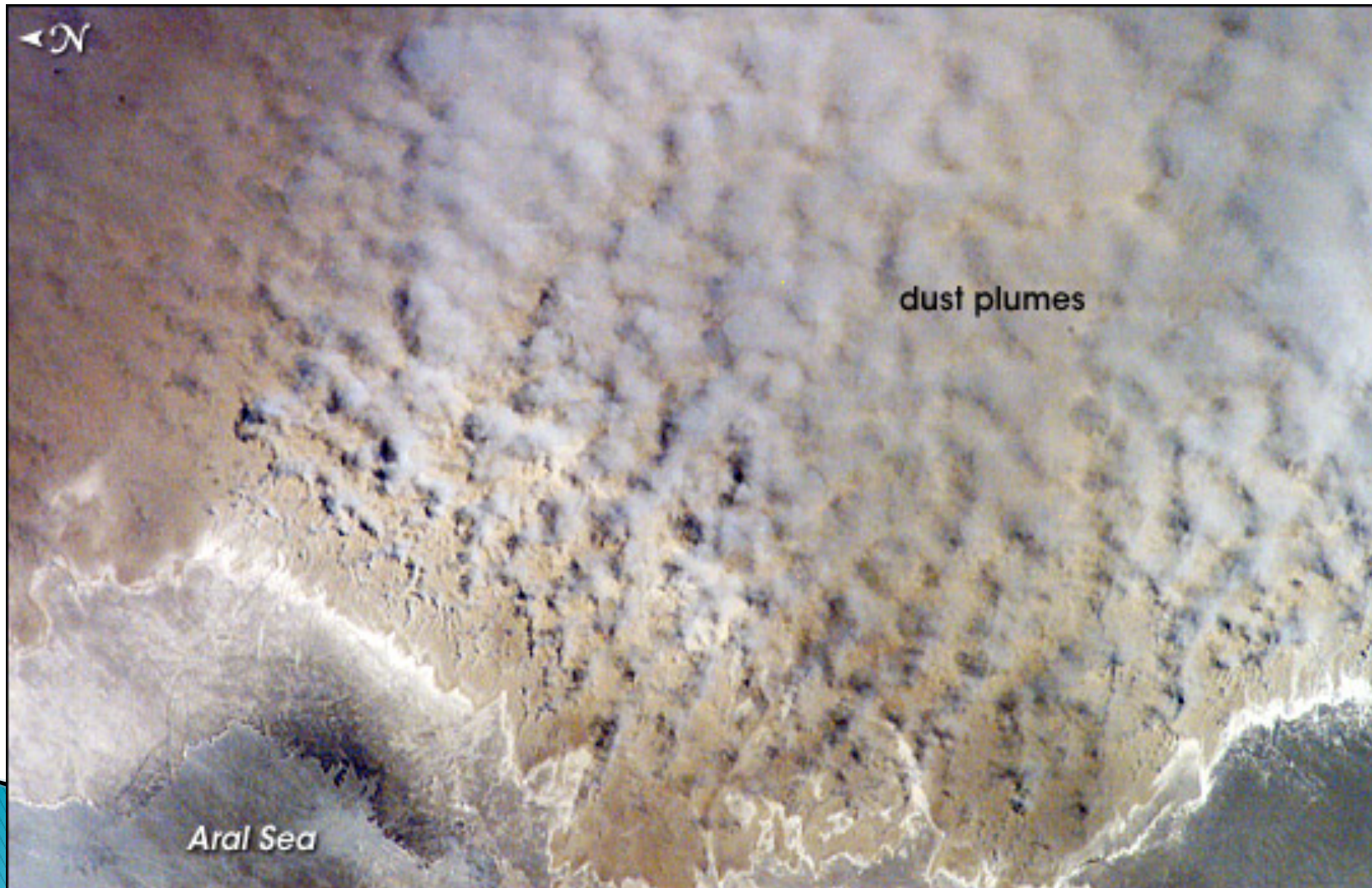


Abandoned boats at the Aral Sea




It was estimated that the average amount of salt removed from the entire dried seabed was about 43 million metric tons between 1960 and 1984

source: Glantz 1999, eol.jsc.nasa.gov



Initiative with regional impacts

- ▶ Mongolia initiated to sign the agreement between Mongolia, Russia and, China on the establishment of linked network of protected areas . First international network was established in 1994 in area close to the Amur river basin, mostly for migratory birds. This approach has been further applied to other parts of these countries for other species and ecosystem.
 - ▶ Successful story in this regard was a cooperation between Mongolia and Russia on Uvs nuur basin. Joint study started in early 1990th and it led to the important outcomes.
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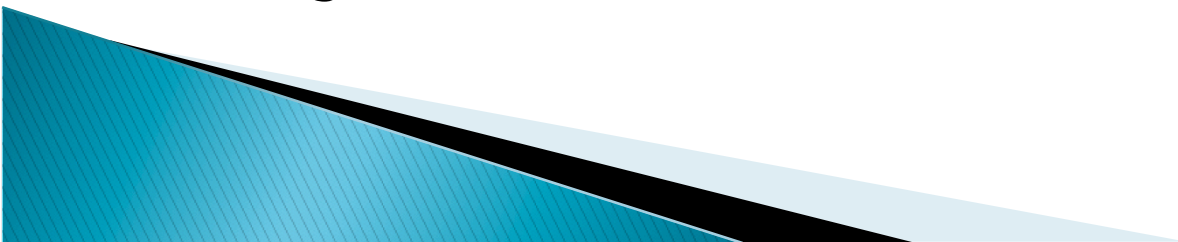
Outcome of joint study: World Heritage list

The Uvs Nuur Basin is an ancient lake bed in the centre of Asia, enclosed and almost pristine despite millennia of nomadic pastoralism. Its twelve protected areas possess all of east Eurasia's major biomes relatively close together: cold desert, desert-steppe, steppe, taiga, alpine tundra, boreal, deciduous and floodplain forests, saltmarshes and snow fields.

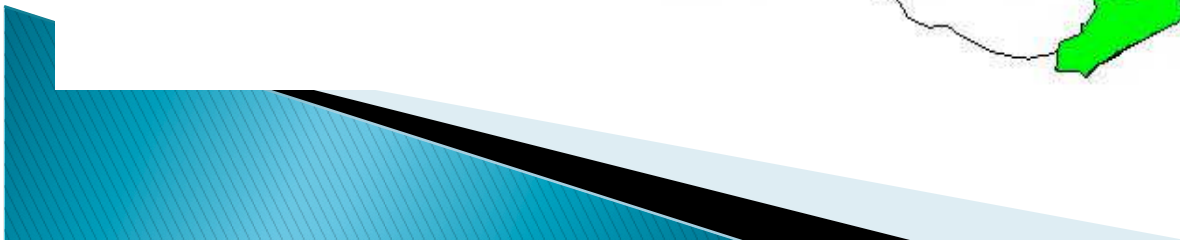
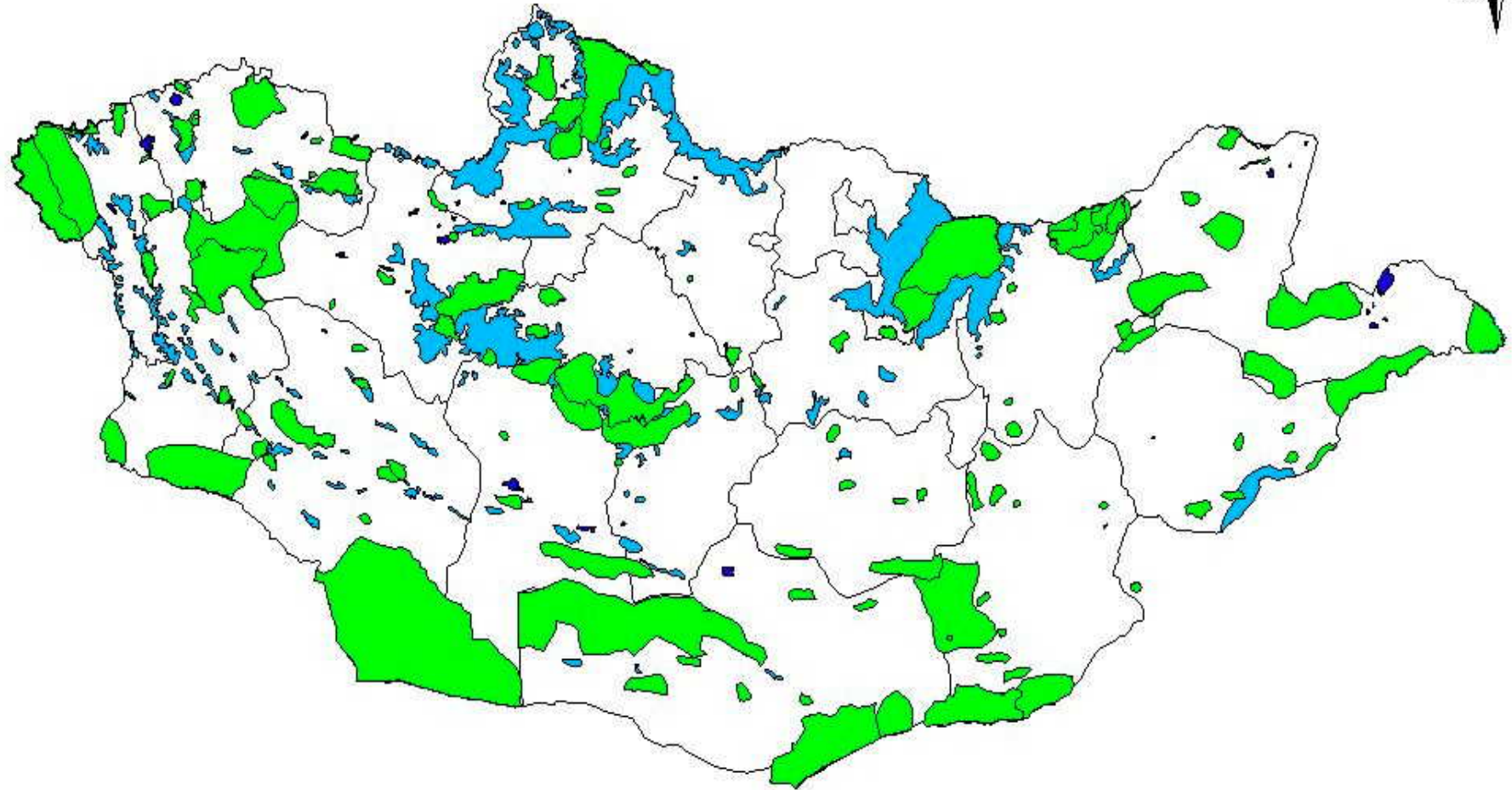
--By the mid of 1990th the cluster of protected areas was established from both side of border.

-- In 1997 the basin was designated as a Biosphere Reserve and one of the International Geosphere-Biosphere Programme (IGBP) study areas for global change research.

--In 2003 World Heritage Committee decided to include the Uvs nuur basin in the list of the World Cultural and Natural Heritage List



Current protected areas (green) and the area (blue) where forms 70 % of river water resources in Mongolia. Source: Davaa



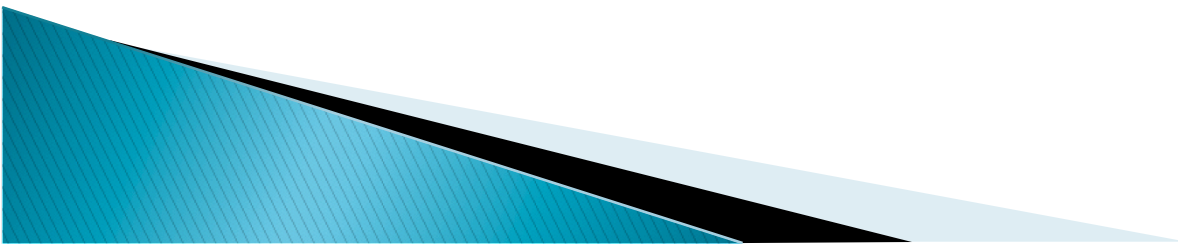
Mongolia's green development initiatives in the past and after UNCSD in Rio 2012

- ▶ Traditional lifesustaining system in Mongolia was fully consistent with major principles of modern concept of the Green Economy.
- ▶ Production involving renewable resources and consumption with fully recycling principles were a solid basis for the environmentally sound life sustaining system.
- ▶ Conflicts, between a closed system as a living environment with limited capacity (pasture, for instance) and an open human system without forced limitation of the population size, have been resolved thanks to consistence of production and consumption patterns with natural cycles.
- ▶ New Government of Mongolia after parliament election in June 2012 transformed the Ministry for Nature, Environment and Tourism to the new **Ministry for Environmnet and Green Development**. I do hope that this policy would be translated into concrete action on the ground.



Recycling tradition in Asia is a great opportunity for green development exercises.

- ▶ Countries in Asia are best example of recycling society in the world.
- ▶ 3R and other recycling and green economy related initiatives in Japan, RoK and other countries need to be actively promoted and supported by other partner countries and international community.



Suggestion instead of Conclusion

- ▶ My suggestion for discussions at this Symposium is to think about possible shift from the concept of costly adaptation to sound harmonization with natural order while maintaining optimal combination of traditional knowledge and advanced modern technologies. In order to achieve that it is important to maximize the synergy of cooperation and partnership among countries in Asia mobilizing fully science based approaches in their joint endeavors.



**Thank you
for your kind
attention !**

