Second National Forest Inventory of the Kyrgyz Republic

INFORMATION BULLETIN №1

2022

The 2nd National Forest Inventory (NFI-2) was launched in 2019 (hereinafter NFI-2) and is aimed at creating a reliable and up-to-date information database on the state of the forests of the republic, their quantitative and qualitative characteristics, and updating the forest cover map.

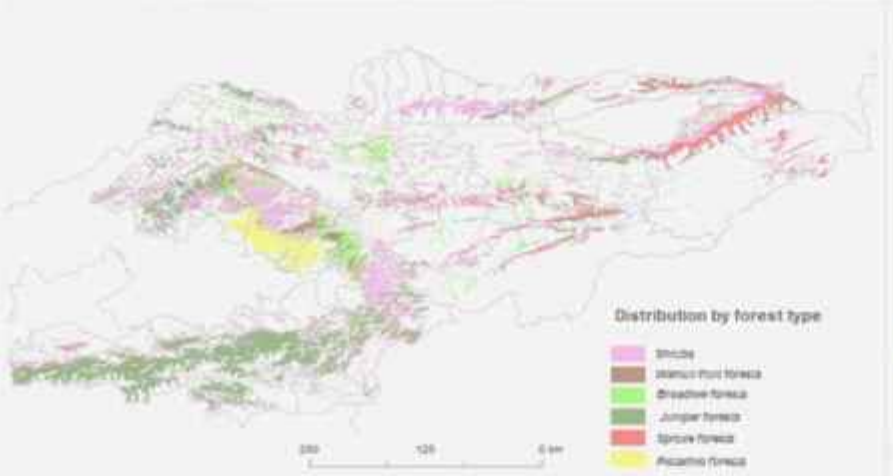

Figure 1: Forest map of Kyrgyzstan (data from 2007)

This process was initiated by the State Forest Agency of the Kyrgyz Republic as part of the Action Plan of the Concept of Development forestry sector of Kyrgyz Republic until 2040. The NFI-2 is implemented by the consortium UNIQUE-CAREC, which conducting their work in the frame of the project "Integrated Management of Forest Ecosystems of the Kyrgyz Republic", funded by the World Bank and the Global Environment Facility.

The NFI-2 project is composed of 6 objectives according to the topical needs of this initiative and one of the very important ones is conducting field assessments of the forests, collecting the necessary information about forests and its components.

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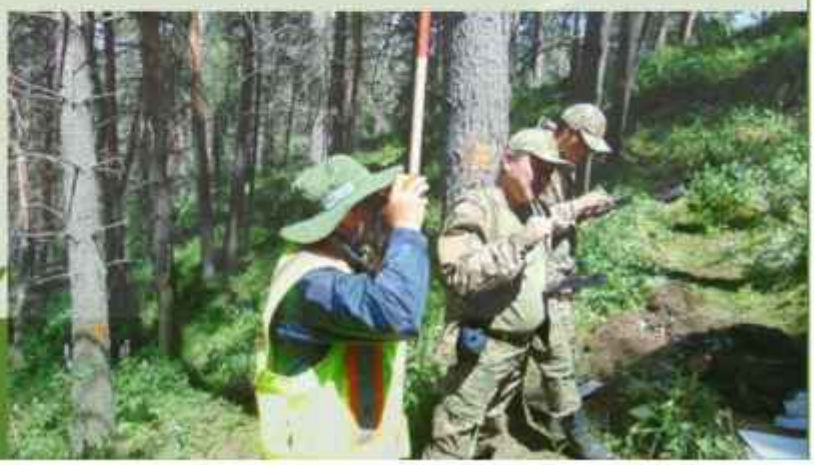
This newsletter intends to provide a short overview on the carried out field work of the NFI-2 project. With regard to field work, the consortium team successfully finished the following work tasks:

- Development of a field work manual, which describes in detail the methodology and , measurement steps for the data collection in the field and has been officially approved by SFA and the Institute of Biology of the Kyrgyz Republic;
- Development of a field data quality assurance manual to ensure professional support of field teams and field control by project supervisors for a high level of data quality and for optimizing the standards of the nationwide field work methodology; finally, all data was checked through a plausibility control by the data base team of the project;
- Development of a manual on daily working procedures for field workers;
- he initial number of tracts and plots by strata (for all forest types) for field work has been determined based on statistical analysis of the required number of plots;
- Prepared work maps based on satellite images, where the accessible plots, based on remote evaluation, are indicated;
- The final number of tracts and plots, considering the feedback from the field work;
- Eventually 14 field teams in 2020 and 4 field teams in 2021 were trained and conducted the field work in all regions of the republic. Each team consisted of one Leader, one assistant and one worker. Leaders of the field teams were only high level specialists, mostly form the SFA Forest inventory and planning department. This was necessary since forest inventory represents a specific field in forestry;
- Theoretical and practical training sessions, as well as field work, were based on the approved field work methods, making use of newest forest inventory tools and taking into account optimized working conditions.
- After all field work and corrections a final dataset of the NFI -2 was prepared.



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Vertex Geolaser 5

Figure 2: Instruments for NFI works

The global COVID-19 pandemic, which began in 2020, had a significant impact on the implementation of NFI-2, in particular, the inability of most international experts to arrive for practical training, the organization of field work. But despite this, training sessions worked well. The initial trainings were conducted online and then a one week practical training was conducted by the international coordinator Dr. Alexander Gradel and national coordinator Kuban Matraimov in the forest. The consortium team was able to organize these events and specialists were trained. Field work was started in June 2020, immediately after the permission of the Government of the Kyrgyz Republic to travel within the country.

Field teams received the necessary modern equipment, tools and materials: tablets with software for entering forest data directly in the field, the highly sophisticated electronic VERTEX Geolaser 5 with functions for measuring tree height, slope, azimuth, horizontal distances and potential for assessing the local position (GPS function). The teams also received drills for measuring the age of trees, a SUUNTO compass and other equipment.

Features of NFI-2 field works

The NFI-2 field work methodology was as close as possible oriented towards the methodology of field work of forest inventory at the forestry enterprises and protected areas level, which has been used in the forest management planning (taxation) system of Kyrgyzstan since 2001. The shape and dimensions of the plots are almost identical and have an area of 500 m^2. This is done in order to facilitate the training of field specialists and the further application of the NFI #2 methodology. The shape of the plots is circular and has 3 sub circles inside, where various parameters of trees, shrubs and grassy cover are collected.

For the first time, a digital application was used for Kyrgyzstan during field work to collect data directly, without paper formats and instantly upload data to the server. This has significantly saved the time and labor of field teams, since previously field data was entered and checked manually. However, to be prepared for all situations, each team was additionally equipped with some paper formats as backups.

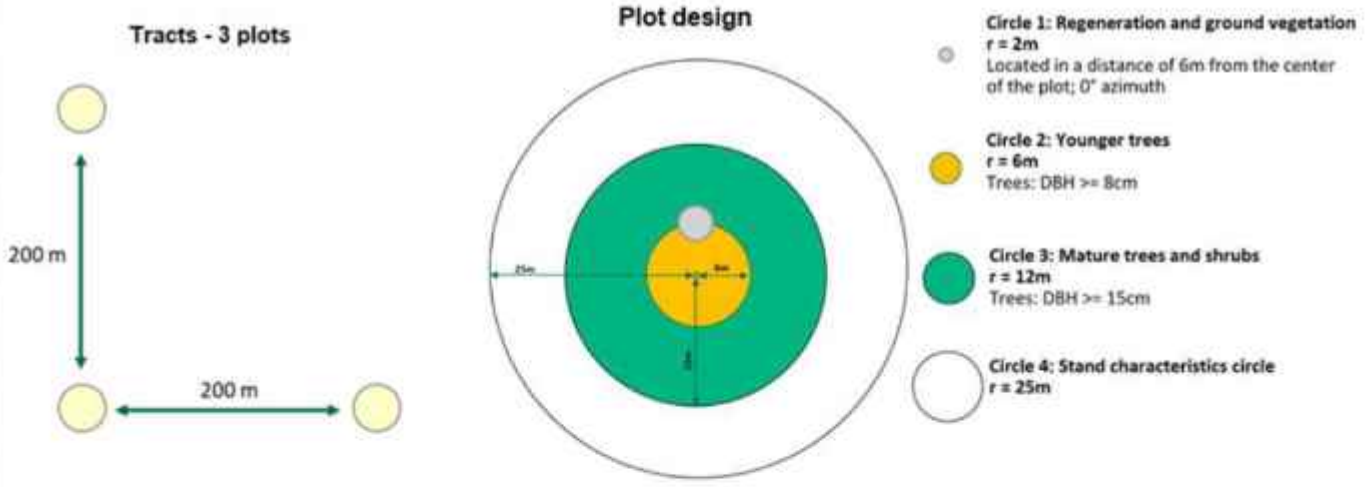

Figure 3: Placement and design of the plots

Trainings for the field groups

The training was conducted in 2 stages:

Online format. During the pandemic, training was conducted for field teams and Supervision teams. They got acquainted with the methodology of field work, skills of working with new tools and equipment, software for data collection, technical conditions for ensuring data quality. This online training was conducted by the international key experts from UNIQUE, which due to COVID-19 pandemic, could come in person to Kyrgyzstan.

Offline format. The first field training was conducted on the territory of the Chuy leskhoz with the participation of field teams and Supervision teams. During the training, field teams learned in practice how to find plot centers using GPS, applying the electronic and manual measuring equipment, enter data directly via an app in the tablets according the field methodology etc. Following the results of the training each participant had to undergo a test. This helped to build balanced and capable teams and to understand which topics needed most support from supervisors during the initial start of the field work.

Field works

Field work consists of the assessment and measurements of the forest structure on the defined parameter according to the approved methodology. All measurements were conducted only on the above mentioned plots. During field work on each plot all relevant information about trees, shrubs, herbaceous plants and geographical and other relevant parameters were collected according to the approved field methodology. Finally, 1252 tracts or 2490 plots, distributed among the six strata, where assessed. Field specialists began field works in June and completed work with the onset of cold weather, in beginning of December 2020. Each team received a work package, which included all necessary information about tracts which they had to finish within a given time frame (usually about 2 months). This also turned out to be an important planning tool for facilitating logistics and control.

By the end of 2020 field groups had completed already 1,186 tracts (2,342 plots), which amounted to 95% of the total planned volume of NFI-2 field work! Field work was constantly monitored by the projects Supervision & Control teams, which also provided support in terms of training, recommendations for high-quality data collection, accurate understanding of the methodology of field work.

In 2021 some initially planned plots, located in the border zone of the Batken region, had to be removed from the field work due to the difficult security situation for field teams. After the updated planning in close cooperation with the client SFA the remaining field work was finished until autumn 2021. Overall 66 tracts or 148 plots which accounted for the remaining 5% of the volume of work were assessed in 2021.

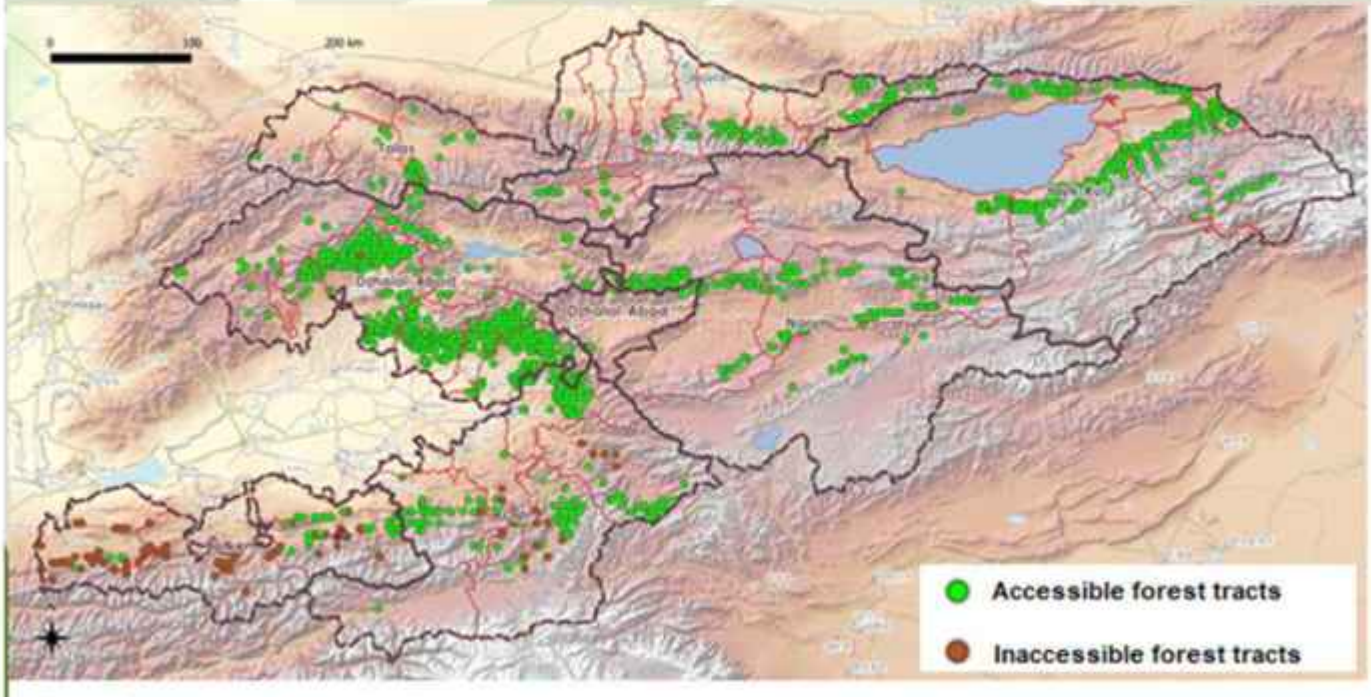

Figure 5: Location of tracts for field

Differences between the methods of NFI-1 and NFI-2

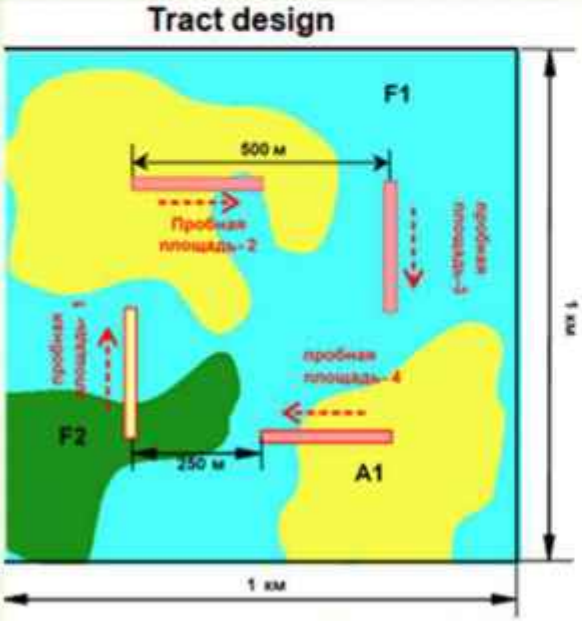

Figure 6 : Location of the NFI #1 plots

The methods for the first and second national forest inventory were developed depending on the specific goals. During the NFI-1, a lot of information had to be collected not only about forests, but also about agricultural lands and crop yields. Therefore the plots design was rather large, with rectangular shape with dimensions of 250 meters by 20 meters. Each tract was compiled by 4 of such plots (see figure). The distance between tracts of the grid was 18.5 km longitude, 13.5 km latitude. For mountainous terrain, it was quite difficult to lay such rectangular plots. However this international method was used to integrate Kyrgyzstan's data into the world database on natural resources (FAO Database).

Differences between the methods of NFI-1 and NFI-2

NFI-2 aimed at collecting detailed information only about parameter related to forest, and therefore the tract and plot design was adjusted compared to NFI-1: Smaller sample area size, but higher number of samples. Depending on the strata (predominant tree species) the distance between tracts of the grid ranged between 1 km longitude and 1 km latitude (for Pistachio strata) and 8 km longitude and 16 km latitude (for shrub strata). One of the tasks of NFI-2 is to allow a comparison of the results of NFI-1 and NFI-2. In order to solve this challenge, the above shown adjusted circular design was laid on top of the rectangular forest plots of the NFI-1. (see figure xy.....) However, in order to integrate the NFI-1 inventory data into the international accounting documents, the same land classification as for NFI-1 and the national level was applied.

This figure shows the combination of circular plots of FIG-2 and rectangular plots of NFI-1.

Thus, the results of the NFI can be compared by two methods and may allow to monitor some dynamics.

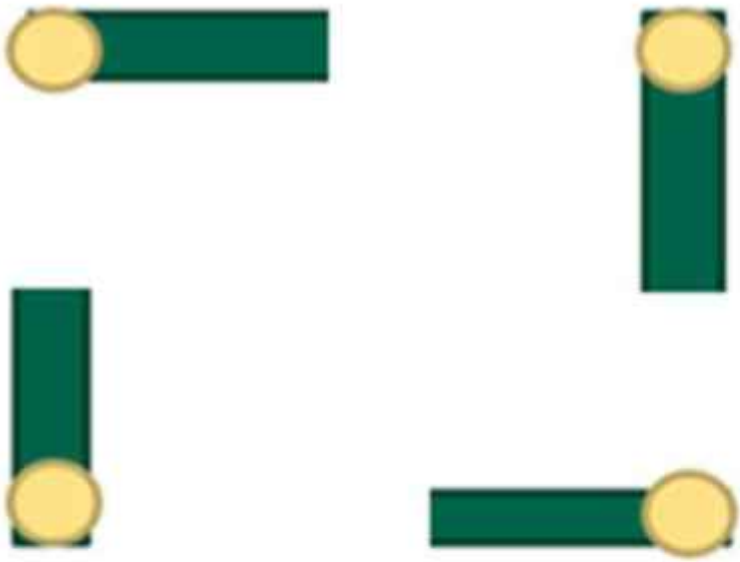

Image 7: Combining the plots of NFI #1 and NFI #2