MINISTRY OF ENVIRONMENT AND TOURISM

Meeting report

Date of meeting:	November, 28 2016
Requested by:	Division of Climate change and international cooperation, Ministry of Environment and Tourism of Mongolia
Subject:	SUSTAINABLE FOREST MANAGEMENT IN MONGOLIA: New development objectives after National Forest Inventory interpretation
Participants:	Ms. Ariuntuya (MET), Ms. Tuvshinjargal (MET), Mr. Batjargal Z. (NCF), Mr. Hans Hoffman (ADB-TA), Mr. Oldrich Zajicek (CZ Embassy), Ms. Ariunaa N. (TAF), Mr. Klaus Schmidt-Corsitto (GIZ), Mrs. Chuluuntsetseg D.(GIZ), Mr. Dan Altrell (GIZ), Ms.Chuluunkhuu B. (GIZ), Ms. Bilguun (GIZ), Mr. Erdenebat (GIZ), Mr. Frederic Schmidt (GIZ), Ms. Kristina S.(GIZ), Ms. Suvd (GIZ), Mrs. Enkhtsetseg (KfW), Ms. Bunchingiv (UNDP), Mr. Chris Dickinson (UNREDD), Mr. Richard (UNREDD), Mr. Khishigjargal (UNREDD), Mr. Batchuluun (UNREDD), Mr. Bilguun O. (UNREDD), Mr. Dorjtseren (MSFM)
Distribution list:	all participants and invitees

The brown bag lunch meeting took place from 12:30 to 13:30 on November 28th 2016 in the "Khaan" conference hall of the Ministry of Environment and Tourism (MET).

Mr. Klaus Schmidt-Corsitto, the Director of the GIZ Programme, Biodiversity and Adaptation of Key Forest Ecosystems to Climate Change II, has presented the new development objectives under the sustainable forest management concept, based upon the national forest inventory interpretation.

Firstly, Mr. Schmidt-Corsitto gave a brief overview on the history and methodology of National Forest Inventory of Mongolia. Followed by the implementation and objectives of the Multipurpose Forest Resources Inventory of Mongolia project, 2014-2016. The main data, results and their interpretations were comprehensively explained by Mr. Schmidt-Corsitto, as followed: a) mixed forest are more stable against fire, pest and climate, b) natural regeneration is well functioning, especially after fire and pest, c) portion of three- and multi-layer forests are low, d) important timber gaps in economic forests, e) overaged forest stands in all regions, f) significant amount of standing and fallen dead wood, g) important carbon stock in Mongolian Taiga forests.

Based on the evidence based results, the key policy recommendations along with the relevant silvicultural guidelines were presented such as increase mixed forest, increase effort to maintain natural regeneration, stabilize economic forest by decreasing portion of one – layer forests, filling the gap and increasing the carbon stock, reduce number of overaged trees by one- to two third in the next 10-20 years, and avoid standing and lying artificial deadwood.

Overall, Mongolian forest policy should be shifted from need oriented to sustainable forestry, most appropriate silvicultural guidelines and a stand wise planning system shall be adopted. Also, integration of biodiversity protection into sustainable forest management and extension of Forest unit duties and competencies were highlighted as necessary.

After concluding the discussions and Q&A round, Ms. Ariuntuya (MET) thanked all participants and successful cooperation. The MET will inform on the topic and date of the next meeting in due course.

SUSTAINABLE FOREST MANAGEMENT IN MONGOLIA: New forest development objectives based on results of National Forest Inventory

Brown Bag Lunch
28.11.2016
Klaus Schmid- Corsitto

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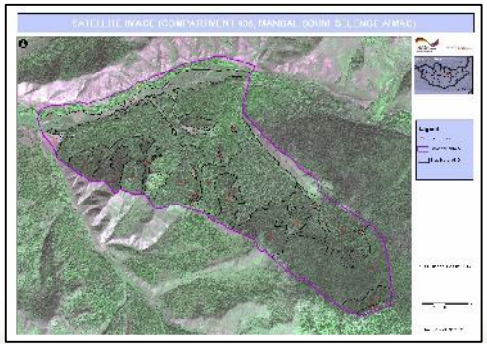
Content of the presentation

The National Forest Inventory

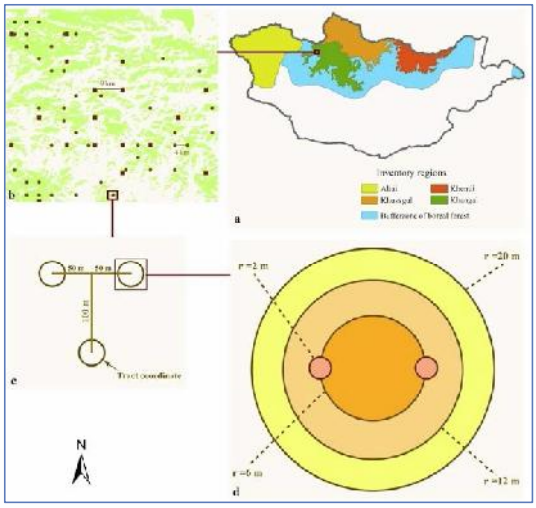
- History and Methodology of National forest Inventory
- Implementation of NFI
- Objectives based on the NFI results
  - Forest types
  - Forest structures
  - Growing stock, optimal growing stock
  - Overaged trees
  - Dead Wood
  - Carbon stock and optimal carbon stock
- Summary: Development objectives after NFI
  - Forest Policy, from need oriented to sustainable forestry
    - Silvicultural guidelines
    - Adapted taxation forest inventory for a stand wise planning system
  - Integration of Biodiversity protection into sustainable forest management
  - New forest management administration (Expansion of Forest unit duties and competencies)

History and Methodology of National Forest Inventory

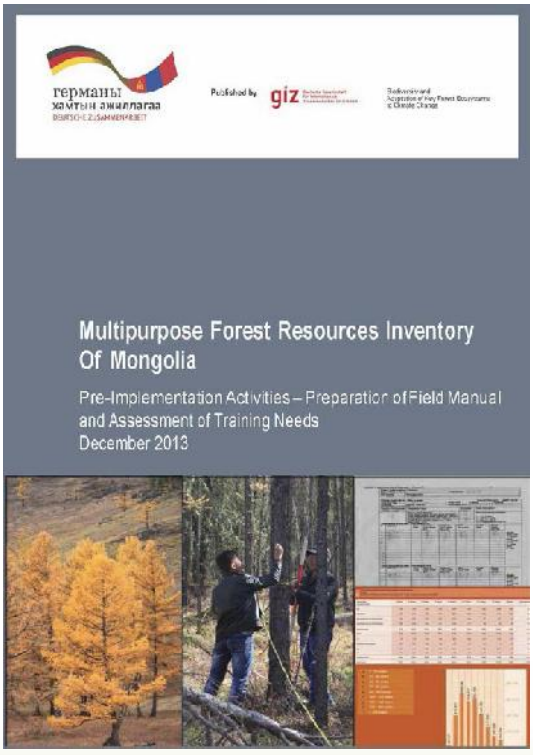
From need oriented forestry to
- **sustainable forestry**

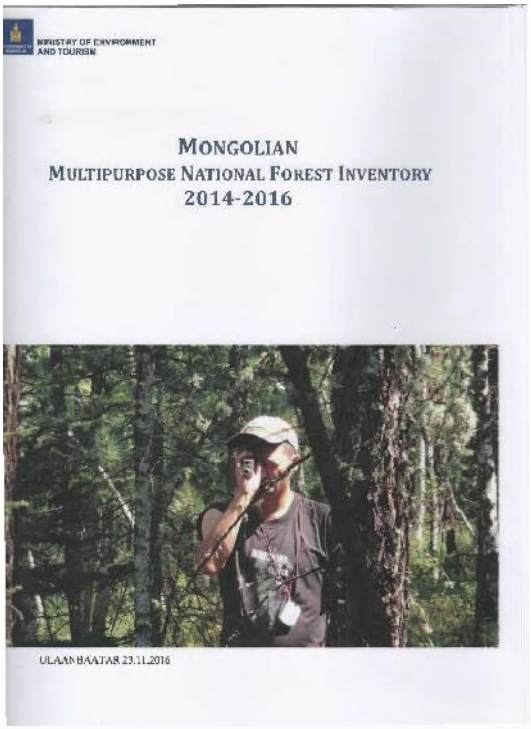


From taxation inventory to
- **systematic inventory and**
- **stand wise forest planning**



Implementation of NFI





Objectives based on the NFI results

Multipurpose:

Purpose 1: reporting to UNFCCC (United Nations Framework Convention on Climate Change) about Mongolian carbon stock.

Purpose 2: Evidence based data collection for forest policy discussion, silvicultural guidelines, monitoring of natural resources and evidence based project proposal.

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Results and objectives based on the NFI results:

Forest types (S. 65),

Boreal Forest Area	**9.095.925 ha**
Coniferous forest	*7.065.526 ha*
Broadleaved forest	*602.352 ha*
Mixed forest	*882.992 ha*
Forest regeneration	*545.054 ha*

Forest Types area distribution at National Level

Land Use	Class	Species		Area	
	Level 1	Level 2	Level 3	(ha)	(%)
Boreal Forest 9,095,925 (100%) (Area ≥ 1.35 ha; Tree canopy cover >10%; Tree height >5 m. Excludes land that is predominantly under agricultural or urban use) (Tree def.: A woody perennial with a single main stem, or in the case of coppice with several stems, having a more or less definite crown.)	Coniferous forest 7,065,526 (77.7%) (>75% coniferous species)	Siberian Larch (>75% Larix spp.)		5,673,050	(62.4%)
		Pine / Cedar 497,539 (5.5%) (>75% Pinus sylvestris/sibirica)	Scotch Pine (>75% Pinus sylvestris)	278,777	(3.1%)
			Siberian Pine (>75% Pinus sibirica)	195,134	(2.1%)
		Spruce / Fir 20,708 (0.2%) (>75% Piceaobovata/Abies sibirica)	Siberian Spruce (>75% Piceaobovata)	13,368	(0.1%)
			Siberian Fir (>75% Abies sibirica)	1,920	(0.02%)
		Mixed Coniferous 874,229 (9.6%) (> 75% coniferous species and <=75% of any single coniferous genus/genus group)	(> 75% coniferous species and <=75% of any single coniferous species)	903,277	(9.9%)
	Broadleaved forest 602,352 (6.6%) (>75% broadleaved species)	Birch / Poplar 600,771 (6.6%) (>75% Betula platyphylla/Populus spp.)	White Birch (>75% Betula platyphylla)	534,907	(5.9%)
			Poplar (>75% Populus spp.)	21,919	(0.2%)
		Other, or Mixed Broadleaved 1,582 (0.02%) (>75% broadleaved species and <=75% of any single broadleaved species group)	(>75% broadleaved species and <=75% of any single broadleaved species/genus)	45,526	(0.5%)
	Mixed forest (>=25% and <=75% each coniferous and broadleaved species)			882,992	(9.7%)
	Forest regeneration (No trees with Dbh >=6 cm)			545,054	(6.0%)

Objectives based on the NFI results: Forest types

A. Finding: Mixed forest are more stable against fire and pest.

Recommendation:

Forest policy: increase mixed forest

Silvicultural measurement: Mixed enrichment plantation to increase proportion of mixture, regulation of tree species mixture.

B. Finding: Natural regeneration is well functioning, especially after fire and pest.

Recommendation:

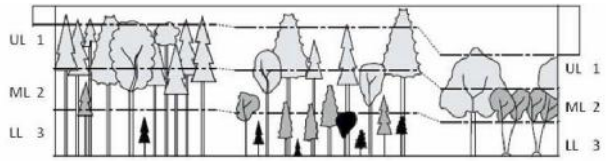
Forest policy: increase effort to maintain natural regeneration

Silvicultural measurement: Increase proportion of mixed Forests, Cleaning of seedling stands

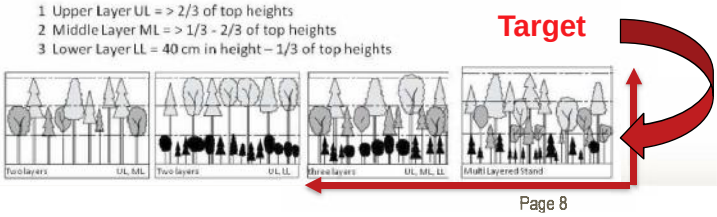
Results and objectives based on the NFI results: forest structures

Proportion of Forest Area by Stand Structure and Forest Inventory Region, %				
Regions	Stand Structure			
	(1) One-layer	(2) Two-layer	(3) Three-layer	(4) Multi-layer
Mongolia	**28**	**53**	**17**	**2**
Altai	42	55	2	1
Khangai	40	40	14	6
Khuvsgul	28	52	20	1
Khentii	18	60	19	3
Boreal buffer zone	43	51	5	1

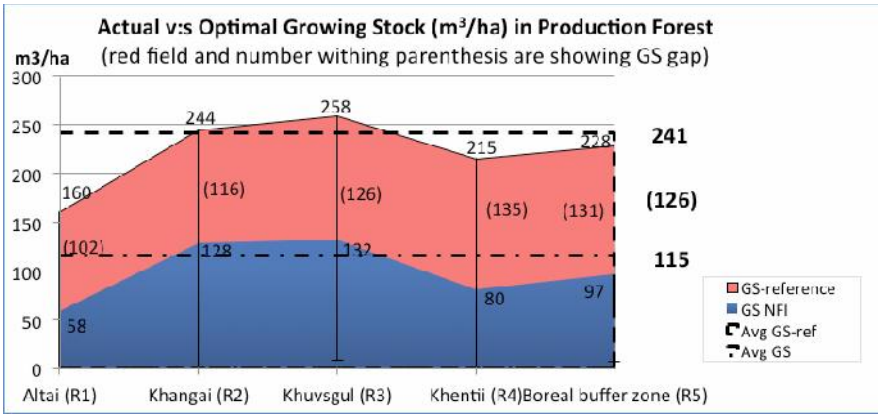
Findings: Portion of three- and multi layer forests are low.
Forest policy: stabilize economic forest by decreasing portion of one – layer forests.
Silvicultural measurements: develop selection wood (Plentar forest) methodologies. Develop shelter wood compartment system with long lasting regeneration system.



1 Upper Layer UL = > 2/3 of top heights
2 Middle Layer ML = > 1/3 - 2/3 of top heights
3 Lower Layer LL = 40 cm in height – 1/3 of top heights



Results and objectives based on NFI results: growing stock, optimal growing stock



Findings: Important timber gaps in economic forests
Forest policy: Filling the gap and increasing the carbon stock
Silvicultural measurements: decreasing the average age of production forest stands, improving the growth space by systematic thinning.

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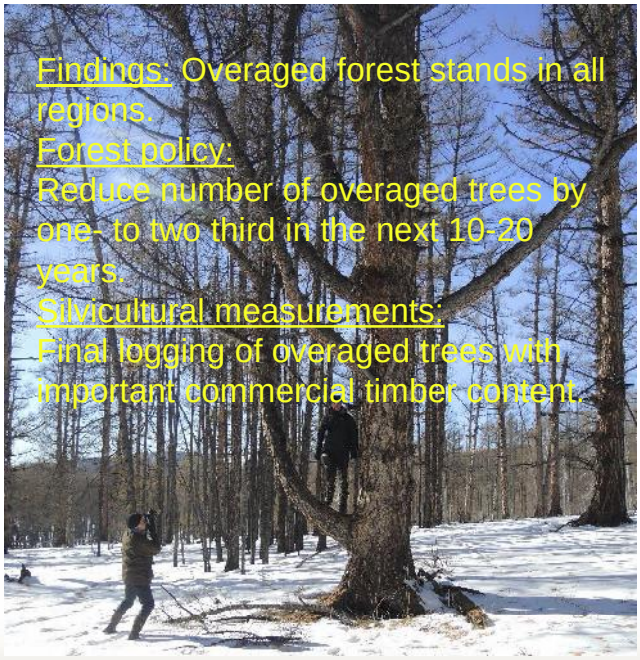
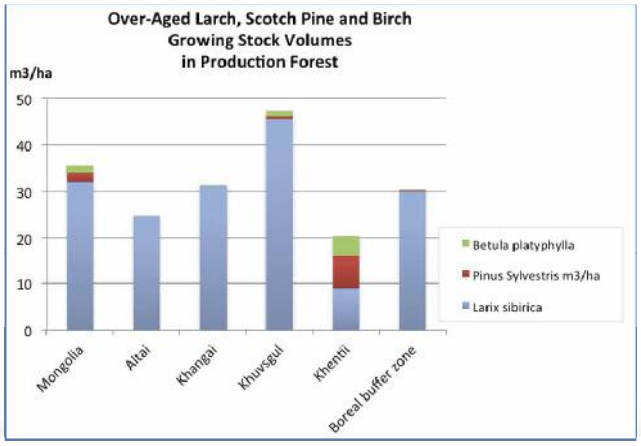
Results and objectives based on NFI results: Overaged trees



Over-Aged Growing Stock Volume and Stem Density in Boreal Average Forest and in Boreal Production Forest by Tree Species and Forest Inventory Region

Region	Boreal Average Forest			Boreal Production Forest		
	Growing stock volume, m^3/ha			Growing stock volume, m^3/ha		
	Larix sibirica	*Pinus sylvestris*	*Betula platyphylla*	*Larix sibirica*	*Pinus sylvestris*	*Betula platyphylla*
Mongolia	27.8	1.6	1.3	32.0	2.0	1.6
Altai	30.0	0	0	24.7	0	0
Khangai	29.7	0	0.1	31.3	0	0.03
Khuvsgul	34.7	0.7	1.0	45.5	0.6	1.3
Khentii	13.9	4.7	3.1	8.7	7.2	4.4
Boreal buffer zone	27.1	0.7	0.3	29.9	0.4	0.2



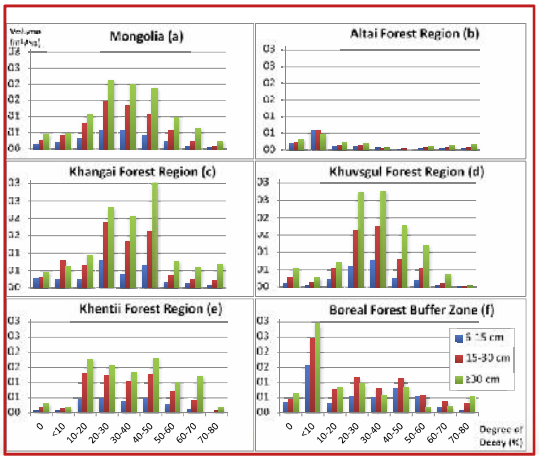
Results of NFI and objectives based on the results: Dead wood

Volume of Fallen Deadwood and Stumps by Forest Inventory Region, m^3/ha

Region	Deadwood Type		Total
	Fallen dead wood	Stumps	
Mongolia	25.8	2.0	**27.8**
Altai	12.4	4.0	**16.3**
Khangai	28.9	4.2	**33.1**
Khuvsgul	25.3	1.4	**26.6**
Khentii	26.0	1.1	**27.0**
Boreal buffer zone	24.6	3.5	**28.0**

Stem Volume of Standing Dead Trees, by Dbh class and Forest Inventory Region, m^3/ha

Region	Tree Dbh class			Total
	>30 cm	15-30 cm	6-15 cm	
Mongolia	9.8	6.2	2.5	**18.5**
Altai	1.7	1.3	1.1	**4.1**
Khangai	11.4	7.4	2.9	**21.6**
Khuvsgul	10.4	5.7	2.2	**18.3**
Khentii	9.3	6.3	2.3	**18.0**
Boreal buffer zone	7.7	8.0	4.8	**20.6**



Findings: Significant amount of standing and fallen dead wood

Forest policy:

Avoid standing and lying artificial deadwood

Silvicultural measurements:

Clean forestry, final timber logging following determined rotation periods (Birch 60 years, Larix 150 years)

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Results and objectives based on NFI results: carbon stock

Findings: Important carbon stock in Mongolian Taiga forests

Forest policy:

??????????????????

Silvicultural measurements:

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Carbon* Density (tonnes/ha) in Above Ground (AGC) and Below Ground Living Biomass (BGC), Deadwood (DWC), Litter (LC) and Organic Soil layer (SOC), by Forest Inventory Region, *tonnes C/ha*

Forest Region	CARBON POOL					TOTAL CARBON
	AGC	BGC**	DWC	LC	SOC***	
Mongolia	30.7	9.3	8.0	13.7	188.3	250.1
Altai	21.4	7.0	4.8	17.7	103.1	154.1
Khangai	34.9	9.9	10.1	10.0	152.4	217.3
Khuvsgul	32.2	9.8	7.3	16.9	196.0	262.2
Khentii	26.7	8.4	7.7	7.6	224.5	274.8
Boreal buffer zone	27.0	8.2	10.5	-****	-****	45.6****

Summary: Development objectives after NFI

- **Forest Policy, from need oriented to sustainable forestry**
- **Silvicultural guidelines**
- **Adapted taxation forest inventory for a stand wise planning system**

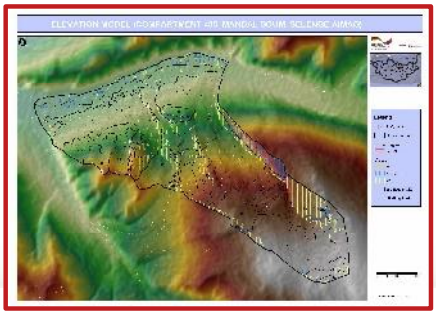
Forest Policy, from need oriented to sustainable forestry →

1 Mio. m3 / year **to** 6 Mio. m3 / year + 12 Mio. m3 / year ?

Silvicultural guidelines →

Mongolian Silvicultural guidelines: principles and guidelines for nature adopted silviculture (excluding clear cuts, mini rotation and others)

Adapted taxation forest inventory for a stand wise planning system →



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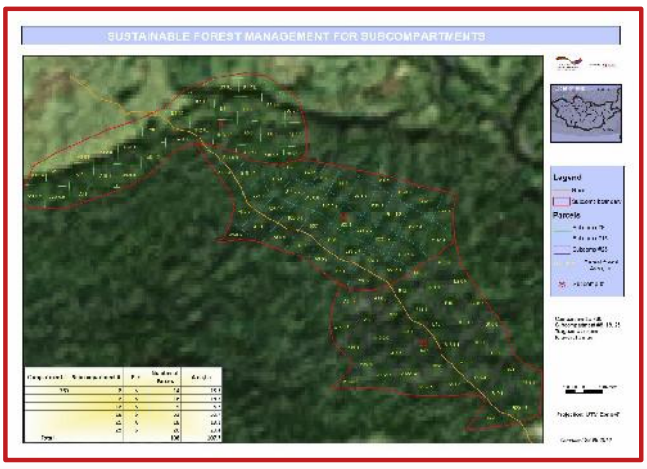
Summary: Development objectives after NFI

Integration of Biodiversity protection into sustainable forest management

New forest management administration (Extension of Forest unit duties and competencies)



Thank you for your attention

Sustainable forest management

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