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RESPONDING TO CLIMATE CHANGE: CARBON RIGHT AND DATA SHARING WITHIN LAND ADMINISTRATION

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Engaging the challenges, Enhancing the relevance
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FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

OUTLINES

- Climate Change and the consequences
- Drivers for Climate Change
- Human activities and sources of GHG emission
- What should we (as land professionals) do?
- Proposed Framework
- Conclusion



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CLIMATE CHANGE AND CONSEQUENCES

- A major issue worldwide and the news appear everywhere.
- All aspects of human and natural life are affected
- Impacts are multifaceted, affecting various sectors including agriculture, food security, water resources, energy infrastructure, ecosystem services, and human health (Kohler & Maselli, 2009).

Climate change behind extreme weather

Carbon dioxide emissions show big jump in 2010

GLOBAL CLIMATE CHANGE

California adopts limit on greenhouse gases

Groundwater depletion detected from space

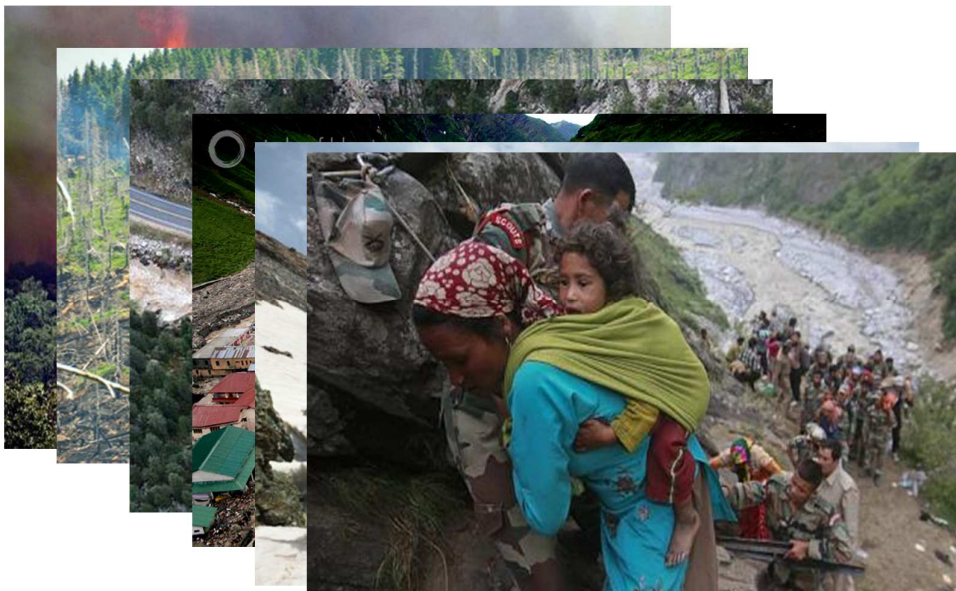


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CLIMATE CHANGE AND CONSEQUENCES



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DRIVERS FOR CLIMATE CHANGE

- The 2007 Intergovernmental Panel on Climate Change (IPCC) Assessment Report states that the warming of the global climate on earth is mainly caused by two activities.
 - **Natural activities** → **Out of humankind control**
 - **Anthropogenic activities** → **Humankind control**
Changes in nature made by human activities



HUMAN ACTIVITIES ON LAND

- **An** inseparable part of humankind, a base of human activities, natural resources and source of life and wealth (UN/ECE, 1996);
- **A** symbol of identification bound with other identifying factors like family, groups, communities, nations, ethnicity, gender, etc.;
- **An** entity that organizes ecosystems and provides life-support systems;
- **A** source of economic and social human activities such as urban growth, agriculture and industry expansion
- **A** place of supply and demand





SOURCES OF GHG EMISSIONS

- Electricity - burning fossil fuels mostly coal and natural gas
- building or transport network – burning fossil fuels from gasoline and diesel
- Industry - burning fossil fuels for energy as well as greenhouse gas emissions from certain chemical reactions necessary to produce goods from raw materials.
- Commercial and residential areas - fossil fuels burned for heat, and the handling of waste.



SOURCES OF GHG EMISSION

- Agriculture - livestock such as cows, agricultural soils, and rice production causing changes in the characteristics of soil and vegetation of the land,
- Land use change - conversion of forests, grasslands and wetlands to agricultural areas land use change
 - Plants absorb carbon dioxide (CO₂) from the atmosphere as they grow, and store CO₂ throughout their lifetime
 - Soils store CO₂, depending on how the soil is managed.
 - The storage of carbon in plants and soils -> biological carbon sequestration.
 - Emissions or sequestration of CO₂ can occur as land uses change.



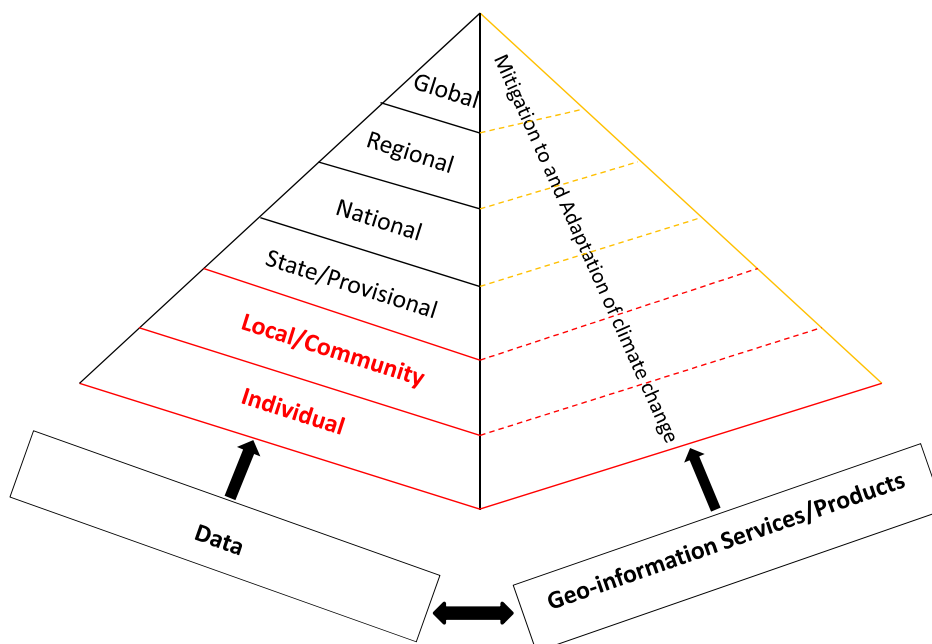


WHAT CAN WE DO?

- Mitigation to and adaptation of Climate Change
 - Global level, Regional level, National level, State/provisional level, Local/community level and Individual level
- Land (and building) rights, responsibilities and restrictions that can support reduction of GHG emission – redesign existing system?
- Building land use land development tools that support on mitigation to and adaption of climate change;
- Transparent Land information sharing mechanism;
- Mobile GHG reduction services at community and individual levels
- ???



PROPOSED FRAMEWORK





CONCLUSION

- What are the new requirements (data and services)?
- How to integrate new requirements into the existing Land administration?
- How to make sure that the new system will be acceptable to our society?
- Will the institutional reform be possible?
- Will the new system be sustainable?
- Etc.



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THANK YOU



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