

APAN Consultation meeting: Pastoral Communities embedded in the Gobi embedded in Mongolia

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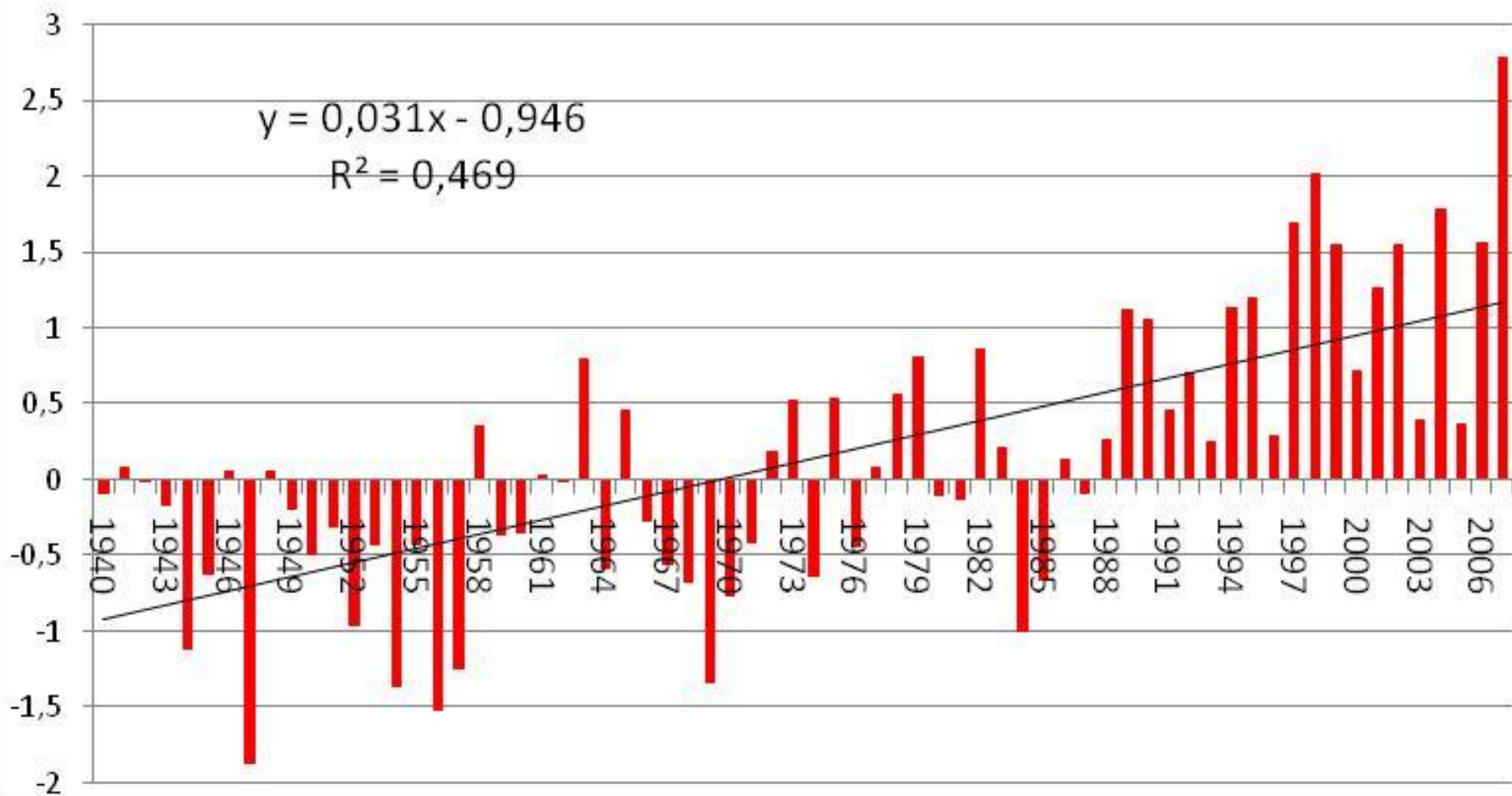
***Mongolian Development Institute
President's Office of Mongolia &
Mongolian Academy of Sciences***

**ASIA-PACIFIC CLIMATE CHANGE ADAPTATION FORUM,
October 21 - 22, 2010, UNCC, Bangkok, Thailand**

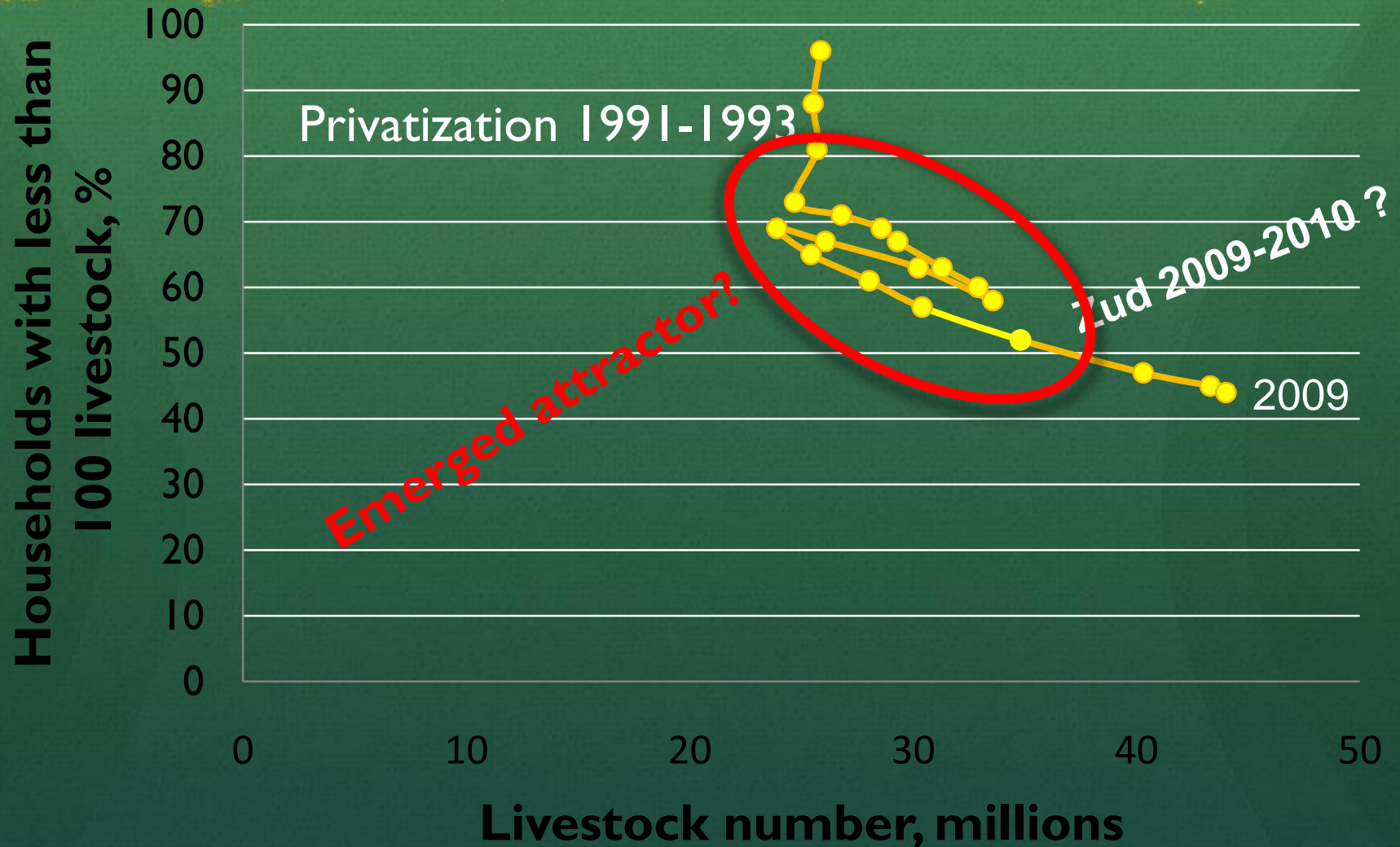
Content

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- **Vulnerability Assessment of Pastoral Social-Ecological Systems at multiple scales**
- **Integration of Climate Change Adaptation into Sustainable Development in Mongolia.** *APAN Consultative Meeting, 17-18 June 2010, Ulaanbaatar, Mongolia*
- **Climate Change Adaptation and Sustainable Development of Mongolia.** *2nd International Conference: Climate, Sustainability and Development in Semi-arid Regions, August 16 - 20, 2010, Fortaleza - Ceará, Brazil*
- **Concluding remarks**

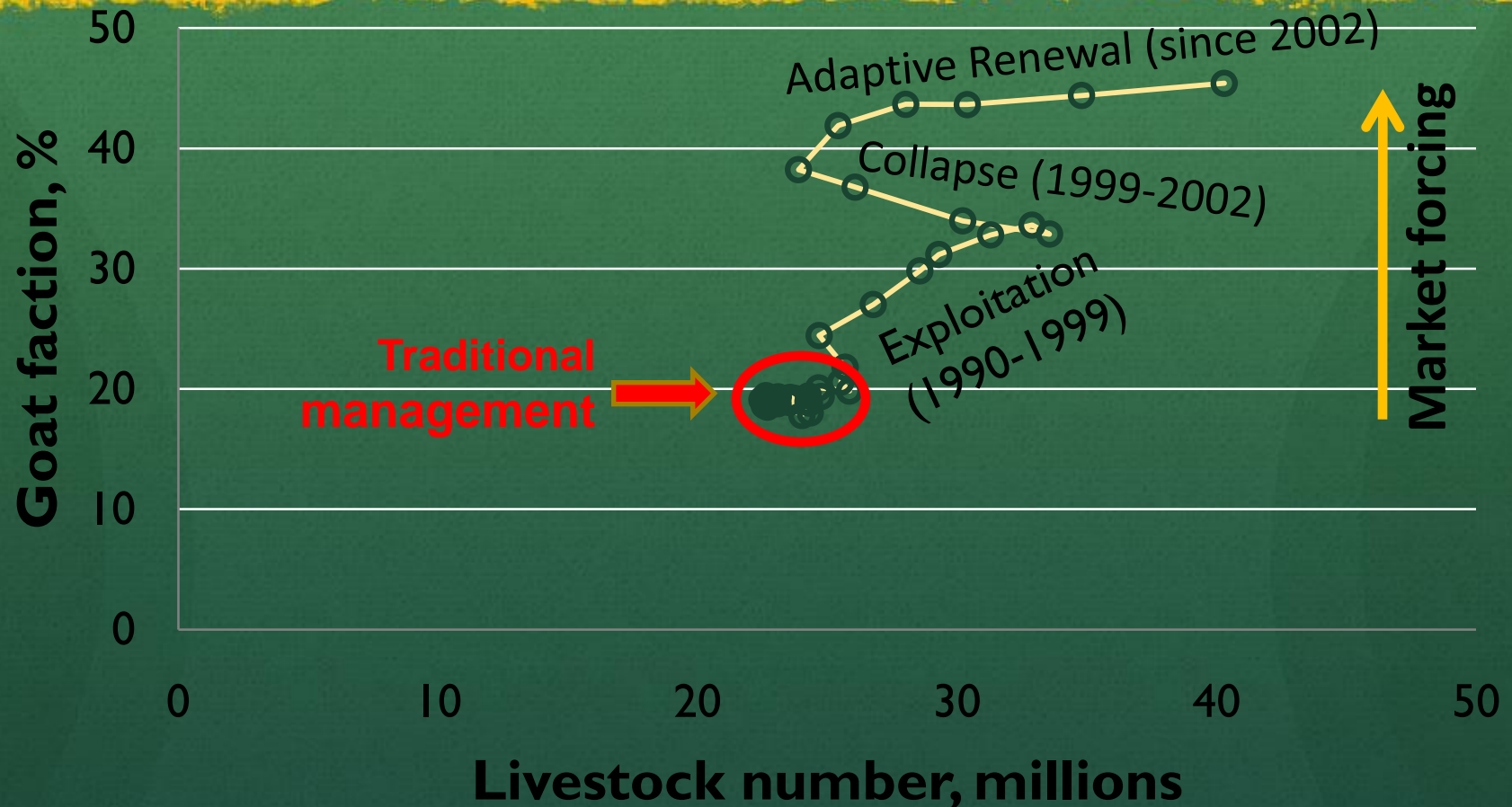
Air Temperature in Mongolia, since 1940

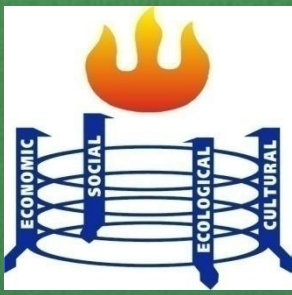


Regime shift since 1990: Poverty Trap?



Regime Shift since 1990: Cashmere





Dryland
Sustainability
Institute

T. Chuluun,
M. Altanbagana
S. Davaanyam
B.Tserenchunt

GLP Open Science Meeting 2010 – Land Systems, Global Change and Sustainability, Arizona State University, Tempe, Arizona, USA, October 17-19, 2010.

Vulnerability and resilience of pastoral social-ecological systems in Mongolia

Community



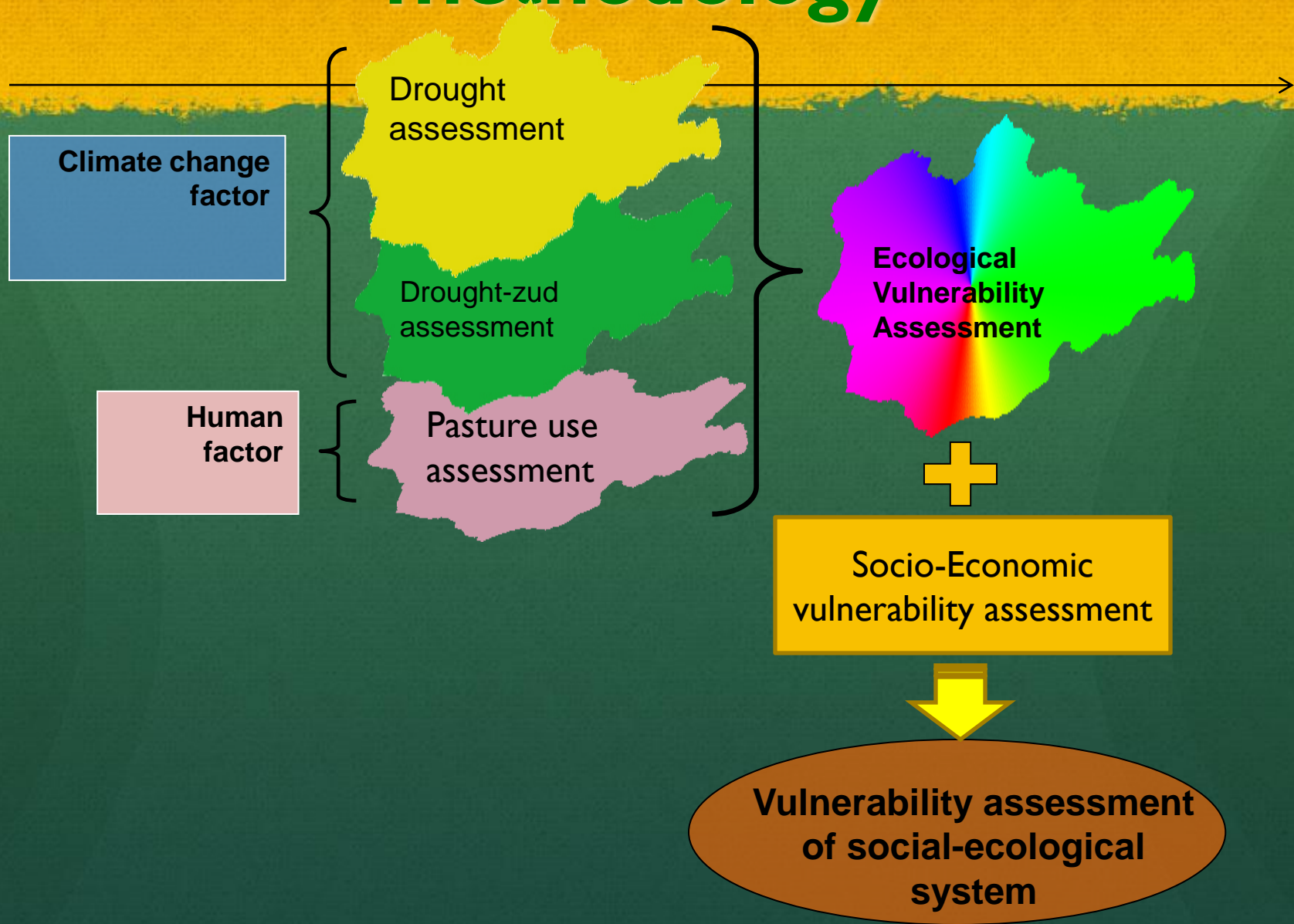
River basin

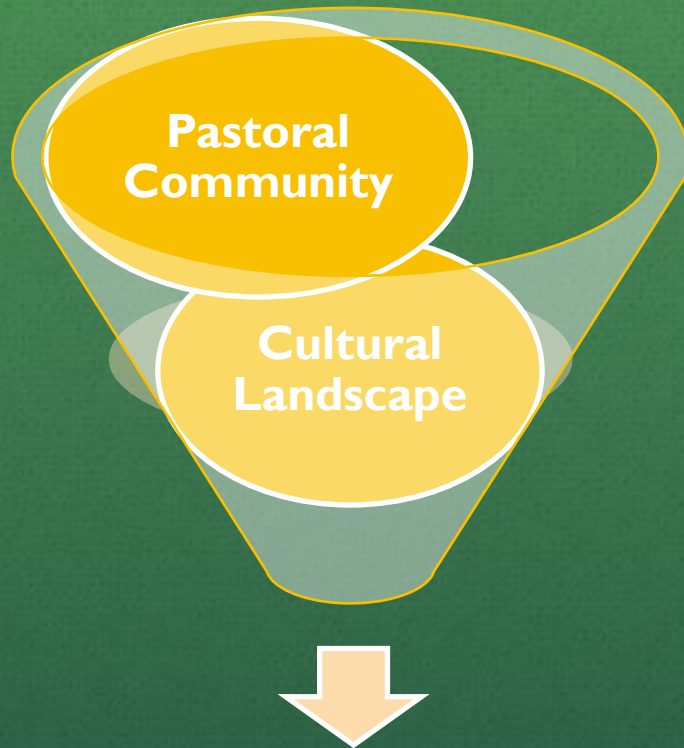


National



Vulnerability assessment methodology





Coupled pastoral
community-cultural
landscape system

How

- **Resilience**
- **Vulnerability**
- **Adaptation**

of coupled pastoral
social-ecological
systems are
changing due to

- **Climate change**
- **Market forces**
- **Globalization?**

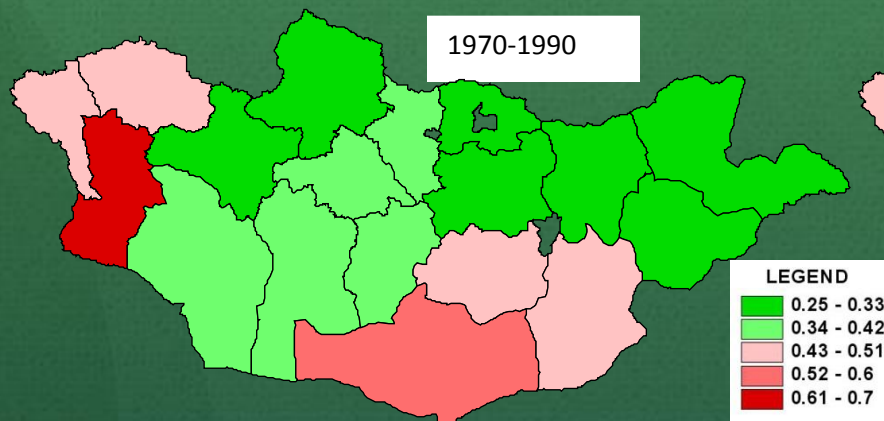
Stakeholders's Assessment: DDP application “caricature”

- Dynamics of H-E systems is defined primarily by **climatic disasters** events such as drought and *zud*;
- **Global warming** is a critical slow variable of pastoral H-E systems;
- **Surface water shortage** is already crossed the threshold level and its leading to collapse of social-ecological systems;
- **Global (44%)** and country (31%) level regulations are more important than local government (16%) or community level regulations (9%);
- Level of policy, which combines up-to-date **modern science and traditional knowledge**, is fair.

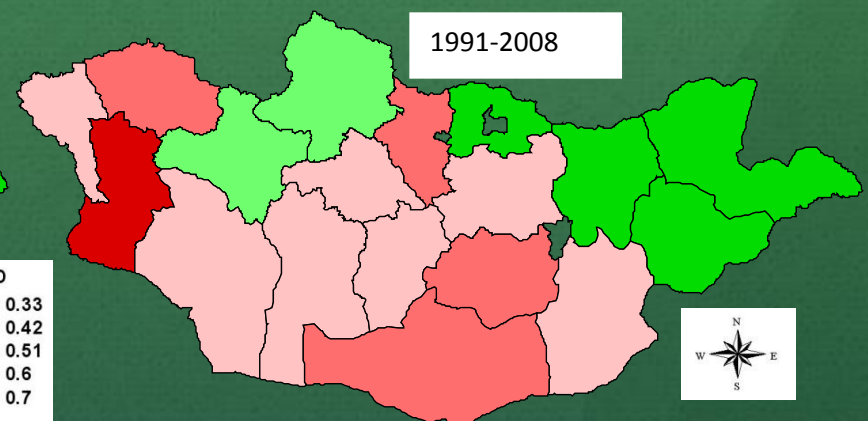
Dryland Development Paradigm Application for Pastoral Systems in the Tuin and Baidrag river basins in Mongolia (APN: 2009-2011)

Ecological vulnerability assessment: National scale

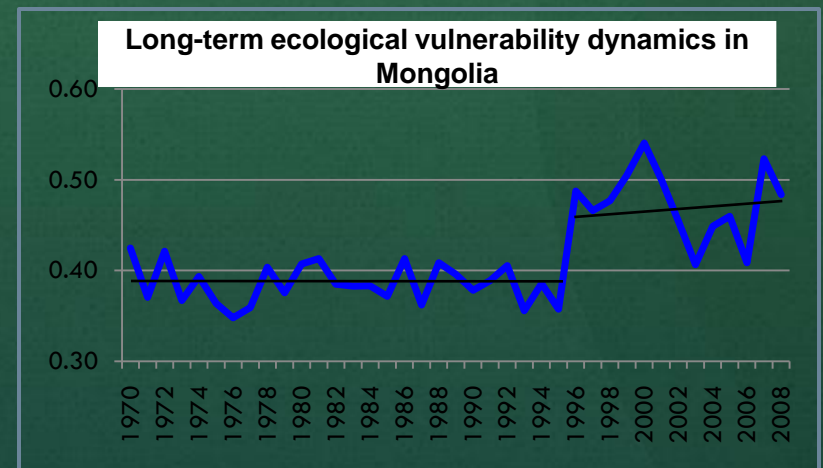
1970 - 1990



1991 - 2008

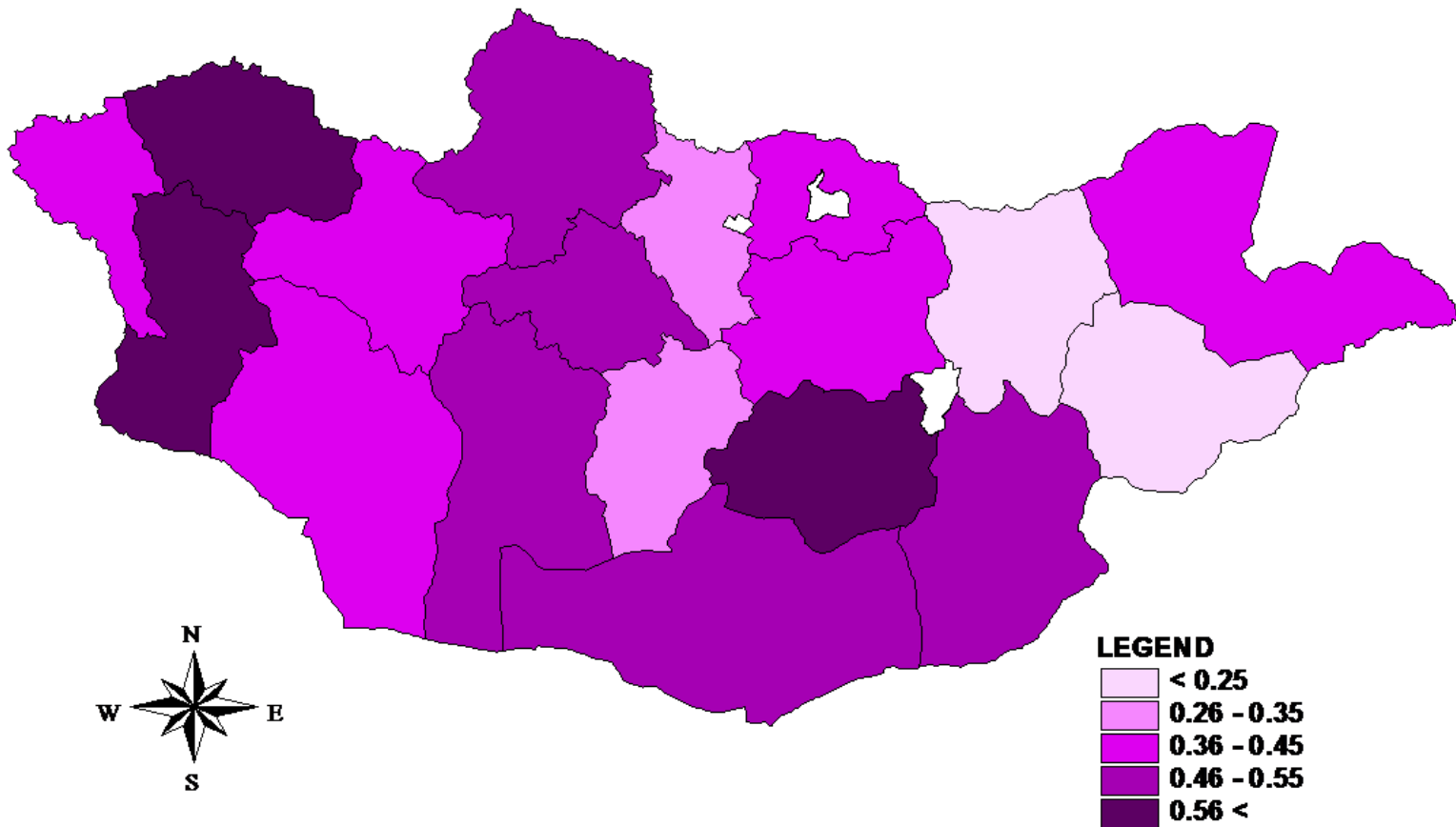


Long-term ecological
vulnerability dynamics
in Mongolia



Vulnerability of PSEs at national level

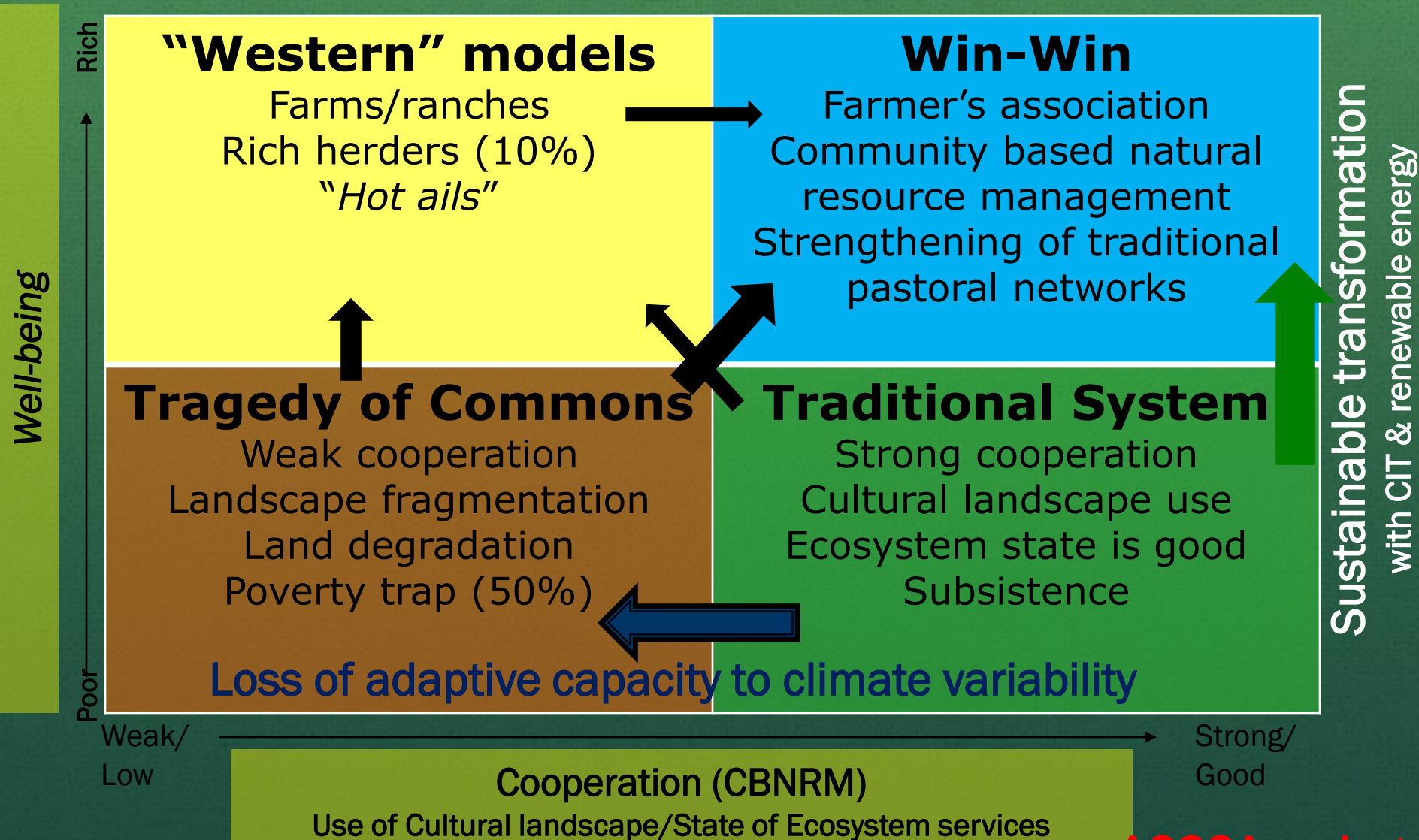
Ecological vulnerability + Poverty map (HDI)



Conclusion

- Mongolia is vulnerable to climate change due to its impacts on water and forage resources, and also transitional economy;
- Development of Mongolia during the last two decades were unsustainable if consider environmental degradation and poverty increase;
- Many “big” projects were often fragmented and not comprehensive, not enhancing social and ecological resilience;
- It is important to integrate climate change adaptation with sustainable development, applying science, technology and innovation for green economy, poverty reduction and sustainable governance.

Scenarios for pastoral social-ecological systems





**Pastoral
Community**

**Cultural
Landscape**



**Coupled pastoral
community-cultural
landscape system**

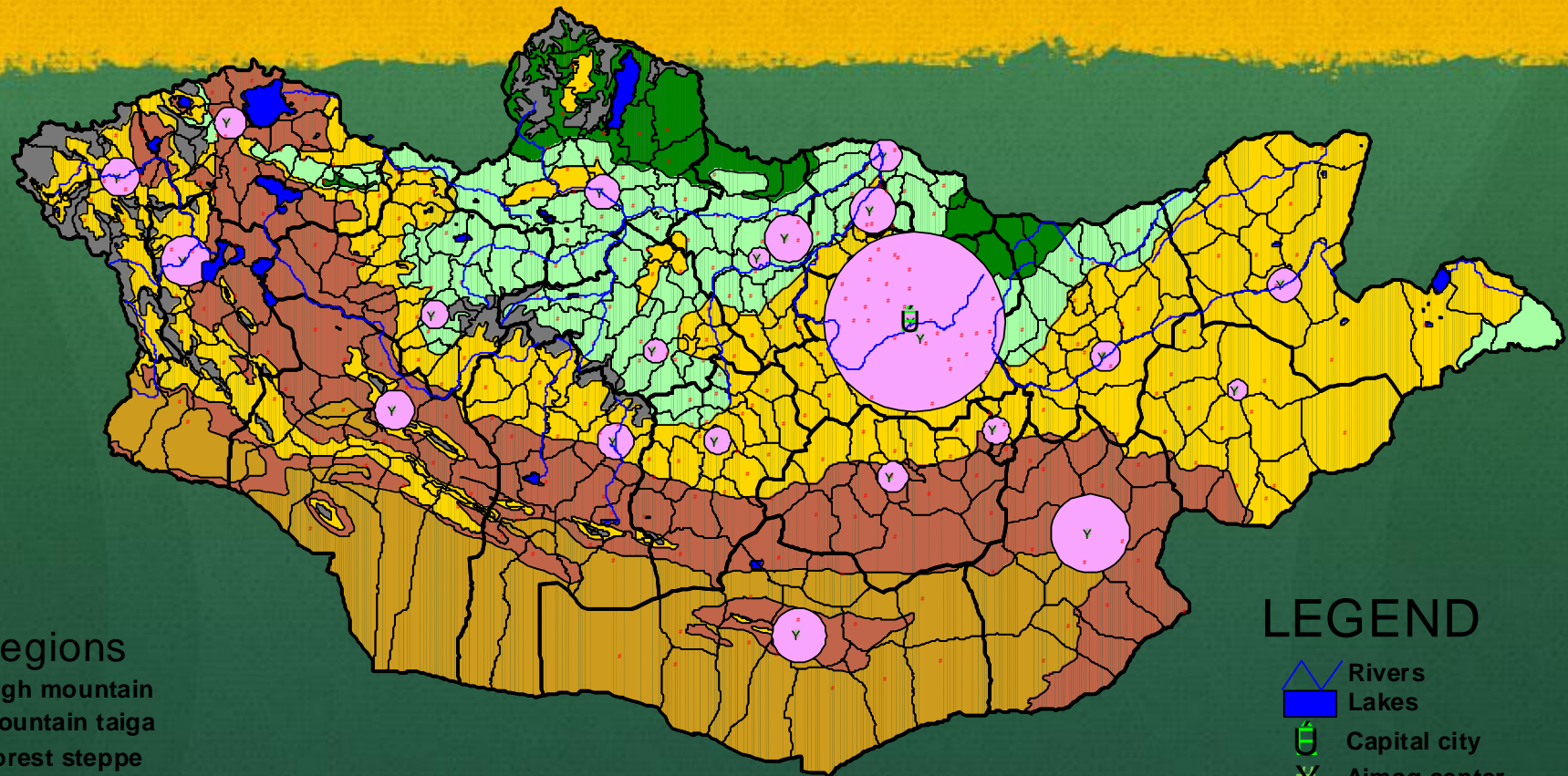


**Social-ecological system
based adaptation**

**Win – Win for both ecosystem
services and communities!**



Ecoregions and Urban Footprint Zones of Mongolia



LEGEND

- Rivers
- Lakes
- Capital city
- Aimag center
- Sum center
- Buffer zones
- Aimag boundary
- Sum boundary

Ecoregions

- High mountain
- Mountain taiga
- Forest steppe
- Steppe
- Desert steppe
- Desert

A photograph of a herd of camels standing on a dry, grassy plain. In the background, there is a large, calm blue lake, and further back, a range of dark, rugged mountains under a clear sky. The scene is captured in a wide-angle shot, emphasizing the vastness of the landscape.

The Mongolian Gobi – World Cultural and Natural Heritage

Technological Transformation

Sustainable transformation of pastoral communities

Can wireless communication information technology (CIT) support nomadic culture in Mongolia, increasing adaptive capacity to climate change?

We have an opportunity to conserve natural, social and cultural capitals in Mongolia, strengthening traditional pastoral community-cultural landscape systems in rangelands in the Gobi and dry steppe (in all dust and sand storm source areas) with introduction of modern technologies such as renewable energy and CIT.

Land Degradation and Desertification in Mongolia

Earth



Mongolia



Human



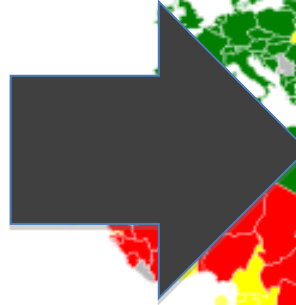
Нарны аймгийн газраагуудын бунд Дэлхий гэдэг амьд цэг
Дэлхий ботар Монгол хэмээх амьд цэг
Түүний ботар хүмүүн гээч нэгэн цэг
Балуудын Лавлаасурэн

Togtokh CHULUUN, Ph.D.

UN Human Development Index

HDI (corrected for per capita carbon emissions)

1. **Norway**
2. **Australia**
3. Iceland
4. **Canada**
5. Ireland
6. Netherlands
7. Sweden
8. France
9. Switzerland
10. **Japan**
11. Finland
12. **USA**



1. Switzerland
2. Sweden
3. France
4. Iceland
5. New Zealand
6. Norway
7. Portugal
8. Italy
9. Spain
10. Austria
11. Lithuania
12. Denmark
- Japan 21st**
- Canada 36th**
- Australia 37th**
- USA 39th**

2007 HDI Dataset

Integration of Climate Change Adaptation into Sustainable Development in Mongolia. APAN Consultation Meeting, 17-18 June 2010, Ulaanbaatar, Mongolia

Participation: More social scientists than natural scientists!



Governance at multiple scales

- Greater coordination between all actors and advocates, especially researchers and policy makers;
- Need for a cross-sectoral coordination;
- Strengthening of a Green Development Institute – as national hub on climate change adaptation;
- Introduce diversity institutions in diverse ecological and economic regions.

Capacity: How to deliver these needs?

- Specific focus on water, agriculture and livestock as priority sectors;
- Focus on the impact of climate change on water resources and riparian ecosystem services;
- Enhanced capacity for research on climate social science;
- Conduct an Ecosystem Services Assessment;
- Improved capacity on Ecosystems Based Adaptation;
- Specific training programme on Climate Change Adaptation.

Knowledge: Climate Change Adaptation

Knowledge at the national level

- Establishment of a national knowledge hub on adaptation;
- Highlight the Mongolian nomadic culture and traditional knowledge;
- Integrate environmental factor into the Human Development Index;
- Identify technology and policy options, based on the integrated knowledge;
- Promote a new “commons” approach, through the utilization of less resources, leading to a change in society.

Climate Change Adaptation and Sustainable Development of Mongolia.

2nd International Conference: Climate, Sustainability and Development in Semi-arid Regions, August 16 - 20, 2010, Fortaleza - Ceará, Brazil



Bayarlalaa!

Thank you!

