RECOMMENDATIONS FOR DEVELOPING

FOREST EDUCATION STRATEGY
FOR GEORGIA

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1. PREFACE

1. The scope and pace of education reforms in Georgia over the last decade are unique in the region but have not yet yielded the expected improvements in the quality of education. Much has been achieved in reorganization of financing and governance systems of education. The key reforms included: (i) decentralization of the management; (ii) adoption of a “per-student” financing mechanism at all levels of education; (iii) creation, under the umbrella of the Ministry of Education and Science, of new public legal entities responsible for ensuring the quality of reforms; (iv) adoption of new standards and outcome-based national curricula in general education along with the development of new textbooks; and (v) design of a new national assessment and examination system. These policy measures were complemented by a greater focus on educational inputs such as investments in infrastructure and technology, the physical security of schools, and in improving the tuition of foreign languages.

2. Despite the many innovations and important changes to the education sector, reforms have not yet translated into gains particularly in the quality of education. The majority of students in Georgia demonstrate below average levels of performance in reading, mathematics, and science as measured by national and international student assessments\(^1\). Another significant shortfall is a mismatch between knowledge being attained by students upon graduation and professional merits of labor force that employers seek in the job market. Along with general economic context in the country, this contributes to high rates of unemployment.

3. In 2014, the Government of Georgia produced a programmatic document called *Strategic Directives for Developing Education and Science System in Georgia*, which provides frames for further reforms be undertaken following the five main avenues of progress: (1) Improving children’s readiness for schooling; (2) achieving national goads of general education by improvement of student outcomes; (3) enhancing the role of vocational training in the development of human capital and raising enrollment through raising appeal and affordability of vocations schools; (4) enhancing role of higher education in creation of new knowledge and knowledge transfer as well as through

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\(^1\) such as PISA 2009+, TIMSS & PIRLS 2011
improving access to higher education; and (5) Strengthening research capacity for economic and social development and for enhanced quality of higher education.

4. The national Forest Education Strategy should be developed under the umbrella of Strategic Directives for Developing Education and Science System in Georgia and in harmony with the National Forest Concept For Georgia, which is another document of strategic importance adopted by the Parliament of Georgia in 2014 that defines main principles for sustainable forest management and covers the area of education and science in relation with policy objectives of forest sector.

5. Improving forest education system is of high urgency and importance, because forests are a national asset for Georgia and a valuable element of its natural capital, while forest management remains a relative weakness in generally improving public sector of Georgia and an acute lack of forestry professionals at all levels is faced in the country.

6. The Forest Education Strategy for Georgia (hereinafter – the Strategy) should define the State’s approach to building human capital for sustainable forest management within the frames of National Forest Concept and following Strategic Directives for Development of Education and Science System in Georgia. The Strategy should apply to all levels of teaching which ranges from pre-school through post-graduate, and is respective of the life-long learning system.
2. THE GOAL OF THE STRATEGY

7. For the purpose of solving existing problems in the forest education sector, increasing adequacy of learning outcomes with the market demand for forestry professionals and practitioners, and enhancing national capacity for applied research in silviculture, the goal of the Strategy should be to: (i) align institutional structure and managerial pattern of forest education facilities to the guiding principles provided in the Strategic Directives for Developing Education and Science System in Georgia and adapt it to the practical needs of the sector, (ii) ensure good match of knowledge and practical skills of graduates with qualifications of employees sought by public and private entities operating in forest sector, and (iii) establish an effective mechanism for raising public awareness of the vital functions of forests and for achieving public buy-in of responsible forest use pattern. For achieving this goal, the national system of forest education should be reorganized to balance demand and supply sides, to maintain relevance in the dynamic era of technological progress, and to get focused on both national and global challenges for sustainable forest management.
3. PROBLEMS AND CHALLENGES

8. The problems existing in the national forest education system have direct and significant implication for how forests are being managed in Georgia. The most important issues are poor knowledge base of students entering forestry schools, lack of motivation – especially among youth – to undergo forestry training and take up forestry jobs, outdated curricula and training modules, lack of modern training infrastructure and materials, and poor opportunities for on-the-job and mid-career training.

9. Fundamental changes are required to overcome the described problems and to re-establish the profession of a forester as a prestigious and demanded career path.

3.1 Poor knowledge base of enrolling students

10. This issue is important for the forest education, but it goes beyond its frames and affects quality of professional and vocation training in general. In this regard, enhancing of knowledge base of young people enrolling into forest schools may be addressed only through nation-wide enhancement of the quality of general education and subsequent improvement of learning outcomes. This is an ongoing process as the government of Georgia continues to invest into early childhood development, teaching quality in general education, curricular improvements, access and equity, etc. Having noted the general nature of less than desirable knowledge base of enrolling students, it is also true that forestry schools are not attracting higher-end customers as the youth with the best learning outcomes from general schooling does not apply for forestry training. This aspect of quality problem should be targeted within the system of national forest education.

3.2 Weak appeal of forestry training programs and schools

11. Quality of teaching, learning materials and infrastructure have significant impact on the students’ motivation to attend any school, however employment opportunities are key to young people’s choice of profession and schooling. Lack of prestigious and well-paid jobs in forest sector, as well as physically demanding nature of work performed by majority of forestry practitioners makes this cluster of career paths non-attractive for the youth. Albeit shortage in supply of forestry professionals, employment prospects for forestry school graduates are not highly optimistic, because often times the
knowledge and skills attained through the learning process do not equip them adequately for undertaking responsibilities in the offered job. Even when classroom training results in good outcome proven through quizzes and tests, the lack of hands-on practice and real-life experience prevents graduates’ smooth transfer to the labor market and integration into their jobs.

3.3 Outdated curricula and training modules

12. Georgia’s prospects to compete in the global economy will depend on its ability to produce a highly-skilled workforce. This largely depends on the relevance and quality of the education received by the students. To improve relevance of forest education, the system needs to be better aligned with the requirements of economy, and the quality of teaching and learning needs to be significantly improved. At present, both undergraduate and graduate training programs in forestry include disproportionately high number of modules on general biology, agriculture, and biotechnology which are not irrelevant but are not specific to the specialization in forestry. There is an acute lack of specialized modules that would provide training in forest administration, forest law and law enforcement, forest economics, etc. Also, modules carry little if any coverage of environmental implications for forest management. Finally, curricula are not well suited for converting knowledge acquired by students into practical skills, qualifications and competences, which leads to disconnect between workforce entering the labor market and demand of potential employers.

3.4 Insufficient technical base for teaching

13. Modern generation of students has high expectation of the learning environment and technical means applied in teaching. Youth of the digital era has its own way of accepting and processing information which means that this information has to be adequately presented and packages for them for optimal transfer of knowledge. Methods and technical means of teaching in forestry schools are by large extent lagging behind. While quality of teaching depends primarily on the qualification of teachers, it is also a function of training materials and technologies. Lack of modern libraries, laboratories, and textbooks hurts learning outcomes. So is inability of teachers to use advanced technologies and deploy them in training process. Finally, forestry training cannot achieve results without taking students to forests. Lacking access to practical training in natural forest settings; missing training plots equipped adequately for teaching and research is a significant glitch in the system which has to be addressed on priority basis.

3.5 Lack of on the job and mid-career training opportunities
14. Rapid development of science and technologies worldwide as well as intensified natural and anthropogenic transformation of ecosystems in Georgia determine a need for adapting of forest management modality and practice to current challenges and demand more frequently than ever in the past. This enhances the role of permanent education in this sector, which has been virtually non-existent for an extended period of time. Recent establishment of the Environmental Information and Education Center under the Ministry of Environment and Natural Resources Protection created space for on the job and mid-career training for professional involved in environment sector, including staff and personnel engaged in forest management, however a fully ledged mechanism of permanent education for foresters is yet to be established and operationalized.
4. MAIN PRINCIPLES OF THE STRATEGY

15. The principles of the Forest Education Strategy are in line with the relevant statements and commitments of the Strategic Directives for Developing Education and Science System in Georgia and the National Forest Concept for Georgia. The guiding principles include, but are not limited to, the following:

4.1 Adherence to the principles of sustainable development

16. Labor market in forest sector is based on use, protection and reproduction of forests which are a natural resource with economic, ecological and social value. In order to exercise forest administration and management in adherence to the internationally adopted conventional good practice and to the principles of sustainable development, the national forest education system should be designed to fit into the global context and incorporate teaching important aspects of global climate change, carbon sinks, ecosystem services, social equity and inclusion.

17. Forests have multiple functions and extraction of its timber and non-timber resources is one type of forest use which requires careful long-term planning. While resource extraction from Georgia’s forests needs regulation and confinement to zones and areas where it may be sustained over time, there is a potential for tangible increase of revenues from forest use through minimizing loss and adding value to primary produce. Both public and private entities involved in forest harvesting will need an inflow of well-trained staff and personnel knowledgeable in the design and arrangement of forest roads and other infrastructure for accessing and removing wood with minimal damage to standing trees and soil, tree felling, wood processing, use of secondary and by-products of timber production, disposal of residual organic waste, etc. Understanding environmental impacts of forest use and applying measures for their mitigation is one of the core competencies to be given to forest school graduates for paving their way to successful career paths.

18. In a number of countries, including Georgia, forest administration and use is associated with increased risks of corruption that includes illegal timber harvesting and smuggling. These malpractices cause financial loss for a county and damage to forest ecosystems. Hence forest education should make emphasis on legal aspects and train students in forest law enforcement. Given that laws and regulations change over time,
it is important to have short-term training courses for practitioners in order to bring them up-to-date on current regulatory framework occasionally during their careers, as need may be.

4.2 Education system as a supplier of demanded human resources

19. In the context of market-driven economy, the national system of forest education must be serving current real needs for the professionals of this sector, and supplying work force carrying knowledge and skills sought by employers. Because public sector has massive role in forest administration, close cooperation is required between government institutions in charge of forest management and the educational facilities of this field. Participation of private business and other stakeholders in forest management increases demand for human resources within the sector. More than in many other fields of public administration and commercial activity, forest management and use creates job opportunities especially for local population in rural areas.

20. At the same time, forest sector is under competition in the labor market with other branches of economy. Availability of human resources for forest administration and management greatly depends on the quality of jobs, their security, wages and social benefits. It is in the interest of the Government institutions mandated for forest administration to track and react to labor market dynamics, so that they can remain offering appealing jobs to well-educated and skillful fresh workforce.

21. Legal and institutional framework for forest administration is an important factor influencing demand for forestry professionals. Certain number of staff and particular set of competencies will be required to fill in positions at public and private entities depending on how forest inventory and management planning, administration, resource use, monitoring and control functions are distributed and assigned to various entities.

4.3 Building integrated forest education system

22. Forest education system should serve dual goals of raising awareness and altering public behavior in regard to forests, and supplying human resources for sustainable forest management. Therefore, the system should comprise of programs for providing basic knowledge about forests and their functions as part of the general education for children, higher education and vocation training programs for preparing forestry professionals and practitioners, and short-term training and skills acquisition programs for staff and personnel already employed in forestry sector. Additional, extracurricular activities complementing core training at general schools, especially in rural areas, is
also an excellent tool for formulating adequate attitude of children to forest and thus influencing public perception and behavioral pattern in a long run.

23. Professional forest education delivered through university, college and vocation training schools aims at supplying human resources to take up forest administration positions in public agencies, forest management jobs in both public and private institutions, and research and teaching positions in academic institutions. Either the above types of education facilities or specialized training centers should be offering mid-career training opportunities. Environmental Education and Training Center can certainly contribute and a separate, more specialized forest training center may be established to offer skill-refiner courses in forest law enforcement, forest guarding and protection, forest fire management, etc.

24. Subject to introduction of mandatory certification of all employees in the forestry sector, additional need for specialized training courses may arise. Curricula for such training will be shaped by certification criteria and will comprise of theoretical and practical training units.

4.4 Linking science and education

25. Despite deep reorganization and optimization of scientific-research facilities of the country, Georgia still lacks smoothly operating effective system of planning, financing and managing research work. Scientific institutes in forest sector declined over the past decades as subsidies shrunk and demand-supply chains did not re-establish themselves in the new setting of market-driven economy. Forest education system shall aim at revitalization of forestry science in Georgia by supplying human capital for the applied research and for transforming research outcomes into forest practices. Another pillar for building viable scientific capacity is the linkage between research and university education. Involving students in scientific work will guarantee smooth engagement of graduates into research jobs and will allow to reduce costs by optimizing the use of research facilities, laboratory equipment, and staff time.

4.5 Enhancing international integration and exchange

26. Forest education and research in Georgia will succeed through tapping into international resources and knowledge base which is essential for retaining relevance under rapid globalization. However facilitation of scholarships and other programs that take Georgian youth to foreign schools should go in parallel with the provision of adequate incentives for well-trained young professionals to return to Georgia and enter labor market in the home country. Inviting foreign professors for teaching over short to
medium term in Georgian schools, promoting online training opportunities, and
supporting participation of Georgian students and young scholars in international
conferences are also viable ways of improving quality of training and the teaching
outcomes.
5. TRANSLATING STRATEGY INTO ACTION

27. Operationalizing of the Forest Education Strategy requires development of an Action Plan and of a mechanism for monitoring and adjusting its implementation. The Action Plan has to be worked out jointly by the Ministry of Environment and Natural Resources Protection and the Ministry of Education and Science. Their consent on the content and time-table of the Action Plan is critical for achieving results and the intended outcome. The Action Plan should cover the period up to 2025 and comprise of activities towards creation of legal basis, enabling institutional environment, and provision of adequate funding mechanisms for the implementation of the Strategy.

28. The new Forest Code of Georgia will lay out authorities and responsibilities of various State institutions in the forestry sector. It will also name by-laws and regulations which need to be revised, replaced or developed to facilitate enforcement of the Forest Code. It is expected that the Forest Code rules in establishment of the system of licensing employees of the forest sector and sets up requirements for their professional qualifications. While spelling out types of forest use and status of land under forests, the Forest Code may define legal status of forest plots to be allocated for educational and research purposes. A set of specific actions shall then be formulated, scheduled and budgeted to translate these rulings into practice.

29. Ministry of Education and Science should take a lead in establishing benchmarks for learning outcomes of forest educational programs on Bachelor and Master levels, while the Ministry of Environment and Natural Resources Protection, in cooperation with the National Forest Agency, should develop staff structure for public institutions in forestry sector with differentiated requirements for the level of education (bachelor, master, doctor). Joint decisions of the two Ministries will be required to identify optimal institutional basis for the provision of mid-career short-term training program for forestry practitioners by the public sector. A set of relevant incentives should be worked out for stimulating participation of the private sector in the areas where private training facilities may have comparative advantage. Once these critical decisions are made, the Action Plan shall spell out steps for phasing in the staff licensing system, developing training modules and curricula that correspond to the established benchmarks, building material basis and human capacity to teach various programs at the identified training facilities and schools, and engaging private sector in the capacity of an interested future employer as well as of the supplier of training services.
30. Providing budget estimates and identifying sources of funding is essential for making the Action Plan realistic and implementable. It will facilitate allocation of base funding from the State budget as well as provision of donor or private support for individual actions.

31. Monitoring progress and assessing interim outcomes of the implementation of the Action Plan against pre-established set of success indicators will be critically important for allowing the Government to adjust actions based on the feedback and keep the Action Plan relevant throughout its term. The Action Plan should be perceived as a living document also because lack of baseline information in some areas may not allow to formulate all activities at once and as the information gaps close by filling in the required data, the Action Plan is likely to expand by including additional items. While the Ministry of Education and Science and the Ministry of Environment and Natural Resources will have critical role in tracking implementation of the Action Plan, involvement of NGOs and civil society is also highly recommended.
ATTACHMENTS
Attachment 1. Recommendations
for balancing demand for and supply of forestry education

In order to balance the demand and supply of education, the above mentioned factors have been analyzed and the possible scenarios have been simulated taking into account the international trends in sustainable forest administration and management. The final result of Forest education demand and supply blending must be training programs and educational curricula. A training program has to integrate the interests of all stakeholders involved in Forest sector development, including: (i) Public authorities presenting the legislative and executive power, (ii) Educational institutions, (iii) Private business, and (iv) Civil society.

The below chart demonstrates the approach on how to balance the interests of all stakeholders involved into Forest sector development:

- Public authorities with interest to administrate forest on sustainable basis;
- Public owned forest management bodies, private business with interest to use qualified human resources for effective forest management;
- Education institution with interest to graduate personnel demanded by labor market;
- Civil society with interest of all people to live in the country, where the forests successfully meet different demands of the national economy and population.
The main role in the institutional organization of forest education belongs to the national forest policy that is implemented through strategic planning, legislative and normative acts. Strategic planning establishes the goals and indicators of forest use, reproduction and protection for long-term period. Forest legislation determines the system of forest administration and management, distributes the public functions and services among the national and regional bodies. Forest legislation has also to establish the requirements to qualifications and competences of personnel involved into forest administration and management.

Public authorities are responsible for education in cooperation with employers convert the qualifications and professional competences into knowledge and skills of forest institutions graduates.

Training programs and curricula are to be the result of cooperation between educational institutions and employers, including public authorities and private business. Content of the training programs together with teaching methods must be considered as the main indicator of education quality. Training programs are implemented by education institutions through bachelor, master and doctoral curricula, as well as vocational training.

The education institutions design the curricula using modular principles to use the training programs with their profile orientation to competences of graduates.

Efficiency of training program implementation greatly depends on capacity building of teaching staff, teaching and learning resources.

Forest education system will succeed only if educational institutions be able to work out and implement the programs ensuring the high motivation of both the students and employers.
Attachment 2. Employment in Forest sector: estimation of current situation

The present institutional organization of Forest administration and management is determined by The Forest Code of Georgia (1999).

The Ministry of Environment and Natural Resources Protection of Georgia (MoENRP) represents the higher national executive power institution responsible for national forest policy and the law enforcement in forest relations. The Forest Policy Service of the MoENRP facilitates the above mentioned goal.

The executive and supervising functions within the MoENRP are performed by:
- National Forest Agency (NFA);
- Agency of Protected Areas (APA);
- Department of Environmental Supervision.

On regional level the executive functions and control are performed by:
- Local departments under the NFA (9 forestry services);
- APA territorial administrations (18 administrations)

Institutional organization of State Forest administration and management (current system)
On national level the human capacity in the central administrative apparatus of the system of MoENRP and representing Forest sector or adjacent fields is as follows:
- NFA staff – 78 employees in central apparatus;
- Environment Information and Education Center of MoENRP, staff – 21 employees (currently 17 positions occupied);
- APA staff – 35 employees in central apparatus;
- Forest Policy Department staff – 5 employees.

Around 32% of Forest sector employees in NFA central apparatus are the graduates of HEIs with professional qualification “Forestry” or adjacent specializations.

On regional level the forest management is provided by regional staff including managers and specialists of:
- 9 regional Forestry services of NFA with 786 employees (including 569 Forest guards)
- 17 territorial administrations of APA (449 employees).

All positions in central as well as regional apparatus are filled on the basis of open competition.

According to GIZ report “Capacity Development in Forestry Sector of Georgia” (2014), the personnel of regional Forestry Services has quiet good educational Forestry background (the lowest value - 63% and the highest - 100%), while speaking of forest guards and rangers, it is noteworthy that only 27% of employees possess forest educational background (with lowest value - 17% and the highest - 49%).

The responsibilities of regional forest administration are not regulated by special normative acts establishing the qualitative standards or regulations which determine the effective decision-making in the field of forest use, protection, conservation and restoration including controlling functions. The documents of this type, which in the governmental practice are called “administrative regulations”, provide the new system of personnel supply for regional service based on:
- The organization and conduction of fair open competition procedures to fill the positions of managers and specialists;
- The certification of managers and specialists according to their competencies.

There are no regulatory documents on regional level defining and proving the mentioned-above activities on human resource management.
The upskilling or other qualification-raising activities for the managers and specialists of State governmental structures lacks the regular basis due to organization and/or financial causes. No such activities have been performed for the period of 2004 - 2012.

In 2013 MoENRP delegated the responsibility on creating the system of personnel training on newly established Environmental Information and Education Center. One of the main goals of the EIEC is to contribute to sustainable development of environmental education within the MoENPR competencies through:

- Raising public awareness by preparing and publishing materials and organizing events on environmental topics;
- Organizing trainings and qualification-raising activities for different target groups (State employees (judges, journalists, teachers), students, private sector representatives, etc.);
- Contributing in including environmental topics into various educational and certification programs;
- Organizing conferences, seminars, workshops and competitions on environmental topics;
- Organizing traineeship and internship for the MoENPR departments and services;
- Organizing thematic courses, basic training programs and qualification-raising activities for retraining of MoENPR department and service employees;
- Organizing grant projects;
- Participating in various activities in selecting and managing human resources;
- Elaborating legislative and normative acts within the competencies and presenting them to the MoENPR in accordance with established procedures.

Different trainings for various target groups including the MoENRP personnel have been organized and held by EIEC for the period 2013-2014, which is a positive sign in improving situation with staff re-training.

Regarding the specialists involved in forest use and reproduction within the licensing agreements:

- There is no available data on the professional qualification of the mentioned staff.

- There are no legal requirements for the professional qualifications of personnel involved in field works, established by the professional standards, necessary for human resource management as well as for conducting educational trainings and qualification raising activities.
- There is no public program of small business development in the field of forest business based on contracting organization of logging and Forestry operations.

- At present there is no any kind of State support in human capacity development for private sector business regarding financial, as well as organizational aspects.
Attachment 3. Recommendations for developing labor market and human resources in forest sector

In order to develop labor market and human resources in Forest sector, directly reflecting on Forest education, it is recommended that:

1. The MoENPR on the basis of Statements of National Forest Concept, the Forest Code, and other documents of strategic planning on national and regional level elaborates the long-term program for developing the human capacity for Forest sector establishing:
   a) The dates and terms for the period up to 2025;
   b) Demand on human resources for forest administration structures on national and regional level with determining the professional qualifications for two scenarios of institutional organization of forest administration and management.

The demand on human capacity is to be defined coming from two possible scenarios of public sector development:
   - The scenario in which logging and the forest operations are performed by private business on base of license agreement.
   - The scenario in which forest management is carried out by public owned enterprises, which delegate the logging and forest operations to contractors (small business). The contracting system of logging and Forestry operations is widely used in all European countries. It makes possible to reduce the unemployment in rural areas, increase the people income, and integrate the Forestry and agriculture.

The dynamics in number of workers involved in State sector should become the foundation for forming the State demand on human resources which will be transferred to the Ministry of Education and Science (MoES) with consecutive financing of educational institutions.

The special place in human capacity building should be occupied by “green economy” with establishing innovative qualifications, providing the creation and development of innovative enterprises in Forest sector.

2. The MoENPR elaborates normative documents (administrative regulations) defining the rules for conducting public functions and providing public services by managers and specialists of forest management structures on national and regional level. As according to international practice, administrative regulations should establish:
- Legislative and normative basis to perform public functions and provide public services,
- Administrative actions, performed by the personnel of administration organs for implementing planned activities in accordance with the requirements of Forest Law;
- The rules of cooperation between Forest bodies with adjacent public services (Ministry of Internal Affairs, Prosecutor's office, Courts, the organs of financial control etc.) and public organizations;
- The rules to prepare and present reports on the achieved results;
- The labor consumption in executing administrative actions depending on the scale and structure of forest operations;
- The demands for employees’ qualifications regarding competences required for conducting public functions.

These requirements directly define the demand on training of human resources of corresponding specialties.

The Forest administration mechanism with implementing administrative regulations should be established by Forest Law.

Administrative regulations must be elaborated in compliance with the present planned forest system. The number of administrative regulations must be determined according to the obligations of national and regional forest management organs according to Forest Law.

3. The MoENPR together with MoES elaborates and approves the professional standards for various specialties of Forest management system (industrial and silvicultural operations). The professional standards determine the requirements for professional qualification regarding the competences.

4. The Environmental Information and Education Center as the structure under the MoENPR:
   - Elaborates the system of knowledge and skills certification by means of testing;
   - Works out the modular programs of retraining taking into account the results of certification;
   - Establishes the system for accreditation and personal development.

The present recommendations in case of their realization would provide the legislative, organizational and information foundation for forming the demand on human potential.

**Attachment 4. Training Programs – current situation and future outlook**

The training of human resources for Forest sector occurs through:
Higher academic education
- Vocational education and training (level I-V)

The reforms by decentralization of educational system and liberalization of educational programs which have been started in 2004 led to a greater freedom of educational institutions in designing educational curricula. This makes possible to train specialists with a narrow specialization (e.g. bachelors/masters, vocational programs in taxation, bachelors/masters in forest landscape design, etc.).

In December 2010 National Qualifications Framework (NQF) was approved by a decree N120/N of the Minister of Education and Science of Georgia. The document includes all the qualifications for all levels of general, vocational and higher education competences existing in Georgia. The NQF defines what type of knowledge, skills and values an individual should have in order to receive a certifying document of completion at a corresponding level – School Certificate (Attestat), Vocational Diploma, Diploma.

Within the List of Directions, Field/Specialties, Sub-fields/Specializations and Professional Specializations (annex 4 to the main NQF document) the Forestry field is considered within the Agricultural direction and includes the subfields/specialization in Forestry, Forest Ecology, Hunting, and Forest Husbandry, and professional specializations of Forester (woodcutter, taxator), Forest ranger, Forest husbandry technician, Forest pathologist-technician, and Hunter.

The educational program should be accredited (the service provided by National Center for Educational Quality Enhancement) according to the accreditation standards defining:
- The goals of an educational program, learning outcomes and the compatibility of the program with them;
- Methodology and organization of teaching, adequacy of the assessment of program mastering;
- Student performance, individual work with students;
- Provision with teaching resources;
- Potential to further enhancement of the educational quality.

The structure and content of academic educational programs is regulated through National Qualifications Framework defining minimal competences that a holder of a corresponding qualification (bachelor, master, PhD) is expected to possess (qualifications descriptor) and benchmarks which define competences of educational programs with regard to specific directions or field/specialization considering appropriate levels of education.
The structure of educational programs should be in compliance with the University regulations defining the guidelines for program basic content and credit distribution, and the procedures of program adoption.

At present academic education in Forestry is provided by 7 universities through bachelor, master, and doctoral programs. These are:

- Agricultural University of Georgia
- Technical University of Georgia
- Ilia State University
- Gori Sukhishvili University
- Iakob Gogebashvili Telavi State University
- Batumi Shota Rustaveli State University
- St.Tbel Abuseridze Educational University of Georgian Patriarchy

HEIs providing academic and vocational Forest education

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<th>NAME OF INSTITUTION</th>
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<th>LEVEL</th>
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<td>Faculty of Agrarian Sciences</td>
<td>Forestry</td>
<td>Bachelor</td>
<td>Bachelor in Forestry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forester (woodcutter, taxator)</td>
<td>Vocational (Level IV, V) 60 ECTS</td>
<td>Forester (woodcutter) (Level IV, Level V)</td>
</tr>
<tr>
<td>Batumi Shota Rustaveli State University (BSU)</td>
<td>Technological Faculty</td>
<td>Forestry</td>
<td>Bachelor</td>
<td>Bachelor in Agricultural Sciences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forestry</td>
<td>Master</td>
<td>Master in Agricultural Sciences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forestry</td>
<td>Vocational (III) 45 ECTS</td>
<td>Forester (woodcutter, appraiser)</td>
</tr>
<tr>
<td>St.Tbel Abuseridze Educational University of Georgian Patriarchy (TBELI)</td>
<td>Faculty of Agricultural Sciences</td>
<td>Agricultural Sciences (subprogram – Forestry (სატყეო მეურნეობა))</td>
<td>Bachelor</td>
<td>BSc in Agricultural Sciences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agricultural Sciences (subprogram – Forestry (სატყეო მეურნეობა))</td>
<td>Master</td>
<td>MSc in Agrarian Sciences</td>
</tr>
</tbody>
</table>

The vocational education and training of levels I-III is also provided by vocational colleges (Professional College “Horizon”, Ozurgeti (Level III), and Javakhishvili Borjomi Private School (Levels I-III)). All programs train students for professional specialization “Forester (woodcutter, taxator)”.
For period 2010-2014 total number of bachelor Forestry programs graduates amounted more than 295 (does not include TESAU graduates number for the mentioned period). At the same period of time (2010-2014) 29 graduates were awarded the Master degree after completing course in Forestry and only 1 PhD degree has been awarded at Agricultural University of Georgia (Fig.3).

Number of Forestry program graduates for the period 2010-2014

Current number of students using bachelor Forestry programs amounts to 231, from which 165 are the students of GTU. This comparatively high number of students on currently running bachelor Forestry programs can be explained by the 2013-2014 governmental initiative to fully cover the educational fees for students on a number of programs, including Forestry program at GTU.

At present there are 4 master programs implemented by 4 universities with overall number of students equal to 48 from which 35 are the students of Master in Life Science at Ilia State University (most of them taking the specialized courses in Forestry, while two students are to be awarded the complementary degrees in Forestry (MSc) and Sustainable Forest Management (MBA)). 7 students are currently seeking for PhD degree in Forestry.
Number of students in currently ongoing programs (2014)

The analyses of curricula content based on the available data have shown that all bachelor programs provide students with general knowledge and skills in the field of Forestry without emphasis on narrow specialization. The curricula include various disciplines ranging from classic courses of Exact and Natural sciences (Mathematics, Chemistry, Computer Sciences, etc), and Life Sciences (Biology, Environmental Sciences) to the specific courses in Forestry and Agriculture. It is noteworthy that the programs offered by different institutions have quite a big similarity in their content. The master courses are more diverse, providing students with courses oriented on narrow specialization, though in some cases and due to reasons of economy of resources the Forestry courses are substituted by courses shared with other Master programs that less correspond to the specificity of the program.

In order to demonstrate the share of Forestry specialization courses in the whole educational program and to compare the credit load of Forestry courses, the latter have been grouped into three modules and the percentage of each module credit load has been calculated in the program total ECTS (240 ECTS and 120 ECTS for Bachelor and Master programs respectively). The analyzed data is presented below.
Curricula content analysis for currently ongoing Forestry Bachelor and Master programs. 1 - Forestry /Silviculture Module; 2 - Forest Administration, Forest Law and Forest Economics Module; 3 - Environmental Module; 4 - Other. The presented data does not include information on whether the course is compulsory or optional.

As it is seen from the Fig.5 almost all Bachelor programs and Master Program at Agricultural University lack the courses in Forest Administration, Forest Law and Forest Economics, thus not providing the necessary knowledge and skills for students who can be employed in forest administration structures. Some programs lack the emphasis on environmental protection issues. The BSc and MSc programs at Georgian Technical University are oriented mostly towards industrial use of timber and non-timber forests, technical issues in conducting forest operations with the appropriate equipment for laboratory work, at the same time they don’t stress enough the environmental topics in use of Forest resources.

As to the international cooperation in the field, one of the best examples is the launching of Master Program in Life Sciences at Ilia State University, developed in the partnership with DAAD, GIZ, EU, and MoENPR of Georgia. German specialists also provide the coordination of the program. The Program includes Master courses in Natural and Forest Resources and Biodiversity (MSc) and Sustainable Natural and Forest Resources Management (MBA). Two graduates of the master program are now employed at NFA. It
is also noteworthy that Telavi State University was one of the beneficiaries of EU Funded Tempus project **Cibeles** (2010-2013) which was aimed to improve the standards of the teaching curricula of Forestry on the Bachelor level in accordance with the Bologna standards.

Around 60 professors (full, associate, assistant) are involved in teaching process on Forestry Bachelor and Master programs. The majority of academic staff involved in teaching activities possesses PhD degree. It is a frequent case when the academic staff of one institution is also involved in teaching activities of Forestry programs in other institutions as invited lecturers. There is an experience of involving foreign specialists to teaching and learning process (e.g. at Agruni, Iliauni). On the other hand, the Georgian academic personnel are taking part in various exchange programs.

The material technical facilities of Universities presented by specialized educational scientific laboratories, scientific equipment, computers and digital facilities in most cases are less than satisfactory, despite the fact that it hasn’t been stressed in full scale in the self-assessment questionnaire data filled by representatives of administrative and academic staff of HEIs, or during interviews.

The universities do not possess experimental forest plots equipped with special technique for undertaking field works and practical training where students can gain the practical skills and knowledge in performing forest operations. The field work usually occurs in nearby forest areas with or without the permission and support of regional departments of NFA and APA.

In most cases there are agreements and cooperation memoranda signed between the Universities and potential employer public organizations and private companies for conducting student professional practice. Though despite the numerous agreements of cooperation between Universities and employers, the education-industry links are still poor. The potential employers are not involved in the process of curriculum development, thus the knowledge and practical skills of graduates often do not meet the requirements of labor market.

The teaching and learning process is provided with the manuals, textbooks and special literature including the textbooks in Georgian (translations and textbooks of Georgian authors). Though in some cases there is a lack of teaching and learning resources of recent years and the basic Forestry disciplines are taught with out of date textbooks named as the main literature source. There is a practice, when students themselves are involved in translating textbooks into Georgian (Iliauni).
The international experience proves that one of the compulsory components of student professional training is their involvement in research-scientific activities, which brings possibilities of using differentiated approaches in organizing the educational process by taking into account the individual demands of students. Currently the situation regarding of involving students in research is less than satisfactory, due to the poor material and technical facilities for conducting the experimental work.

There is an experience of involving students and academic staff in exchange programs. The foreign specialists are invited to deliver lectures at Master Program at Iliauini State University. As the program is bilingual, and the invited German lecturers provide their lectures in English the problem of students’ English knowledge arises. There are no strong requirements regarding English knowledge for students applying for the program, which leads to difficulties in understanding of the material, while conducting the education process in English.

In order to assess the students’ motivation in choosing Forestry professions a survey was conducted among Bsc and MSc Forestry program students of Georgian Agrarian University, Georgian Technical University, and Gori Sukhishvili University (96 students in total).

The students’ survey showed that the main motivation when choosing the forest education is the interest in Nature, Environmental sciences or Forestry. Another popular answer was the perspective of employment. At the same time, the students evaluate the possibility of employment in the country as quite low, though with perspective improvement. One of the strongest motivations appears to be study fees and low competition when submitting for the course.

For the recent years there have been no regular planned supported actions for HEIs in professional orientation of school graduates. Though recently the Government of Georgia took a decision to fully cover the students’ fees for taking Bachelor programs for the years 2014-2015 running at State Universities in 17 disciplines of 8 directions which were declared the State priority, among them the Agrarian Sciences, including Forestry programs. Under this initiative the BSc Forestry program at the GTU has been fully funded, which has been immediately reflected in significantly increased number of students applying for the program.

There are no subject benchmarks established and adopted for Forestry programs on bachelor and master levels.
As for occupational standards for vocational training, which generally define minimal credit value and mandatory competences in terms of knowledge, skills and values for each level of vocational education, only the professional standards for vocational training in specialization of “Forester” have been approved.

There is no available data on how many vocational program graduates exactly have been employed in Forest sector, though the tendency shows that the graduates of vocational training programs are often employed in private sector companies. Despite this, the latter are not participating in financing of the vocational educational programs.
Annex 5. Recommendations for improving forest education system

The basis for creation and functioning of effective system in forest education is its recognition as a driving force in the strategy of innovative development of Forest sector of the country.

Coming from the international obligations of Georgia in Forest sustainable management, preservation of genetic resources and biodiversity, and agreements on climate change, the legislative and executive institutions will adopt the normative acts, defining:

- Strategic goals of Forest sector development, and the mechanisms to reach the goals (conception, strategy, long-term programs),
- Legislative base of Forest relations (Forest Law).

They should also establish the demand on human resources including the overall number of employees, as well as the qualifications for the whole planned period in accordance with the stages of reforms in institutional organization of Forest governance system.

In accordance with these goals and taking into account the lessons learned from the analysis of current situation, the strategy of Forest education is to be based on the recommendations as follows below.

Development of higher forest education

1. List of Bachelor and Master Forestry program profiles are to be recommended and promoted (including stimulating measures like financial support) by MoES in cooperation with MoENRP, in accordance with the labor market demands.

2. Changes are to be introduced to the National Qualification Framework for enlarging the list of specializations and professional qualifications in Forestry in order to facilitate the development of flexible programs meeting the labor market needs. This is due to the creation of new job (qualification) opportunities in Forest administration and management system as a result of planned structural and institutional reforms and the implementation of innovative technologies of green economy.

3. The content of Bachelor Forestry curricula should be improved by increasing the share of Forestry related courses in Forest administration, Forest legislation and law
enforcement, Forest innovative technologies (green economy), entrepreneurship, public relations, Forestry economics and financing, health safety issues, etc.

4. Priority profiles for Master programs shall reflect the narrow specialization, like Master program in Forest Administration, Master program in Forest Management, Master program in Forest Inventory, etc.

5. The private-public partnership in forest education is to cover the following fields of cooperation:
   - Active participation of public authorities and private enterprises in development of bespoke collaborative degree programs
   - Target teaching in accordance with the agreement between enterprise and educational institution obliged to provide the graduates with required knowledge and skills
   - In-company retraining (upskilling) must be implemented on regular basis with public financial support. The programs of retraining must be modulated and flexible enough to address diverse groups of professionals on the basis of knowledge and skill certification

6. HEIs are to be granted with free use of forest plots equipped with teaching facilities in order to strengthen practical component of Bachelor and Master Forestry programs and provide the conditions for scientific research.

7. HEIs have to work out the long-term plans of Forest education development with priority to improve the in-house capacity of academic staff by implementing the doctoral programs.

**Development of vocational forest education**

The development of vocational education and training of highly qualified forest workers must be oriented on labor market demands in the area of forest industrial management.

1. Vocational Forestry education is to be oriented to graduate:
   - Personnel for performing logging and silvicultural operations on the basis of public-private partnership including the one on the contract basis
   - Specialists for innovative technologies of green economy with maximal involvement of human resources in rural area
   - Specialists for touristic business based on forest recreation.

2. Institutions of vocational forest education are to be in close cooperation with universities implementing the academic Forestry and environmental programs.
Youth orientation and motivation

1. Additional school education has to orient youth to choose Forestry and environmental professions. The forms and methods of extracurricular education must be diverse and approved by school administration.

2. Environmental and Forestry teaching programs are to be practically oriented providing the schoolchildren with possibilities to actively participate in Forestry operations.

3. Special manuals providing to schoolchildren the knowledge and skills in practical Forestry and nature protection shall be prepared and published.

4. Teacher’s guidelines for incorporating Forestry and environmental topics into extracurricular, as well as the general school courses (Biology, Geography, History of Georgia, etc.) are to be prepared. The recent example of such activity is the publishing of textbook “Environmental Education at Schools, Teacher’s book for I-IX classes” (2014) with the support of MoES, MoENPR, Ministry of Foreign Affairs of Finland, and UNDP.

5. Participation of schoolchildren in special children national or international competitions in Forestry and nature protection is encouraged.

It is recommended to maximally use the experience of organizations involved in extracurricular school education in Forestry and environmental issues in West Europe countries (Scandinavian and Baltic countries).

It is also important to establish contacts with HEIs, providing the educational programs in Forestry and Environmental issues, including the active involvement of HEIs academic staff in motivating school children towards choosing Forestry and environmental specialization.
## Appendix 1. HEIs self-assessment Questionnaire data

<table>
<thead>
<tr>
<th>Name of Institution</th>
<th>Graduates’ employment rate</th>
<th>Material-technical resources</th>
<th>Academic personnel</th>
<th>Teaching and learning materials</th>
<th>Laboratory facilities</th>
<th>Field practice as the part of curriculum</th>
<th>Extracurricular activities</th>
<th>Involvement in international projects/programs</th>
<th>Forest plot existence</th>
<th>University-employers links</th>
<th>Scientific research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agruni</td>
<td>n/a</td>
<td>good</td>
<td>Highly qualified; prof, doctors – majority (12 full prof + 12 associate prof + 6 assist prof)</td>
<td>Available, including e-resources</td>
<td>good</td>
<td>present</td>
<td>present</td>
<td>RERAM №609 57 3 FP 7-INCD-20199. Management of Sustainable Forest Biodiversity in South Caucasus – International Field School (from Sept 22 to Oct 1, 2014)</td>
<td>Dendrology park</td>
<td>Memoranda, agreements signed</td>
<td>good</td>
</tr>
<tr>
<td>GTU</td>
<td>n/a</td>
<td>good</td>
<td>Highly qualified; prof, doctors – majority (14)</td>
<td>available</td>
<td>good</td>
<td>present</td>
<td>-</td>
<td>Memoranda of cooperation signed with Universities in Poland and Belarus</td>
<td>no</td>
<td>Memoranda, agreements signed</td>
<td>good</td>
</tr>
<tr>
<td>Iliauni</td>
<td>2 last-year graduates employed at Forest Policy Department</td>
<td>good</td>
<td>Highly qualified; available*</td>
<td>good</td>
<td>present</td>
<td>-</td>
<td>Master program developed with partners from Germany (DAAD, GIZ)</td>
<td>no</td>
<td>Memoranda, agreements signed</td>
<td>good</td>
<td></td>
</tr>
<tr>
<td>SU</td>
<td>n/a</td>
<td>good</td>
<td>Highly qualified; prof, available</td>
<td>good</td>
<td>present</td>
<td>present</td>
<td>Memorandum signed with the University of Texas</td>
<td>Mem</td>
<td>Memoranda, agreements signed, links</td>
<td>satisfactory</td>
<td></td>
</tr>
</tbody>
</table>

* indicates that the data is not available.
<table>
<thead>
<tr>
<th>Institution</th>
<th>Availability</th>
<th>Staff Quality</th>
<th>Collaboration</th>
<th>Collaborative Projects</th>
<th>Industry Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>TESAU</td>
<td>n/a</td>
<td>good</td>
<td>available</td>
<td>good</td>
<td>present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High qualified; prof, doctors – (10 prof +13 PhD) majority** * (none on vocational pr.)</td>
<td>EU funded Tempus Project Cibeles (concluded in October, 2013)</td>
<td>no</td>
<td>Memoranda, agreements signed, links with industry</td>
</tr>
<tr>
<td>BSU</td>
<td>n/a</td>
<td>good</td>
<td>available</td>
<td>good</td>
<td>present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High qualified staff</td>
<td>Forest International Day (planting trees, Kobuleti protected area); Ecotour; International Day of Tree Plantation (planting trees) International Summer School on Ecological Problems</td>
<td>-</td>
<td>no</td>
</tr>
<tr>
<td>Tbeli</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** the self-assessment results not always correspond to the assessment of the consultant
Appendix 2. Students’ Questionnaire

In total, 96 BSc program students were questioned. The questionnaire includes the following questions:

1. *What is your motivation for choosing forest profession?*

2. *Are you satisfied with educational process?*

3. *In your opinion, what are employment opportunities for forest program graduates in Georgia and abroad?*

Table 3. Student Questionnaire data

<table>
<thead>
<tr>
<th>University</th>
<th>Answers to question 1 from more to less popular (number of students)</th>
<th>Answers to question 2 from more to less popular (number of students)</th>
<th>Answers to question 3 from more to less popular (number of students)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRUNI (4 students)</td>
<td>The wish to work as a forest ranger, “masculine” profession (1)</td>
<td>More or less (1)</td>
<td>Growing perspective to be employed in Georgia (1)</td>
</tr>
<tr>
<td></td>
<td>Low competition (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The wish to work in landscape design (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SU (6 Students)</td>
<td>Interest in Nature (2)</td>
<td>Yes (6)</td>
<td>The employment perspective in Georgia is high due to the lack of professionals in the field (2)</td>
</tr>
<tr>
<td></td>
<td>Interest in Forestry (2)</td>
<td></td>
<td>The employment perspective is high in Georgia as well as abroad (2)</td>
</tr>
<tr>
<td></td>
<td>Not sure (1)</td>
<td></td>
<td>Better abroad than in Georgia (1)</td>
</tr>
<tr>
<td></td>
<td>The wish to contribute to forest protection in Georgia (1)</td>
<td></td>
<td>The employment perspective in Georgia is low due to the weak</td>
</tr>
<tr>
<td>GTU (86 students)</td>
<td>Interest in Nature (Flora and Fauna; Environmental Sciences) (34)</td>
<td>Yes (54)</td>
<td>High in Georgia (29)</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------------------------------</td>
<td>---------</td>
<td>---------------------</td>
</tr>
<tr>
<td></td>
<td>Interest in Forestry (17)</td>
<td>No (14)</td>
<td>The employment perspective in Georgia is high due to the lack of professionals in the field (15)</td>
</tr>
<tr>
<td></td>
<td>State funding of study, attractive study fees (12)</td>
<td>More or less (12)</td>
<td>More or less good employment opportunities in Georgia (12)</td>
</tr>
<tr>
<td></td>
<td>Employment perspective (8)</td>
<td>Not sure (1)</td>
<td>Better abroad than in Georgia (7)</td>
</tr>
<tr>
<td></td>
<td>Nature Protection; to contribute to improvement of ecological situation in the country (9)</td>
<td></td>
<td>Low in Georgia (6)</td>
</tr>
<tr>
<td></td>
<td>Difficult situation in the field in home region (3)</td>
<td></td>
<td>Don’t know (5)</td>
</tr>
<tr>
<td></td>
<td>The best Faculty from those offering free of charge study (2)</td>
<td></td>
<td>Better in Georgia than abroad (4)</td>
</tr>
<tr>
<td></td>
<td>High demand on Forest professionals (2)</td>
<td></td>
<td>The employment perspective is high in Georgia as well as abroad (2)</td>
</tr>
<tr>
<td></td>
<td>By accident (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The wish to be close to nature (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family tradition (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>To combat illegal logging (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interest in Hunting (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>By friend’s advice (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not to serve in the army (1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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