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Review of Methodology on Climate Change Impact and Vulnerability Assessment for Application to the Forest Sector in Republic of Korea: The First Step for Mainstreaming Adaptation in Forest Sector

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Background

Institution has been firmed up for climate change adaptation in forest sector.
Legislation: It has become mandatory for Korea Forest Service to report the results of climate change impact and vulnerability assessment on forest sector every five years.
the Framework Act on Agriculture and Fisheries, Rural Community and Food Industry (revised in 2015)
the Creation and Management of Forest Resources Act (revised in 2019)
Preparation: For implementing the above duty, the National Institute of Forest Science (NIFoS) has categorized the forest sector to eighteen detailed sectors and established monitoring framework to assess the climate change impacts since 2015.

Objectives

To develop appropriate methodology and framework for assessment of climate change impact and vulnerability on forest sector in Korea

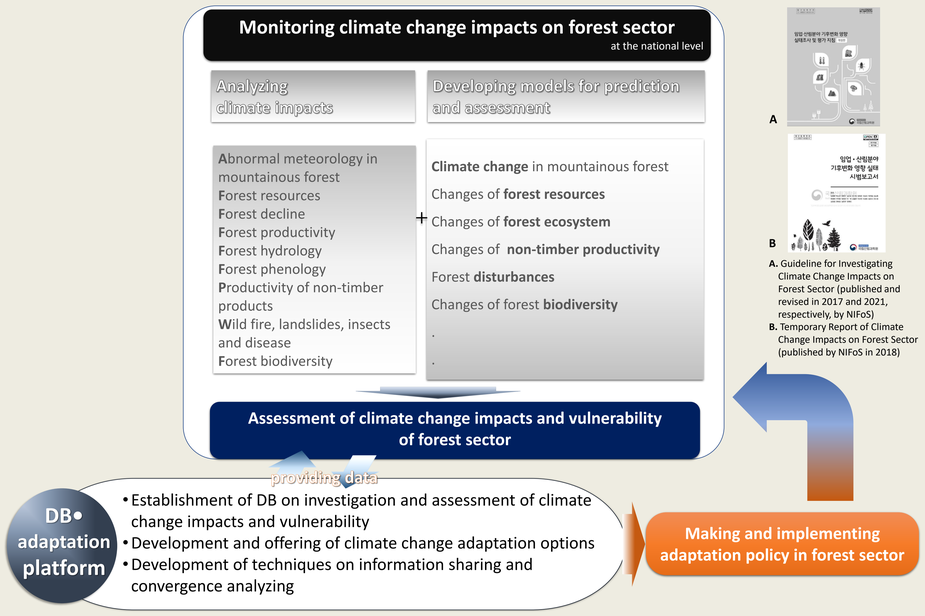
Approaches and Results

ⓐ**Reviewed cases:** the Adaptation Partners Frameworks (USA), the Climate Change Response Framework (USA), the Canadian Council of Forest Ministers Framework (Canada), and the Climate Change Risk Assessment (UK)
ⓑ**Clarified the ultimate goal of assessment**
ⓒ**Categorized assessment areas for each detailed sector**
ⓓ**Made the possible stepwise check list** with the hope of producing appropriate results on climate change impact and vulnerability which can be utilized in the stage of mainstreaming adaptation in forest sector.
ⓔ**Drew the tentative framework**
drawn from this study contains the considerations about where we need to go and how to go for achieving adaptation.

Basis for the next step

This study is expected to establish the essential basis for supporting decision making for finding actual tools to conserve and enhance forest ecosystem services and sustain life of human being under climate change pressure.

Frameworks for assessment of climate change impacts and vulnerability in forest sector

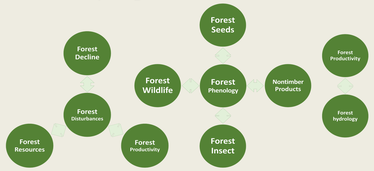


A. Guideline for Investigating Climate Change Impacts on Forest Sector (published and revised in 2017 and 2021, respectively, by NIFoS)
B. Temporary Report of Climate Change Impacts on Forest Sector (published by NIFoS in 2018)

The ultimate goal of assessment: to provide the up-to-date information for supporting <u>appropriate decision making*</u> under climate change pressures
* for what: conservation and sustainable management of forest ecosystem
**for whom: field managers (forest owner, forester, management officers etc.)
policy makers (government officers, legislators etc.)
citizen
researchers and technical developers (research institute, university etc.)
***how to release: technical report, counselling, briefing session, lecture, education/instruction,
online platforms (ex: know.nifos.go.kr)

Areas for vulnerability assessment by NIFoS

① Calculating the scientific evidence for utilizing overall adaptive capacity assessment
- projecting the future changes* of each detailed areas (*acclimation/recovery/vulnerability)
- identifying areas which show close correlation so that can spatially overlap each other and overall analyzing



②Adaptive capacity assessment
- Identifying <u>artificial options</u>* which need to be complemented considering the projected results
*knowledge, technics on field management, human resources (comprehension, professionality), social resources (partnerships & networks), organization/institutions etc.
- Assessing on management goals and alternative options (surveying stakeholders and ranking)
- Identifying the potential adaptation options and priorities

Checklist for impact and vulnerability assessment

<u>v Universal check point in every steps : Uncertainty*</u>
(*Even under uncertainty, we should make results with recognizing what we know and don't know at present)
① <u>What is the main goal for management?</u>
ex. Sustainable producing/usage of high-quality forest resources;
Enhancing function and maintaining structure of sound forest ecosystem;
Reducing and preventing damages of forest ecosystem and human caused by wildfire/landslides;
Securing (or improving) productivity of high-quality non-timber products;
Enhancing forestry household income (or mitigating damages);
Conserving forest biodiversity etc.

② What climate factor has affected and how much differed? And what is the threshold on changes of the target?
③ How does the above ② results effect on achieving management goals at present? Does it serve as barriers or opportunities?
④ What actions can be treated for barriers of the above ③ at present? (Identifying adaptation options)
⑤ How will it be changed at the future climate?
⑥ How can the above ⑤ serve as barriers against achieving management goal at the future?(Identifying vulnerable points)
⑦ What should be prepared for overcoming the expected barriers at the stage ⑥? (Identifying potential adaptation options)
⑧ Who are the stakeholders involved in the potential adaptation options identified at the stage ⑦? (Identifying the interviewee for assessing options and determining priorities)

To-Do in every year

investigation on climate change impact; identification about knowledge/technical limitation(it should be reflected at the developing adaptation options stage); identifying potential adaptation options