Agreed:

Director of the Department of "Forest Hunting Inventory and Planning" of the Forest Service, Chairman of Working group

_____ N.Chodoev
30.09.22

Approved:

Deputy director of the Forest Service under the Ministry of Agricultural

_____ N. Kozubaev
30.09.22

"THE INTEGRATED FOREST ECOSYSTEM MANAGEMENT PROJECT IN THE KYRGYZ REPUBLIC" (IFEMP)

CONSULTING SERVICES

NATIONAL FOREST INVENTORY EXECUTION AND CAPACITY BUILDING

Contract № KG/IFEMP/QCBS/NFI/01/2018

FINAL PROGRESS REPORT

Reviewed:

Technical Team for Forest Inventory (TTFI), Team Leader

_____ J. Ashirbekov

Date: 29.09.22

National Forest Inventory Execution and Capacity Building

RFP No.: # KG - IFEMP/QCBS/NFI-01-2018

Final progress report on NFI#2

Client

Forest Service under the Ministry of Agriculture of the Kyrgyz Republic

Authors:

Dr. Axel Weinreich, Team Leader of the consortium UNIQUE-CAREC

Dr. Alexander Gradel, International Expert

Matraimov Kuban, National Expert

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Contact:
Dr. Axel Weinreich
Unique land use GmbH
Schnewlinstraße 10
79098 Freiburg, Germany
+49 (0) 761 20 85 34-0
axel.weinreich@unique-landuse.de
http://www.unique-landuse.de

BACKGROUND

The National Forest Inventory (NFI) is a monitoring system, designed to provide accurate information about the size, distribution, composition and condition of forests and woodlands and about the changes taking place in the woodlands through time. It is essential for developing and monitoring the policies and guidance that support the sustainable management of woodland.

The NFI in Kyrgyzstan has now been conducted for the second time as sample based forest inventory. However, the amount of samples and measurement accuracy was much higher in the second NFI. The 1st National Forest Inventory (NFI#1) was conducted in Kyrgyzstan in 2008-2010 in the frame of the Integrated Inventory of Natural Resources, a widely applied methodology by FAO.) This approach takes into account assessments of forests, agricultural crops, pasture resources and the use of products with the identification of environmental, socio-economic problems. As part of this inventory, 766 tracts (4 plots per tracts) were laid on a 10-minute X 10-minute coordinate grid (in geographical longitude and latitude). Field work was carried out by specialists of the Forest and hunting inventory Department of the State Agency for Environmental Protection and Forestry of the Kyrgyz Republic, and data analysis and processing was carried out by FAO specialists.

The 2nd National Forest Inventory of Kyrgyzstan (NFI#2) was conducted in 2019-2022 with an improved tract design and considering the Kyrgyz forest management planning approach, which is based on the methodology proposed in the framework of the "Kyrgyz–Swiss Forestry Support Program for the Kyrgyz Republic" (1995-2009), lead by Matthias Scheuber. The final adapted methodology, developed and finalized by the UNIQUE-CAREC consortium and approved by Kyrgyz authorities in January 2020 builds on the preliminary stratification of the country's forests and, depending on the strata density of forests and for ensuring statistical accuracy of data with regard to statistical error, applied a grid of tract distribution of 1 km X 1 km, 2 km X 2 km, 4 km X 4 km, or 8 km X 16 km, respectively. Finally, 1,252 forested tracts were approached and measured by the inventory teams. State of the art technology was introduced and applied to ensure an efficient and accurate assessment. In parallel to the field work a land cover classification based on satellite images (ESA Sentinel2) was carried out, taking into account most recent ground trothing information from a FAO project for LULUCF in Kyrgyzstan for the verification. Training and capacity building of involved Forest Service staff, before, during and after the field work was conducted for allowing sustainability of the measures. The 2nd National Forest Inventory (NFI #2) was carried out by the consortium UNIQUE - CAREC (Germany-Kyrgyzstan) with strong participation of specialists of the ULOU Forest and Hunting Department. The applied approach of NFI#2 allowed to take into account data and plots of NFI #1 t for estimating changes of relevant values and indicators. The comparison of both inventories, however, is limited due to the long elapse of time between the two inventories and qualitative and technical differences of plot demarcation.

1 TIME PERIOD COVERED

This final progress report refers to the reporting period is from 01.08.2022 to 30.09.2022 and summarizes the status of the NFI#2 project at the end of this period.

2 IMPLEMENTATION PROGRESS

2.1 Purpose of the report

The Integrated Forest Ecosystem Project (IFEMP) aims "to strengthen the capacity of government institutions and communities to improve sustainable forest ecosystem management through investments in management planning, ecosystem restoration, and infrastructure"[1]. It is financed through a grant and loan of the World Bank and Global Environment Facility (GEF). The Department "Forest and Hunting Inventory and Planning" (ULOU, formerly SKFHIP) under the Forest Service (FS; client, previously SAF, SAEPF) in close cooperation with the consortium of UNIQUE -CAREC are implementing the second national forest inventory (NFI#2) of Kyrgyzstan.

This Final progress report provides an overview of the general scope and implementation of the tasks and activities of NFI #2 works, since project start 2019 until 30.09.2022.

2.2 Overall status of work and relative progress

2.2.1 Administrative topics and changes in the contractual frame

All project partners have been intensively working on the implementation of field work during the period from June to December 2020 and from September to October 2021 based on the V4 Implementation Plan (approved on 09/22/2020), which led to deficiencies in some budget lines. COVID 19, which caused delays and travel restrictions, also led to changes in training schedules and tasks. Due to this and additional administrative difficulties on the part of the project partners, overall 10 amendments to the main contract were agreed. The project had to be extended in three steps until the end of September 2022 (amendment 7, 9, 10). Based on the AGREEMENT between the partners signed on 25.07.2022 to resolve technical, administrative and budgetary issues the budget became redistributed in contract amendment No. 11. Based on the "AGREEMENT to resolve technical, administrative and budgetary issues for the implementation of the Second National Forest Inventory" the final project tasks had been implemented step by step.

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[1] World Bank, 2019 - https://projects.worldbank.org/en/projects-operations/project-detail/P151102?lang=en

2.2.2 Status and update on structural components

Forest Service (FS)

Based on changes in the government of the Kyrgyz Republic, the SAEPF was divided into two separate state organizations: the Committee on Ecology and Climate and the State Forest Agency (SAF). The Committee on Ecology and Climate further became part of a new structure - the Ministry of Natural Resources and Climate. The SAF became the Forest Service (FS). UOLOU (formerly SIKFHP) remains part of the FS, which reports to the Ministry of Agriculture of the Kyrgyz Republic. Almaz Musaev is the Director of the FS.

Technical Team for Forest Inventory (TTFI)

The TTFI is defined within the terms of reference (TOR) and includes: i) ULOU staff, ii) staff from SF, iii) research institutions, iv) experts in forest and pasture inventory, forestry planning, remote sensing and geographic information systems (GIS) Musaev.

Focal points for communication

The main focal points for communication during the respective period is kept: Zhenish Ashyrbekov (TTFI Team Leader) and Nurgazy Chodoev (head of DFHI). Since May 2022 the focal point for commu-nica-tion with the PIU has been changed from Barchynai Kydykeeva to Aidai Mamatova.

Project office

In accordance with Section 7 of the ToR (Government Contribution), the FS (formerly SAEPF) provided office space for staff and consultants until September 2021.

Since September 2021, Unique-CAREC has been using an office outside the FS. Unique has rented an office space for experts and project specialists to work to the required specifications. The office was rented and used until the end of the project.

3 OVERVIEW OF PROJECT PROGRESS BY TASKS AND OBJECTIVES

This section provides an overview of the status of implemented activities, and objectives of the topical tasks..

The left side of the table presents the tasks and activities according to the Work Plan. The right side of the table shows the status of the tasks, the percentage of completion and the obtained outputs.

3.1 Tasks: Objective 01. Review the scope of NFI and adjust the current methodology and sampling design

Table 3: Objective 01 - Tasks, activities, outputs

Task ID	Task Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
1-1	Information needs assessment (INA)	1-1-1	Assess information needs for all users (key line ministries, international reporting bodies, research institutions and other relevant stakeholders), and review national policy requirements to be addressed by NFI. Include consolidated expectations regarding the precision of the NFI statistical estimates, and the accuracy of the national land cover classification.	The assessment of information needs for all users of the results of the NFI was carried out by the consortium. The final version of the Report takes into account the proposals of the workshop participants for stakeholders.	**100 %**	**Delivered**
		1-1-2	Conduct a national validation workshop regarding the outcome of INA, with the aim to present and consolidate the information needs for NFI#2.	- Validation workshop conducted on 08.08.2019 in the SAEPF main building; results discussed accepted among participants. - The TTFI signed protocol of the workshop has been submitted to the TTFI and PIU. - The final report has been agreed and approved and delivered to TTFI and ULOU (formerly SIKFHIP) in hard copy.	**100%**	1-1 Report on information Needs Assessment & enhanced stakeholder appreciation of scope (and limitations) of NFI **Delivered**
1-2	Review and update of	1-2-1	Review and update NFI#1 field survey methodology to ensure consistency and inform the NFI#2 methodology. This will ensure the NFI methodology is based on	- The review of NFI#1 data has been conducted . FMP plot data has been received and analyzed. NFI#1 and FMP grid have been integrated into the NFI#2 grid to test re-assessments.	**100%**	1-2 Revised field methodology

Task ID	Task Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
	the NFI#1 field survey methodology		updated information needs, and a technical review of the efficiency and effectiveness of the NFI#1 methodology.	- Methodology fine-tuned based on the feedback from the on-going field tests in pistachio forests. A final seminar was held to discuss the methodology and the TTFI participants agreed on this document in December.		**Delivered**
			Consider for NFI#2 methodology the planned software, and maintaining backward compatibility with NFI#1 in order to minimize unnecessary changes.	- In January 2020, the methodology for NFI#2 was approved by the National Academy of Sciences and the SAEPF (Forest Service).		
1-3	NFI Time schedule	1-3-1	Propose a time schedule for the required outputs. Consider that outputs have to be approved no later than July 20, 2021.	- The TOR demand, that the whole work plan and budget plan ~~needs to be~~ was revised after the approval of Tasks 1-2 and 1-4, when the final design and methodology was approved.	**100%**	1-3 Project schedule **Delivered**
			Include realistic timescales for all necessary recruitments, equipment procurements, and other critical path items.	- A revised NFI Time Schedule was submitted during the inception phase. - A third revised NFI Time Schedule referring to the implementation plan for the main field work in 2020 was presented and discussed during the mission in January 2020 and finally submitted on 27.03.2020. - In the frame of the work on the implementation plan a fourth time schedule had been delivered end of May 2020. - After the project was extended until 12.20.021, in July 2021, an updated Work Plan for NFI# 2 was developed and discussed with TTFI and ULOU (fifth update). - The latest change in the Time plan was related to the Agreement (signed 25.07.2022) and the following amendment No 11.		
1-4	Anticipated variance establishment	1-4-1	Establish anticipated variance in six main forest types (shrubs, walnut, pistachio, coniferous, juniper and deciduous forests) in NFI#2 based on the new NFI#2 methodology, NFI#1 data and external information sources, where the NFI#1 data are insufficient to derive a solid estimate.	- Anticipated variance based on the analysis of NFI#1 results and data from FMP inventories has been revised and calculated. - A final report including the final strata design and grid spacing has been submitted to TTFI and ULOU (SIKFHIP). - Report approved - Hard copies of the report have been delivered to ULOU (SIKFHIP) and TTFI	**100%**	1-4 Report on required sample sizes **Delivered**
			Include in this analysis all anticipated variances for furthering the major objectives agreed during the inception phase.			

Task ID	Task Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
		1-4-2	Prepare a report on the anticipated variance, and a sensitivity analysis for required sample sizes to achieve target precision in each stratum. In addition, the report should include proposals for measures in case the planned field work volume is insufficient to achieve the consolidated precision expectations that are part of the INA.			

3.2 Tasks: Objective 02. Perform a national land cover classification

Table 4: Objective 02 – Tasks, activities, outputs

Task ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
2-1	Workshop on definitions and Land Cover Classification System	2-1-1	Retrieve information needs for land cover assessment from information needs assessment in Task 1-1	- Report has been submitted after beginning of 2020as email and hard copy and was approved in February 2020 by TTFI and ULOU (SIKFHIP).	**100%**	2-1 Report on defini-tions and Land cover classification system **Delivered**
		2-1-2	Workshop on definitions and land cover classification system (combined with the national validation workshop on the outcome of INA, Task 1-1).	- The workshop was held on 31.05.2019 at ULOU (SIKFHIP), where the national land cover was presented -	**100%**	
2-2	Training course on open source tools for GIS & remote sensing	2-2-1	Develop a training course on open source tools for GIS and remote sens-ing for free available imagery, for ex-ample Landsat and Sentinel and other available under Google Earth or Google Engine, and any relevant da-tasets available in the country.	The training has been conducted in August and September 2022: 04.08.-05.08.2022; 24.08.-25.08.2022; 1.09.-02.09.2022;	**100%**	Training material **Delivered**

Task ID	Title	Activities		Implementation of activities	Completion in % (30.09.2022)	Output
2-3	Stratify the land cover	2-3-1	Develop systems of land cover classification, taking into account the national and international classification (categorization) systems in order to increase comparability with other data (for example, comparability with the data of the KR National Statistic Committee and Convention of Biodiversity data). Considering: 1. NFI#2 data should be as flexible as possible (goal 2). 2. Ensure that the system for data collection and analysis of NFI#2 is aligned with this goal and also minimizes the risk of data entry errors. Same approach will be used in future for land cover change detection purposes.	The system is developed (see also LCC report). Hard copy of the report provided to ULOU and TTFI.	**100%**	2-3 Land and forest cover map and a forest type distribution map **Delivered**
		2-3-2	Gather all necessary spatial data and layers connected to the NFI and the national land cover classification, and **set up a GIS Project**	- The subcontractor Joanneum Research (Austria) has processed the images. All data have been transferred to ULOU – GIS section (Marta Barkybaeva).	**100%**	
		2-3-3	Implementation of the **pre-stratification** in separate forest types / strata	- Pre-stratification is finished. All data have been transferred to ULOU – GIS section (Marta Barkybaeva) - Workshop for providing the information on how to use preliminary products (Sentinel II data) for the work of ULOU. - The results of the pre-stratification were also the basis for the distribution of tracts (sample plots) depending on the provision of statistical accuracy.	**100%**	

Tas k ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
		2-3-4	Implementation of the **pre-clarifica-tion** for each of the sample locations (clusters), resulting in list to be sur-veyed in the field	- Final grid established in June 2019; - pre-clarification and accessibility finished was conducted for final determination of NFI#2 plots. All data have been transferred to ULOU – GIS section.	**100%**	
		2-3-5	**Stratification** of the land cover (per Land-Cover Classification System (LCCS) - wall to wall - (preparing map layers) using free remote sensing da-tasets and Google Earth Engine or similar.- > providing maps layers for multiple use –> input to and utiliza-tion in the estimation stage of the NFI (Field data analysis – means, totals and their sampling error per analysis entity)	Based on the results of stratification, the distribution of forests by the main types of forests for the conditions of Kyrgyzstan, 6 types of forests, was obtained.		
		2-3-5 a	Implementation of the classification algorithms based on the ground truth-ing data, and the production of a Draft Map of national land cover.	- FAO data has been received in November 2020 and the data could be used as one excellent source of the ground truthing system for the LCC. - As second source for ground truthing: stand data from FMP plans and respective maps have been used. After a first test, a delineation of reference polygons has been im-plemented. The ground truthing data development could been completed in May 2021 (see also 2-4-1). - All other preparatory steps for the classification process and the setting up of the processing chain has been con-tinued. The processing of pilot areas of different strata for the fine tuning of the classification process is completed as well. The above mentioned draft LCC map has been pre-sented during the WB mission April 2022. - As the work on full country scale has been relaunched in July 2022 the project finalized the map in September 2022 and submitted it to the client. See also below Task 2-3-5-b.	**100%**	

Tas k ID	Title		Activities		Implementation of activities	Completion in % (30.09.2022)	Output
		2-3-5 b	Implementation of the classification and the production of a Final Map of national land cover.	-	Final land cover and forest type map has been developed and submitted to ULOU. (see Annex 4.2.2)	**100%**	
2-4	Verification of the interpreta-tion results	2-4-1	Carry out verification of the interpre-tation results of activity 2-3-7 (via field or desktop interpretation) and edit, fi-nalize, validate and reproduce the fi-nal land forest map. Produce confi-dence estimates for the land cover and provide map accuracy assessment statistics.	-	Training workshop for LCC with the special topic ground truthing making use of the FAO data and delineating stand polygons based on FMP maps (19.01.-28.01. 2021). After that period the data team and data team supporters continued to delineate ground truthing polygons.		Report on verification **Delivered**
		2-4-1 a	Implement the verification of the Draft Map using the prepared inde-pendent reference data set.	-	See Task 2-4-1 b	**100%**	
		2-4-1 b	Implement the verification of the Final Map using the prepared independent reference data set, including the prep-aration of the land cover and accuracy statistics	-	As the LCC was planned in two phases and the first draft LCC was finished – see 2-3-5-a, the second and final verifi-cation was developed and completed. The final verifica-tion of the results of interpretation of satellite images had been finalized in September 2022.	**100%**	
2-5	Training on the classification and verification processes used	2-5-1	Provide specific training on the classi-fication and verification processes used.	-	The trainings on the applied classification and verification procedures (image interpretation) were held in August and September 2022: 15.08.-16.08.2022; 29.08.-30.08.2022; 14.09.-15.09.2022. Participants learned pro-cedures for classifying and validating satellite data from Sentinel 2 and other sources.	**100%**	Training material pre-pared **Delivered**

3.3 Tasks: Objective 03. Execute the NFI#2 field survey

Table 1: Objective 03 – Tasks, activities, outputs

Task ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
3-1	Field equipment list	3-1-1	Propose a field equipment list (including quantities) that will be the minimum required to execute the field-work.	- Finished in August 2019 and submitted as English and Russian versions to PIU. - Tools and equipment purchased from the PIU.	**100%**	3-1 Finalized hardware list **Delivered**
3-2	Plan for implementation	3-2-1	Prepare a plan for implementation of field survey, logistics, supervision of project activities in the office and field.	- Plan for implementation was presented on 20.01.2020 for discussion with TTFI. Changes were due to the rejection of the first implementation concept by PIU/WB on 19.03.2020. - Draft of the adjusted implementation plan (as report document) was submitted together with the adjusted time plan by email on 27.03.2020 (English version) to PIU and ULOU. The related budget plan was sent by email on 30.03.2020. The Russian version of the Plan for Implementation was sent on 02.04.2020. - Final version 4 of the Implementation Plan was handed in 12.06.2020. It was the result of a long discussion process and re-organization process due to the uncertainties caused by the corona lock down in March to May 2020. - Only at the end of Q3 the approvals from all partners were received. The necessary amendment to the contract securing that the implementation plan and the budget plan are used as base of the field training and field work from 09.06.2020 can now be formally close this task.	**100%**	3-2 Work plan for the implementation of field work developed/updated **Delivered**
3-3	Quality assurance protocols	3-3-1	Define quality assurance protocols that maximize transparency and control the field data collection process.	- The quality assurance concept was presented and discussed with TTFI on 15.03.2020. - The final version has been submitted and discussed with TTFI before the start of the Training of Trainers and has been already intensively used during the training of field teams beginning of June. It is also the base for the work of the newly established Data Team working on field data preparation, data check and data analysis. No issues have been raised by the TTFI.	**100%**	3-3 Quality assurance procedure produced **Delivered**

| 3-4 | Field element execution | 3-4-1 | Execute the field element including field survey with the teams contracted by UNIQUE/CAREC | **Field work 2020**

- With two additional teams, that were started in September, overall 14 field teams conducted field work until December 2020. Early snow in autumn 2020 hindered the field teams, but 95 % of field work, devided into up to 3 work packages, was finished.
- Due to security reasons in the southern part of the country some tracts were excluded, and other tracts added.
- Additionally, SIKGHIP requested to add more tracts of Juniperus in parts of Batken and Osh oblast.
- Rediscovering of NFI#1 plots was very difficult and represents a challenging task.
   o The following is necessary to assure a high likeliness for rediscovering plots:
     • An exact GPS measurement in NFI#1 and NFI#2.
     • The measurement and documentation of reference or marker points in NFI#1.
     • Utilization of a metal stake in NFI#1.
     • A good quality measurements of tree positions in NFI#1 to enable the use of tree location maps for the rediscovering in NFI#2.
     • Good training of teams in NFI#2 that are in charge of rediscovering.
   o The following aspects were not fully given for NFI#1:
     • The GPS measurement in the years 2009/2010 have had only moderate quality.
     • Unfortunately, the FAO inventory did not assess reference or marker points although required according to their own standard that defines the need for 3 reference points per plot.
     • Metal stakes have been used. But the field control documentation that provides proof that this was done with high care and quality is not available.
     • Field control documentation that provides detailed information on the quality of the tree measurements is not available. | **100 %** | 3-4 Field data collection completed during 2019 & 2020 field seasons; accompanied by quality assurance reports and a final field data collection quality and performance report.
Delivered |

				- Therefore, for NFI#2 a high quality of rediscovering was not sure as the NFI#1 implementation did not use and document all necessary measures needed. - o The training of NFI#2 teams was done and additionally a specific guidance document was developed only for rediscovering plots. The refinding and re-measurement of NFI#1 and FMP plots was a topic for a special training, which was conducted for all field teams including the instruction to the new GNSS, which was no available at the start of the field work in June. In august field teams were equipped with print outs of plot graphics of tree positions from NFI#1 and FMP plots and a special instruction for the re-finding them. - o Although we (NFI#2 trainers and teams) tried hard to rediscover the plots the success rate was moderate: Out of 173 NFI#1 plots, visited in the field so far, on 87 the plot locations of the NFI#1 plot have been found (ca. on 50%) and a remeasurement was possible. In the other cases, a new plot center was established. Under the given circumstances, this is a considerable share and shows that the training of the NFI#2 and measures taken were adequate and have been successfully applied in the field. Interim field reports have been submitted to SAEPF and described the intermediate status of field work. **Field Work 2021** - Based on the remaining tracts from 2020 a fourth work package for the fieldwork in 2021 was developed and distributed to four field teams hired by CAREC. - Field Training for the teams have been performed and a training-on-the-job by the Supervision & Control experts of CAREC. Update Q4_2021: - From September to October 2021 four field teams finished this fourth work package. - The field work in 2021 is in detail described in the separate "Field work report" – attached to this progress report.		

Task ID	Title	Activities	Implementation of activities	Completion in % (30.09.2022)	Output
			- Finally 2490 plots in 1252 NFI#2 and NFI#1 tracts have been assessed in the field in 2020 and 2021. The progress of field work has been always visible for all partners from TTFI, GOKLOU and SAF via the M6: NFI Web-GIS and Reporting Dashboard: https://unique-mis.de/mis/nfi_kyr/index.php		
3-4-2		Implement permanent field control and quality assurance. Prepare on a bi-weekly bases quality control reports during the field survey and identify for any issues necessary corrective measures in the report. Apply immediately any needed corrective measures. Compile at the end of the field data collection a field data collection quality and performance report.	- Supervision and control during the field work were regularly conducted as hot controls and cold controls by the supervision & control teams. - the S&C teams also ensured important material supply and feedback loop between project and the field teams. 96 tracts (roughly 8 %) have been controlled in the field: the results of 90 tracts were accepted; 6 tracts were not accepted and were assessed again. The **bi-weekly quality control reports** have been replaced by more frequent and continuous control by the Supervision & Control teams, who provide a protocol of each control and plausibility control of the incoming data by the data base team. Thus, a continuous supervision and control applies both for the field and the digital data by the respective teams.	**100**%	
3-4-3		Perform a quality check of data using the NFI software on bi-weekly basis and integrate the findings in the bi-weekly bases quality control reports and the final field data collection quality and performance report	- The Data Team conducted the necessary completeness and plausibility controls, following the Quality Assurance Manual and the Manual on Daily Work Procedures. - NFI Web-GIS and Reporting Dashboard contain functions for plausibility and completeness checks. Each data team member is worked in a tandem approach with the respective supervisor of the respective field team. - All reports and acts, combining data check, hot and cold control, have been signed as part of the overall quality assurance of the field work.	**100**%	

Task ID	Title	Activities		Implementation of activities	Completion in % (30.09.2022)	Output
3-5	Field data collection software for use in NFI#2	3-5-1	Configure and test the Field data collection software for use in NFI#2 using centralized database storage. Execute this task together with Task 4-3.	- UNIQUE developed a tailored data collection app for the NFI#2. This app has been installed on the tablets of the field teams and used during the field work by ULOU field worker and TTFI in the Supervision & Control teams.	**100%**	3-5 Field data collection software developed and configured **Delivered**
3-6	Training in Field data collection software to central NFI team	3-6-1	Provide training of the Field data collection software to central NFI team. Provide this training ahead of the field team training and again in the final stage in the course of the capacity building for the sustainably of the NFI process.	- 100 % Field teams, including TTFI specialists, staff have been trained in 2019, 2020 and 2021 and worked with the software during the NFI#2 field work (see also 3-7-2). - Field data collection software training for TTFI at final stage was held on 12.09.2022.	**100%**	Training material **Delivered**
3-7	Training on data collection	3-7-1	Prepare a permanent set of training sites comprising a sufficient number of tracts in all six major forest types for testing all techniques, field equipment and the mobile data collection software. Test the field data assessment methodology and equipment at the permanent training sites Train the UNIQUE-CAREC team and TTFI - NFI team, including a training on mobile data collection	Training of Trainers for the four Supervision & Control Teams has been switched to an e-learning platform as the corona lockdown did not allow to meet in a group locally, to travel into the forest nor that the planned UNIQUE experts could visit Kyrgyzstan. The 7-days training was organized between the 29.04. and 09.05.2020. Important documents describing the field work, its organization, the control work and daily work procedures are online available.	**100%**	3-7 Capacity building plan and training courses developed including training materials provided **Delivered** Training material is available for the TTFI and SAEPF partners on UNIQUE's e-learning platform Moodle.

Task ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
		3-7-2	Conduct the field training for all teams, supervisory staff and SAEFP staff. Include field work training modules on mobile data collection for all teams, supervisory staff and SAEFP staff.	On-line and Field trainings was taken over by the coordinators and the 4 Supervision & Control Teams for 12 field teams selected by CAREC and ULOU: theoretical training (between 27.05. and 30.05.2020) of field teams and relevant TTFI staff, followed by a 6 day practical training in between 09.06. and 14.06.2020 near Bishkek in the Chui region; organized by the two coordinators. It also included re-finding training of metal stakes with the purchased metal detectors. On the last day all participants had to pass an exam with fixed field work topics in form of an oral discussion with Jenish Ashyrbekov, Alexander Gradel, Kuban Matraimov, Keneshbek Usenov, Emil Ibraev and Kaparbek Bykmurzaev. The training on GNSS devices was combined and with the training in rediscovering and re-measurement of NFI#1 and FMP plots (see task 3-4): 13.08., 14.08. and 21.08.2020; training with each individual field team has been performed during the control trip no 3 between 05.09.2020 and 21.09.2020. A short GPS manual has been elaborated and provided.	**100%**	

3.4 Tasks: Objective 04. Compile, analyze and report on the survey data

Table 2: Objective 04 – Tasks, activities, outputs

Task ID	Title	Activities		Implementation of activities	Completion in % (30.09.2022)	Output
4-1	Plan and design the information system for NFI data collection and analysis	4-1-1	Directly at start of the project, a period of around 2 months will be dedicated to draft a detailed concept and design of the NFI software modules, and their specific adaptations to the needs and conditions in Kyrgyzstan. Envisaged software tools are the following modules developed by UNIQUE: field data collection app, data analysis module for the land cover classification and mapping (LCC) QGIS is in use.	In parallel to the development of the NFI software (data collection, analysis and reporting system) the **concept and design of the NFI software modules** has been developed (see task 4.2 and also Progress report IV) and recently finalized.	**100%**	4-1 Design of the information system for NFI data collection and analysis developed **Delivered**
4-2	Set up the system for NFI data collection and analysis	4-2-1	The modules will be adapted, configured and implemented step-by step, driven by the needs to use them as tool during the NFI. The NFI website, the wiki based project management portal and QGIS are the first 3 modules, followed by Field data collection app. Parallel to the first field phase 2019 the data analysis module will be configured. Each implementation cycle will include several test loops.	- Connected with the points mentioned above in 4-1-1. Different software components, such as the data base with related functions (e.g. plausibility checks) and the data analyses functions are ~~under~~ development. - **NFI Web-GIS and Reporting Dashboard** has been launched end of April 2020 and has been presented to the Supervision & Control Teams as well as the Data Team. It started with functionalities allowing to follow the performance of the field teams and allows the completeness and plausibility check of all uploaded field data. - In the background UNIQUE has completed the work on the NFI Software Module 2.2, the **NFI database** and the respective data management tools. In April all elements allowing the collection and quality assurance of the field work have been completed. - After data checks were completed the work on the data analysis has been started in January 2021. This is a combination of software development (establishing the analytical scripts) and performing the data analysis.	<u>**100%**</u>	4-2 Information system for NFI data collection and analysis in place **in place**

Task ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
				Based on the NFI software a first draft regional data analysis has been performed in June 2021 to allow an evaluation of the selection of additional tracts and plots for the Naryn region by request of GUKLOU prior to the field work in 2021.		
				-The development of the NFI software has been relaunched in July 2022 allowing the final data analysis and reporting. During summer, the focus was on the NFI software module M2.3 Data analysis and M6 NFI Web-GIS and Reporting Dashboard. The whole system for NFI data collection and analysis has been finalized and presented to the Client in September 2022.		
4-3	Field data collection app in Russian language	4-3-1	The language adaptation to localize the Field data collection app will be performed as part of the software adaptation and in parallel with task 3-5, resulting in a Russian language version.	- Completed. As described under Task 3-5-1 the field data collection app has been used during the whole field work in summer 2020 and is in use in 2021. - This Application for tablets has improved the collection of field data, eliminated office work on data entry and instantly creates a database.	100%	4-3 Localized version of Field data collection app tested and accepted
4-4	Training to SAEPF staff in data analysis	4-4-1	A 3-days training is organized on the data analysis workflow and data management before the final data analysis starts in 2020. Additional training on-the-job for the TTFI will be offered.	- A first training of the Data Team in the Quality Assurance process and data preparation for the field teams took place on 12.06.2020. - The Data Team training for the performance of data checks and completeness checks was performed 07.07. – 08.07.2020 - The first training of the so-called Data Team supporters: 04.-06.08.2020, as scheduled in the previous reporting period. - The planned main course for the TTFI team and mainly the data team supporters of ULOU's GIS unit and database unit had to be rescheduled. It was only possible after the recent approval of the new re-allocated Budget plan. The planned trainings for the TTFI team and specialists of the GIS and Data Processing Department of ULOU were held in August and September 2022: - Part 1: 08.08. -10.08.2022;05.09. -06.09.2022; 8.09.-09.09.2022; Part 2: 12.09.-13.09.2022; 16.09.2022; 19.09.-20.09.2022	100%	4-4 Training material and training course for SAEFP staff developed on NFI data management

Task ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
				- - Upon completion of the trainings, the participants gained skills in using data processing tools (Dashboard, Excel tables), the methodology for calculating Stock-Biomass-Carbon		
4-5	Allometric models for volume and biomass	4-5-1	In the first months existing allometric models for height, volume, biomass and carbon estimations per tree species are reviewed and evaluated	- An overview of all volume functions and biomass functions have been collected and gaps were identified jointly with TTFI members of the forest research institute (National Academy of Sciences). The Institute of biology of the national Academy of Sciences of the Kyrgyz Republic (NCP of forest Research) provided allometric data for some species (letter dated April 14, 2020).	**100%**	4-5 Report on tree species allometric models in Kyrgyzstan and the procedures to generate new ones provided **Delivered**
		4-5-2	In case of information gaps, support to SAEFP will be provided on how to generate new allometric models combined with the relevant instructions on developing the missing models.	- A side project proposal (UNIQUE-CAREC-Forest institute) for capacity building and explicit improvement of above ground biomass data has been prepared and was submitted in January to SAEPF. - A side project proposal (UNIQUE-CAREC-Forest institute) for improved analysis of the collected bore cores (improved age and increment determination and capacity building) has been prepared and was submitted beginning of January 2021 to SAEPF. -	**100%**	
		4-5-3	Final definition	- The compilation of allometric models have been implemented in the NFI software (data analysis module) to be used in the task data analysis. - Report on tree species allometric models in Kyrgyzstan and the procedures to generate new ones delivered to the client	**100%**	
4-6	Compilation, analysis and reports on the survey data	4-6	Along with the field survey, data are checked, compiled and analyzed; Processing and reporting is tested. After each field survey (2019, 2020) data are completely analyzed.	See description for each of the sub-tasks below!		4-6 NFI report completed **Delivered**

Task ID	Title	Activities	Implementation of activities	Completion in % (30.09.2022)	Output
		The interim analysis of the 2019 survey data will include an analysis of the anticipated variances of the full inventory and will include proposals for corrective measures if indicated. The final analysis in 2020/2021 includes a comparative analysis with NFl#1. FAO terms and definitions per the country reporting process for the Global Forest Resources Assessment 2015 (FRA 2015) are considered.			
4-6-1		Test analysis of 2019 field data (in parallel with the software performance test)	- Due to the low volume of collected data during the field test in 2019 a basic analysis of the data was conducted. - The field test data analysis results were presented in the field test report (submitted on 07.04.2020). - The allocated budget for the data analysis in 2019 is moved to the main field work in 2020.	**100%**	
4-6-2		Final data analysis after second field campaign in 2021	- In January 2021 - after data checks for the field work 2020 - were completed the work on the data analysis has been started in January 2021. - This is a combination of software development (establishing the analytical scripts) and performing the data analysis. - Based on the field data sampled in 2020 a first draft regional data analysis has been performed in June 2021 to allow an evaluation of the selection of additional tracts and plots for the Naryn region by request of GUKLOU prior to the field work in 2021. Field work 2021, update Q4_2021: - After the field work in 2021 all data are collected and ready to be analyzed after the plausibility and completeness checks are completed. - The final data analysis has been relaunched in July 2022. The consortium finalized this task and in parallel with related modules of the NFI software (see Task 4-2).	**100%**	

Task ID	Title		Activities		Implementation of activities	Completion in % (30.09.2022)	Output
4-7	Implementation of a Website to host the results (in Russian and English).	4-7-1	The NFI Website shall host the results, but also support NFI capacity building and dissemination. It will be designed with multiple NFI cycles in mind and allow for self-service of NFI results by the public.		See Task 4-7-1 a.) and b.)		4-7 Website completed
		4-7-1 a	During the first month an initial "Website – Initial" will be established and improved and updated step by step.	-	Website design and hosting have been completed together with the Forest Service.	**100%**	
				-	The technical setup of the website is completed. We are working in parallel on the content. The access to the WIKI will be embedded as well as to the NFI software – both user restricted.		
				-	The first version of the NFI Website has been launched to SAEPF and TTFI representatives on 11.06.2020.		
				-	The preliminary domain has changed and the NFI website located as sub-domain of the SAPEF website.		
		4-7-1 b	The "Website-final" includes the final NFI data and retrieval techniques (embedded Web-GIS)	-	The site contains information materials, main results, a new Forest Map of Kyrgyzstan and reporting documents.	**100%**	
				-	Link: https://nfi2-kyrgyzstan.info/tt/homepage/#after_section_1		
4-8	Implementation of project 'Wikipedia' type-site to handle internal documentation	4-8-1	A password secured project 'Wikipedia' type-site to handle internal documentation will be established based on a common server technology such as MediaWiki.	-	The WIKI system is established, content is continuously under development.	**100%**	4-8 NFI Wiki site established and open for user edits **Delivered**
				-	The project team has received a user account for the Wiki before the start of the Field Training in May 2020.		
				-	The NFI Wiki system is operable and can be used by the TTFI team.		
4-9	Data sharing policy	4-9-1	Support is provided to SAEPF formulating a data sharing policy for the NFI data and information, including a confidentiality plan to safeguard tract locations.	-	A proposal for data sharing policy is drafted and handed over to the Forest Service (formerly SAEPF).	**100%**	Data sharing policy document developed **Delivered**

3.5 Tasks: Objective 05. Build capacity to ensure NFI sustainability

Table 3: Objective 05 – Tasks, activities, outputs

Task ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
5-1	Institutional setting	5-1-1	Propose the necessary institutional setting, organizational structure and technical capability to implement NFI in Kyrgyzstan on sustainable basis.	Started, during the Kickoff workshop the first proposals for a new institutional setting allowing to implement the NFI on a sustainable base had been presented and discussed with the TTFI. Considering experiences from NFI# 1, NFI#2 and forest management planning in Kyrgyzstan, an institutional arrangement and organizational structure for conducting NFI in Kyrgyzstan on sustainable basis has been proposed.	100%	5-1 Report of proposal supplied **Delivered jointly with 5.2**
5-2	Develop an implementation plan for the third NFI cycle (to be executed on a continuous basis).	5-2-1	Develop an implementation plan for the third NFI cycle (to be executed on a continuous basis).	A plan for the implementation of the third NFI cycle, which will be carried out on a continuous basis, has been developed and proposed. The implementation plan for the 3rd cycle of the NFI can be used to prepare a concept for improving the method of forest management planning in Kyrgyzstan.	100%	5-2 Implementation plan for the third NFI cycle **Delivered jointly with 5.1**
5-3	'Cloud' database for data handling, back-up and storage	5-3-1	Implement a centralized and secure 'cloud' database for data handling, back-up and storage using standard protocols as per the e-Government initiative. It shall be located on a (virtual) server hosted within the Kyrgyz Republic, paid for by the consultant for the duration of the project.	- UNIQUE has established the IT infrastructure and hosting of the NFI website (task 4.7), the WIKI (task 4.8), and the NFI software modules. - In July 2020 the whole NFI software has been moved to a cloud space at CAIAG in Bishkek.	100%	5-3 Create cloud server environment and Field data collection/Wiki/Database **Created**

Task ID	Title	Activities		Implementation of activities	Completion in % (30.09.2022)	Output
5-4	Documentation of the procedure of setting up the cloud infrastructure	5-4-1	Document the procedure of setting it up the cloud infrastructure so that it may be established on a different virtual server. Assist in this transition prior to the completion of the project assuming suitable infrastructure is identified.	- Assistance for transition was already made in 2020 - The document for the procedure is developed and handed in.	100%	Server environment documented that it can be established by a local ICT consultant on a new server Assistance given in transition **Delivered**

3.6 Tasks: Objective 06. Communication and Outreach on NFI

Table 4: Objective 06 – Tasks, activities, outputs

Task ID	Title	Activities		Implementation of activities	Completion in % (30.09.2022)	Output
6-1	Communication strategy and work plan	6-1-1	Develop a communication strategy and work plan to ensure support and acceptance of NFI. The strategy will include a work plan with milestones and precise deliverables to operationalize the communication strategy.	- The main partner institutions and the preferred communication channels have been assessed, comments from TTFI were included in the report.	100%	6-1 Communication strategy developed **Delivered**
6-2	Implementation of a communications plan	6-2-1	Implement a communication plan. The plan includes tools such as: seminars, workshops, newsletter, web page, formal reports and training measures as agreed worth the main partners.	The communication plan has been realized. In the course of the NFI#2, various communication activities were carried out, such as seminars, trainings, development of newsletters and promotion in the media.	100%	
6-3	3 seminars and workshops	6-3-1	Hold a seminar on the principles of statistically based sampling and the methodology to be implemented.	The seminar was held on 09/26/09/27/2022 with the participation of LS (previously SAEPF) specialists who work with data processing and mapping. Skills on the distribution of sample plots according to a given accuracy were presented.	100%	

Task ID	Title		Activities	Implementation of activities	Completion in % (30.09.2022)	Output
		6-3-2	Hold a conference presenting the results of the NFI#2.	A workshop-conference for stakeholders was held on 28.09.2022/29.09.2022. The seminar was devoted to NFI results and the topics of calculating the stock of trees by allometric functions, calculating the biomass of trees for different species and calculating carbon absorption.	100%	
		6-3-3	Hold a workshop to focus on NFI application and use of NFI results for monitoring, reporting and planning.	The workshop on NFI application and use of NFI results for monitoring, reporting and planning was conducted on 30.09.2022. The training participants received new opportunities and indicators for monitoring and comparing forest results.	**100%**	
6-4	Newsletter (informational bulletins) on a quarterly basis	6-4-1	Develop and issue a newsletter (informational bulletins) on a quarterly basis on the NFI issues and deliverables. Results and challenges will be presented to the public	The newsletter# 1 and #2 and #3 and #4 and #5 have been published during the course of the project. Previously, news were sent as short emails including links to the website. Recent newsletters have been published exclusively via the NFI Website (see Task 4-7-1 a). The final newsletter #6 has been submitted to and approved by the client and will be published as soon as possible on the NFI website.	**100%**	6-4 Quarterly newsletter #1,#2,#3, #4, #5 published, #6 approved and to be published as soon as possible
6-5	Information materials	6-5-1	Prepare draft information materials and provide it to the TTFI for further dissemination and website maintenance.	- 2 booklets on NFI#2, which were provided during the kick-off workshop. - In the first quarter information material was prepared for the new website and it continued during Q2 and Q3. - During Q3 several radio interviews and TV spots have been produced about the NFI#2 work. They are available via the NFI Website. - Developed presentation materials for NFI#2, which were presented in various seminars of the FS and the IFEMP project	**100%**	
6.6	Progress report			- During the course of the NFI#2 project, 12 Progress reports were provided to the Customer,	**100%**	

Task ID	Title	Activities		Implementation of activities	Completion in % (30.09.2022)	Output
				which were agreed and approved. This report represents the final report.		

4 ANNEX – OVERVIEW OF MAIN DELIVERIES

All delivered reports and products listed here can be found in the NFI cloud folder:

▪ "…\00-NFI#2 information folder"

Only the main deliveries are highlighted in the following.

4.1 Objective 01: Review the scope of NFI and adjust the current methodology and sampling design

4.1.1 Task 1-1: 1-1 Report on information Needs Assessment & enhanced stakeholder appreciation of scope (and limitations) of NFI

The report consists of a literature review on relevant national and international policy documents and an assessment of different stakeholders that have interest in the NFI#2 results. Interest of stakeholders was ranked (1-4) topical wise. Limitations of the NFI#2 were also addressed and communicated in the report and workshop on 08.08.2019.
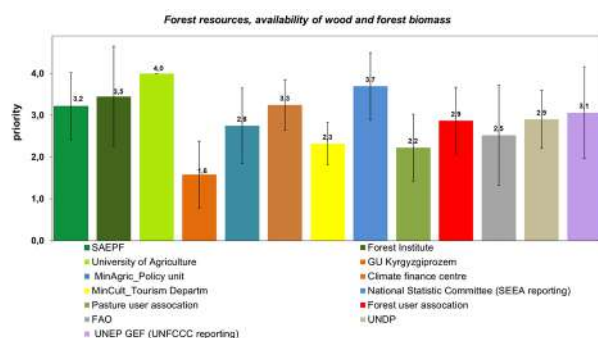

Figure 4-1: **left: example of a topical ranking of priorities (Forest resources, availability of wood and biomass) from the stakeholder survey on expected NFI results. right: Presentation of results at the Information Needs Workshop August 2019.**

▪ Document: 2019-08-08_INA report RU_Final / 2019-08-08 INA report ENG_Final; issued 24.09.2019

4.1.2   Task 1-4: Report on required sample size – the NFI design

For the final NFI design anticipated variance based on the analysis of NFI#1 results and data from FMP inventories has been revised and calculated. The report describes the final strata, tract and plot design as well as the grid spacing.
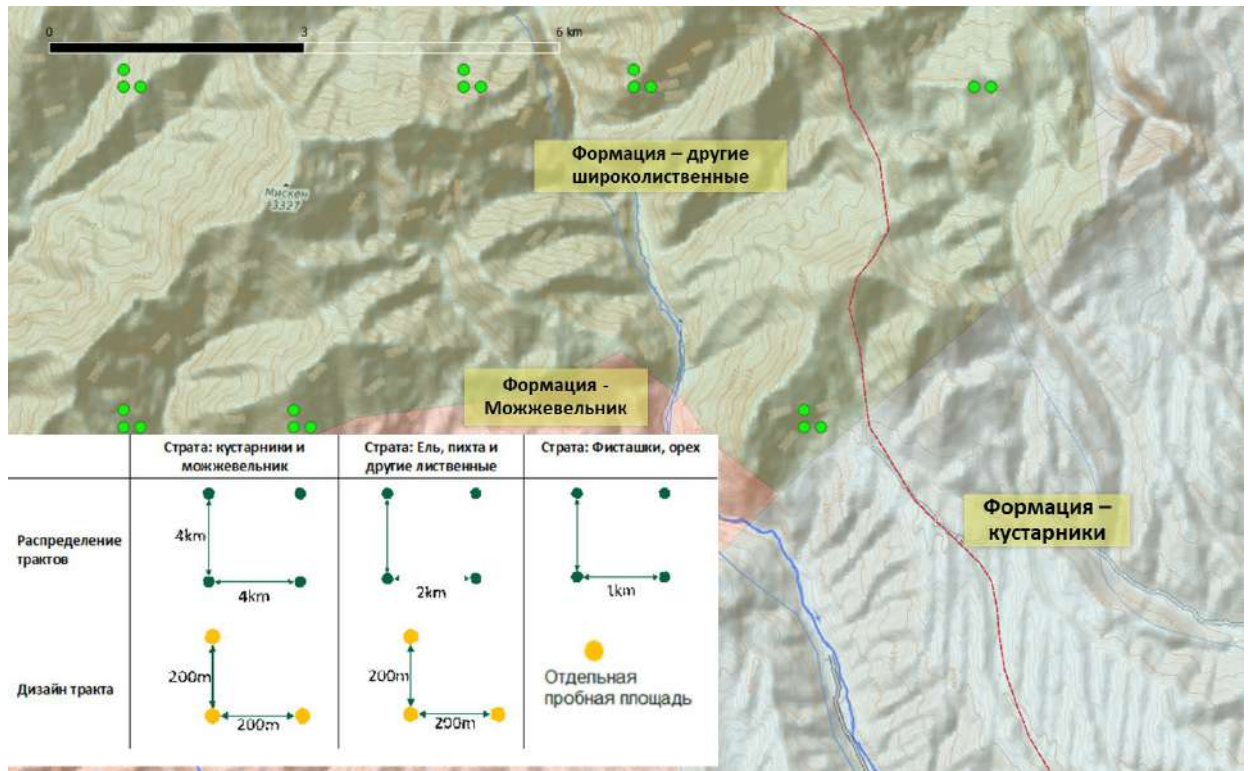

Figure 4-2: Illustration of NFI#2 strata and tract design.

- Document: 2019-09-26 D1-4 Report on required sample sizes_RUS issued 22.01.202

4.1.3　Task 1-2: Revised field methodology – Field Manual

In January 2020, the methodology for NFI#2 (NFI Field Manual) was approved by the National Academy of Sciences and the SAEPF (Forest Service).

Figure 4-2: For the field data assessment described in the Field Manual modern mobile tablets, GPS and Vertex 6 Geo-Laser devices had been foreseen and successfully used.

- ▪ Document: 2020-05-26_Field_Manual_NFI _Approved_and_Improved_RU issued 16.01.2020

4.2　Objective 02: Perform a national land cover classification

4.2.1　Task 2-1: Report on definitions and Land cover classification system

The Land Cover Classification (LCC) for the map, including the forest types for the NFI#2 was mutually discussed and decided with the Client in 2019 (see table 4-1).

Table 4-1: Approved scheme for the Land Cover Classification in the NFI#2 Kyrgyzstan.

Level 1 (basic level)	Level 2 (LC map)	Level 3 (field level)
Forest Canopy cover >10%	1 Spruce & fir forest	1 Spruce (>=60%)
		2 Fir (>=60%)
		3. Other (can be detailed further in the field manual)
	2 Juniper forest	1 Juniper turkestanica (>=60%)
		2 Juniper seravchanica (>=60%)
		3 Juniper semiglobosa (>=60%)
		Other (can be detailed futher in the field manual)
	3 Walnut forest	1 Walnut dominating (>=60%)

Level 1 (basic level)	Level 2 (LC map)	Level 3 (field level)
		Other (can be detailed further in the field manual)
	4 Pistachio forest	Pistachio forest (>=60%)
		Other (can be detailed further in the field manual)
	5 Other broadleaved and mixed forest	To be detailed further in the field manual
Other wooded land	Shrubs	To be detailed further in the field manual (needs to reflect national & international definition)
3. Other land	Other land (Bare land, glaciers, rocks etc.)	
4. Agricultural land	Agricultural land (arable land, pasture / grassland	
5 Settlement (including mines)	Villages and towns	
	Mines, quarries	
6 Inland water resources	Waterbodies (lakes, reservoirs, rivers)	

- Document: Report on definitions and Land cover classification system; 2019-12-18 LC classification scheme_v2_RU_final; 2. Список уч-в семинар НИЛ 2_30 мая 2019; 3. 2019-05-29 LC system discussion_Презентация к семинару, issued 07.02.2020

4.2.2 Task 2-3: Land and forest cover map and a forest type distribution map

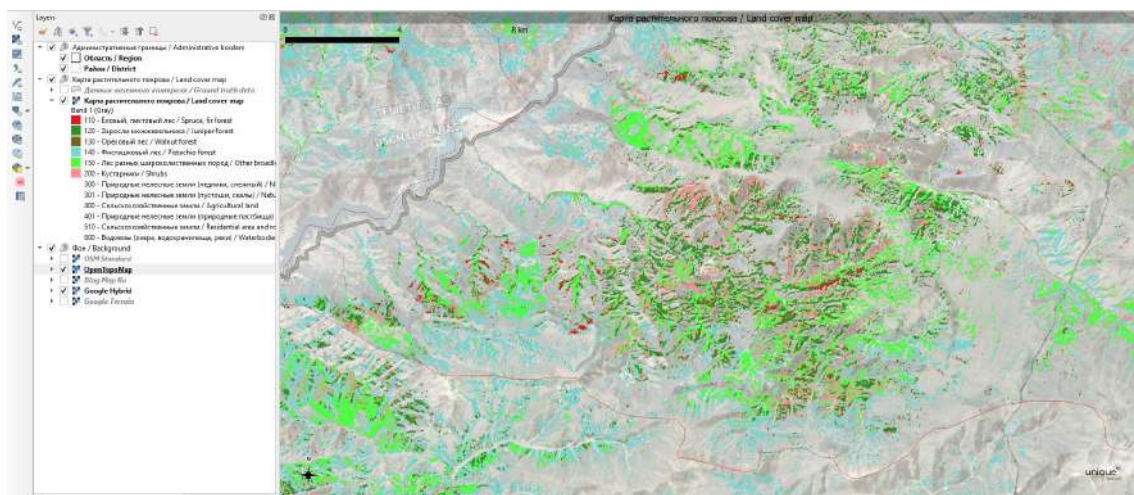Based on the LCC a respective map was developed and presented to the Client in 2022.

Figure 4-3: Zom-in to illustrate the LCC map highlighting the six main forest types defined as the main strata of the NFI#2.

- Document: As GIS layer issued and presented 25.09.202

4.3   Objective 03: Execute the NFI#2 field survey

4.3.1   Task 3-2: Work plan for the implementation of field work developed/updated

Field data was collected by field teams. Most of the field teams were led by one of the experts from the Forest Service. Each field team consisted of 4 person: 1 team Leader, 1 assistant , 1 worker and 1 driver. The data base team prepared the work packages for each filed team. Supervison & Control team supervised and field work and conducted field trainings. Data Base team checked field data timely on the server.
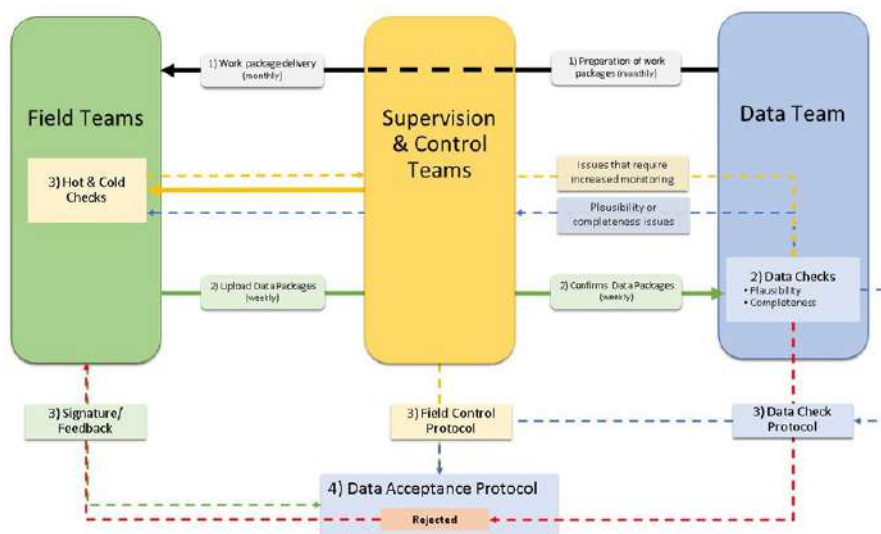

Figure 4-5: Flow chart on data collection by field teams, Supervision by the Supervision & Control Team and data control by the data base team.

- Document: Work plan for the implementation of field work issued 02.04.2020

4.3.2   Task 3-4: Field data collection completed

Field team leaders and Assistants received a theoretical training in May 2020. In June one week practical training was conducted and field work officially started in June 22nd. Field work was conducted during 2019 and 2020 field, accompanied by quality assurance reports and a final field data collection quality and performance report. 19 field teams collected an immense amount of data for the analysis. The field groups carried out measurements on 2,490 plots (or 1,252 tracts) and obtained the following main results and measured:

- 13975 trees
- 1309 stumps
- 676 fallen trees

- 37 different tree species have been identified
- 26 different types of shrubs have been identified
- 35 different types of trees have been identified for regeneration

- Document: Data base with all field data, issued September 2022

4.4 Objective 04: Compile, analyze and report on the survey data

4.4.1 Task 4-2: Information system for NFI data collection and analysis

Field data were collected via the field data collection app that integrated the module that enabled the field team to have all relevant work maps stored on their mobile devices and to improve and quicken the navigation to the tract. Along with the field data collection, data were checked, compiled and analyzed. QGIS (https://www.qgis.org) was used as for all spatial data, pre-clarification of the NFI tracts, and as platform for spatial and remote sensing (RS), for data creation (map production) and related analytics as foreseen in the ToR.

NFI Web-GIS and Reporting Dashboard has been launched end of April 2020, the NFI software module M2.3 Data analysis and M6 NFI Web-GIS and Reporting Dashboard have been completed in 2022. The whole system for NFI data collection and analysis has been presented to the Client in September 2022
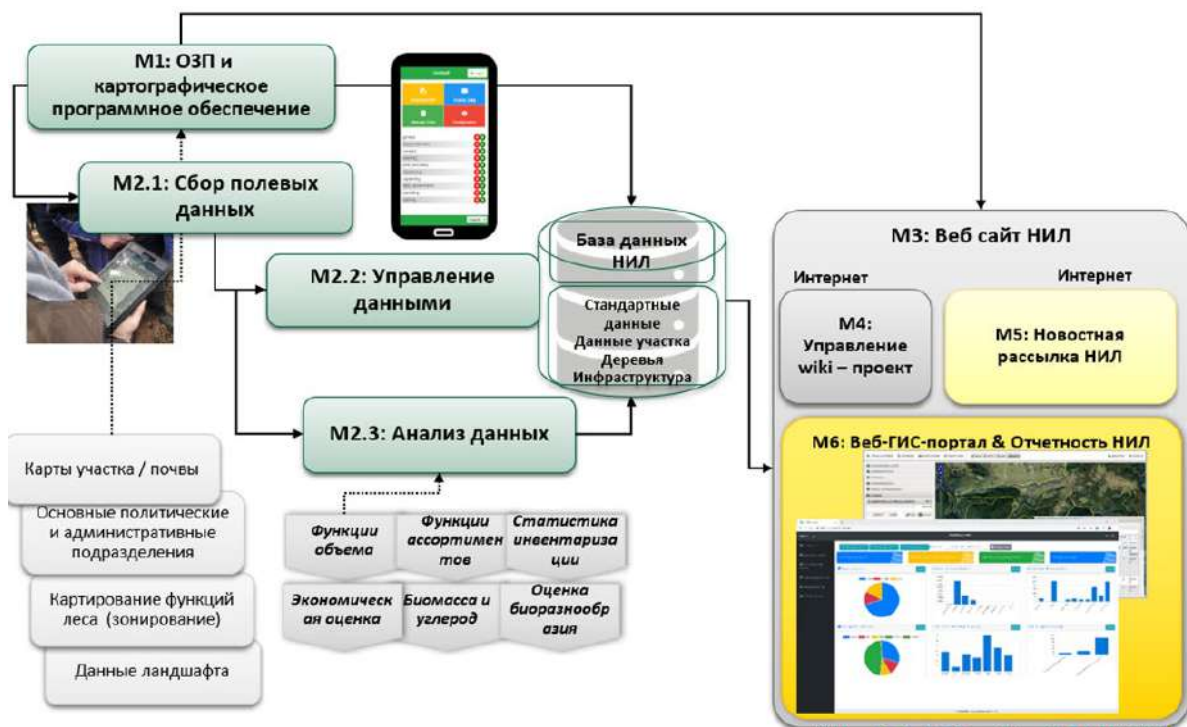

Figure: 4-6: Flow chart of Information system for NFI data collection and analysis.

- Document: Information system for NFI data collection and analysis in place

4.4.2   Task 4-5: Report on tree species allometric models

Tree species allometric functions were collected from different sources and compiled for applying at more than 70 species relevant for forests of Kyrgyzstan (see table 4-2). In cases where species specific functions were missing functions form similar species (usually same genus) were presented. Besides, the procedure on how to generate new functions was explained and provided via a research proposal on new allometric functions.

Table 4-2: A short excerpt from the summary table for availability of allometric information on volume, density and biomass expansion factor (BEF). Overal more tha 70 species have been listed in this table.

ID	Scientific species name	Volume equation	Density equation	BEF
Conifer trees				
1	*Pinus sylvestris*	Yes (derived)	Yes	Yes (derived)
2	*Picea schrenkiana*	Yes (derived) + Yes	Yes	Yes
3	*Abies semenovich*	Yes (derived)	Yes	Yes (derived)
4	*Larix sibirica*	Yes (derived) + Yes	Yes	Yes (derived)
59	J. seravchanica	Yes (derived)	Yes (derived)	Yes (derived)
60	*J. turkestanica*	Yes (derived)	Yes (derived)	Yes (derived)
61	*J. semiqlobosa*	Yes (derived)	Yes (derived)	Yes

- Document: Report on tree species allometric models in Kyrgyzstan and the procedure to generate new ones; issued July 2022

4.4.3   Task 4-6: NFI report completed

This report briefly explains the background and objectives of the NFI#2, presents the methodology, implementation and final results.

Table 4-3: A short excerpt from the total area [1000 ha] and relative area [%] of forest and shrub forest by oblast.

Oblast	Unit	Accessible forest	Accessible shrub-forest	Total: Accessible forest + fccessible shrub-forest	Total Inaccessible Forest + shrub area	Tofal forest + shrub area
Batken	[1000 ha]	43.6	5.8	49.4	71.5	121.0
	[%] of region area	36.1%	4.8%	40.9%	59.1%	100.0%
	MOE95±[%]	9.4	70.2	20.7		

- Document: Second National Forest Inventory Kyrgyzstan; issued September 2022

4.5   Objective 05: Build capacity to ensure NFI sustainability

4.5.1   Implementation plan for the third NFI cycle

Important input for the implementation based on lessons learned from NFI#1 and NFI#2 have been drawn with regard to rationale, institutional setup, staffing, capacity building, work processes and on the integration of FMP and NFI sample plots. It would be more efficient to make use of synergies and unite the NFI with FMP in the future.
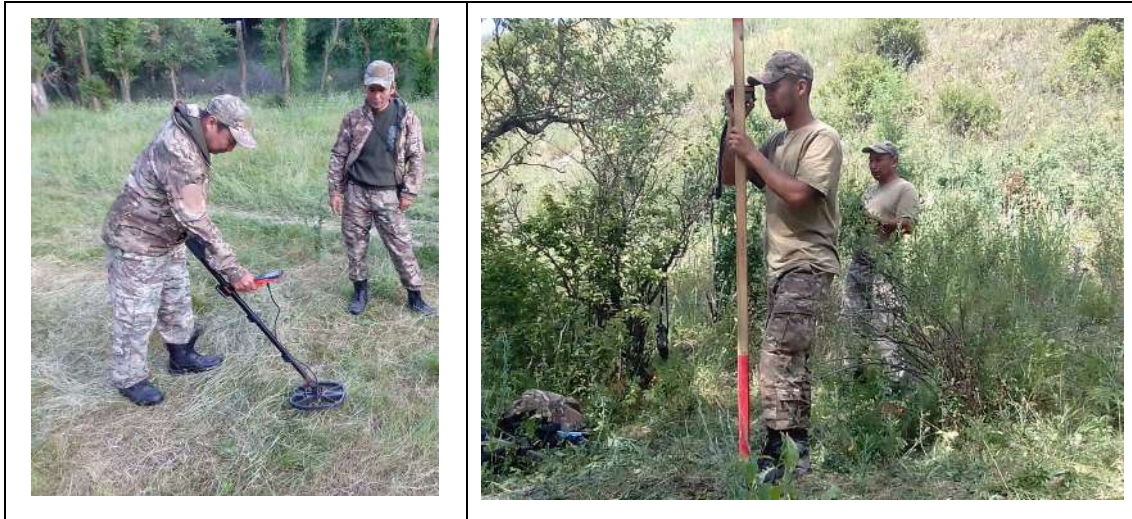

Figure 4-7: Accurate demarcations and measurements are decisive for refinding plots and trees for the NFI and FMP.

- Document: Proposal for 3rd National Forest Inventory; issued 29.09.2022

4.6   Objective 06: Communication and Outreach on NFI

4.6.1   Task 6-4: Quarterly newsletter

Newsletters have been published on a regular base. Newsletters #1,#2,#3, #4, #5 published, #6 approved and to be published as soon as possible. They are published on the NFI website.
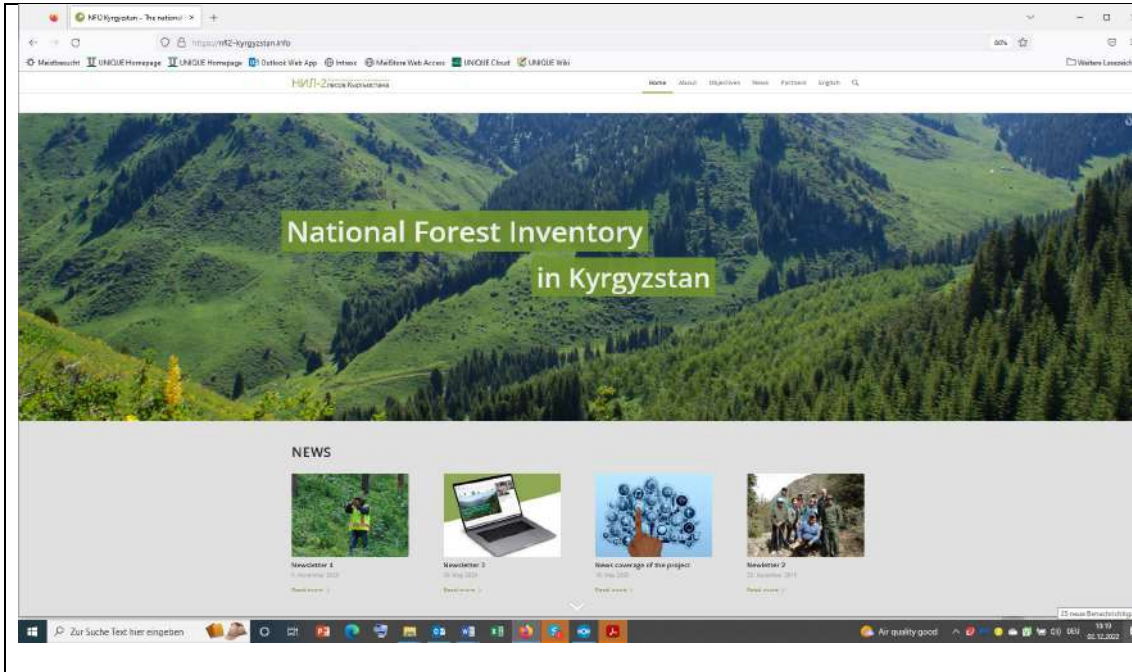
Figure 4-7: issued newsletter are published on the website.

- Documents: Newsletters #1,#2,#3, #4, #5, #6; issued 2019-2022