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**ECE/FAO/Forest Europe Guidelines on the Promotion of  
Green Jobs in Forestry**

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## CONTENTS

EXECUTIVE SUMMARY .....	3
ACKNOWLEDGEMENTS .....	8
BACKGROUND .....	9
<b>1. INTRODUCTION .....</b>	<b>11</b>
1.1. DEFINITIONS .....	11
1.2. PURPOSE AND SCOPE OF THE GUIDELINES .....	12
1.3. PREMISES ON WHICH THE GUIDELINES ARE BASED .....	14
1.4. ACTION AREAS, FORMAT AND STRUCTURE OF THE GUIDELINES .....	16
<b>2. GUIDANCE ON FIVE ACTION AREAS .....</b>	<b>18</b>
2.1. <b>AREA 1</b> WORKFORCE DATA, INFORMATION, ANALYSIS, STRATEGIES FOR HUMAN RESOURCES DEVELOPMENT .....	18
2.2. <b>AREA 2</b> MAKING THE WORKFORCE IN TRADITIONAL FORESTRY FIT FOR PURPOSE .....	22
2.2.1. <i>Identifying changes in job requirements and overcoming skills gaps</i> .....	22
2.2.2. <i>Working conditions matching the requirements for decent work</i> .....	27
2.2.3. <i>Occupational safety and health</i> .....	34
2.2.4. <i>Work organization and contracting of service providers</i> .....	37
2.3. <b>AREA 3</b> JUST TRANSITION .....	40
2.4. <b>AREA 4</b> SEIZING AND EXPANDING NEW OPPORTUNITIES FOR FORESTS IN A GREEN ECONOMY .....	44
2.5. <b>AREA 5</b> RECRUITING, RETRAINING AND RETAINING THE WORKFORCE OF THE FUTURE .....	49
REFERENCES .....	53

## EXECUTIVE SUMMARY

**The role of forests and forestry is changing rapidly and profoundly.** Societies, policy makers and markets are placing a renewed focus on an expanded and universal vision of sustainable development with prosperous and inclusive societies living within planetary boundaries. Forests are central to this vision. This opens major opportunities for forests and forestry but also poses significant challenges. **The Guidelines are intended to assist stakeholders in the forestry sector to successfully navigate the transition.**

**New and increasing opportunities** for providing forest-based services and products, growing business and revenue as well as creating jobs arise from this transition. The importance of **environmental services is becoming increasingly evident to society**, in particular carbon sequestration, biodiversity protection and water treatment and retention. **Markets for products** are **growing** including in bioenergy, modern wood-based mass construction and a range of non-wood forest products. Moreover, the **demand for downstream services** such as environmental education, health services, recreation and tourism based on forests is rising significantly in many parts of the UNECE region.

**Continued globalization** of economies and **advancing technology** are **two major challenges ahead for the forestry sector.** In their wake, mechanization, reorganization of forestry supply chains, and increasing incorporation of information and communications technology, are reducing the number of workers needed in traditional forestry. **Accelerating climate change and rising concern about biodiversity** stress the importance of sustainable forest management. While employment in traditional forestry, focused on timber production, will most likely continue to decline, the remaining workforce will be critical for achieving effective and sustainable management of forests. At the same time, **deficits in decency<sup>1</sup> of work in forestry, ageing workforces and populations combined with continued urbanization** make it both more urgent and more difficult to attract the talent needed for the future.

A large and growing body of evidence shows that **a skilled and enabled workforce is indispensable to meet the challenges and to seize the opportunities resulting from the transition to a green economy and sustainable development.** Due attention has to be paid not only to the new and growing role of environmental goods and services, but also to greening production processes, the organization of work and the development of skills which would enable this transition. At present, there is a lack of competent and adaptable workforce in many forest

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<sup>1</sup> According to the International Labour Organization (ILO), decent work involves opportunities for work that are productive and deliver a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men.

enterprises, administrations and service providers. Following current trends, this workforce deficit may be even larger in the future.

### **Key areas for action**

Five key areas for action emerge from the analysis of the above drivers of change and their impact on forests and the forestry sector:

#### **1. Understanding the current workforce in forestry and its future needs**

Information on the workforce, including on occupational safety and health (OSH), is vital but often missing and increasingly difficult to obtain. Stakeholder cooperation can overcome these difficulties, through increasing efforts to collect data, also on aspects which were not monitored by forest sector before, and improving the availability, reliability and representativeness of the data. Use should be made of all appropriate sources where data are scarce, including dialogue with all relevant actors.

Both the use of modelling techniques, which ideally take into account productivity increases, age, gender and current and future skills profiles in workforce projections, and consultation and dialogue mechanisms with all relevant actors and stakeholders in the sector, will provide the mapping of labour market needs in forestry and enable their integration at national level. Combined efforts can develop and implement the human resources and green jobs development plans needed.

#### **2. Upgrading the workforce to ensure traditional forestry is fit for purpose**

The composition of the forestry workforce and the occupational profiles within it are changing constantly due to evolving technology and management requirements. Importantly, the decency of many current forestry jobs leaves to be desired. Gaps in competencies, often going beyond technical skills, should be assessed and filled.

Fora and mechanisms for consultation and dialogue on sectoral skills involving a broad spectrum of stakeholders from the forest sector and cross-sectoral cooperation with education and labour administration sectors are fundamental means to detect evolving needs in the labour market and identify responses in education and skills development. Similarly, efforts should be made to upgrade existing skills of workers and motivate them for continuous learning. Priority in skills development efforts should be given to contractors and workers performing tasks with major environmental or health and safety risks, migrant workers and forest smallholders. To enable timely mobility of workers, especially in cases of major forest disturbances, international harmonization and recognition of competencies should be promoted e.g. through establishing international sector-wide competency standards.

Any issues identified with fundamental rights at work, in particular discrimination, freedom of association and collective bargaining, as well as concerns about occupational safety and health (OSH), need to be addressed, starting with the wide dissemination of relevant national legislation and ILO standards among all stakeholders.

Highlighting the issue of non-discrimination, persevering gender and other inequalities in the sector should be addressed. Recognizing that there are no quick fixes, member States should develop national gender and broader employment diversity strategies for the forestry sector. These strategies should include monitoring participation of women and other groups in the sector and of equal treatment to ensure equal pay for equal work for all.

Conditions for all workers in the sector, including those of service providers and contractors, should meet the requirements for decent work. Access to business management and technical training at a good quality level and low cost should be provided. Commissioning parties should support contractor development and upgrading by long-term engagement, active involvement and on-site presence. International recognition of registration and certification of contractors should be fostered to allow easy movement across borders in response to changes in demand.

Freedom of association and the right to collective bargaining in forestry should be supported by the establishment or strengthening of workers and contractors' associations and mechanisms for social dialogue and collective bargaining. Reporting of violations of national regulations, applicable international standards or internal enterprise directives, should be encouraged by providing protection for whistle-blowers.

All entities involved in forest operations should be responsible /share responsibility for occupational safety and health. Certification schemes for sustainable forest management can also be one of the ways to improve OSH standards by contractors and forest owners. Reporting on OSH status and areas of improvement should be strengthened by standardizing accident and occupational health reporting and expanding its application in line with the FAO Guide on Accident Reporting in Forestry, supported by self-inspection and audits.

### **3. The need for just transition**

Changing the forest management objectives can lead to significant disruption of forest operations thus causing severe impacts for local workforces and communities. Just transition towards an environmentally sustainable economy therefore needs to be well managed and contribute to the goals of decent work for all, social inclusion and the eradication of poverty. To achieve this, dedicated strategies and plans should be developed through social dialogue and consensus to mitigate social impacts, and should include the establishment and strengthening of institutional and technical capacities of regional and local authorities to guide the transition; provision of opportunities for the participation of representatives of employers and workers at

all possible levels and stages of the policy process; and, an aim at policy coherence of all key policy areas to address environmental, economic and social sustainability simultaneously.

#### **4. Identifying and seizing new opportunities emerging from a shift to green economies**

New, non-traditional job opportunities need to be mapped and their benefits valued, assessing the economic sustainability as well as decency of newly-emerging jobs. The identified opportunities can be seized by mobilizing partners and resources beyond the forestry, by creating dialogue fora and partnerships and promoting cooperation and networking vertically and horizontally. Innovation and entrepreneurship should be supported, and incentives, business models and frameworks for value capture developed, while at the same time using the opportunity of new lines of benefit and value creation to diversify the professional background, gender and ethnicity of the workforce.

#### **5. Measures to attract the workforce of the future**

Forestry will have to retain existing and attract new high potential workers in a more restricted and competitive labour market in the future. This requires long-term plans, based on a thorough assessment of current skills and age profiles and identification of current and future skills needs. These plans should include modern-day measures to make forestry work more relatable, attractive and accessible, involving recruitment professionals to effectively communicate the changing nature of forestry work in a green economy to youth and job seekers. In addition, the plans should include initiatives to extend and diversify the recruitment base and workforce with migrant, women and older workers.

**The Guidelines are not prescriptive. They offer a menu of options** from which national and local stakeholders can choose and which they can adapt in light of their respective needs and conditions. They aim to provide specific and operational guidance on how the challenges can be tackled and the opportunities seized. The focus of the Guidelines is on jobs related to the production of goods and services in the forest. They will be complemented by a compilation of good practices from across the UNECE and FAO member States and signatories of Forest Europe in order to speed up learning and assist the transformation of the sector.

**Dialogue and collaboration among stakeholders in the forestry sector and with partners in other sectors are key.** Their results should inform policy and strategy such as national forest programmes, bio-economy and other sectoral and cross-sectoral strategies, international or national standards and certification schemes, vocational and university education as well as industry driven initiatives.

**The application of the Guidelines at national and local levels, in enterprises and administrations, will make a major contribution to ensure that the forestry workforce is fit for purpose and forestry is able to attract workers in the 21st century's labour market in order to realize the full potential of forests in green economies.**

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## BACKGROUND

The present Guidelines are the result of joint working by UNECE/ FAO Forestry and Timber Section and the Forest Europe Liaison Unit Bratislava.

The preparation of these Guidelines is part of the Swiss funded UNECE project, “Improving the capacity of the UNECE member States to create green jobs in the forest sector” carried out by the Joint UNECE/FAO Forestry and Timber Section. It supports implementation of the Warsaw Integrated Programme of Work 2018-2021, including the promotion of green jobs in the forest sector under Work Area 2: Policy Dialogue and Advice as well as capacity-building activity on the contribution of the forest sector to a green economy under Work Area 4 Capacity-Building. It also contributes to relevant actions of the Rovaniemi Action Plan for the Forest Sector in a Green Economy, especially pillar C, which addresses green jobs in the forest sector with the following goal, “The workforce is able to implement sustainable forest management, and the forest sector contributes to achieving the social goals of the green economy by providing decent jobs.”

Forest Europe’s involvement is in line with from the Madrid Ministerial Resolution 1 – Forest sector in the center of Green Economy endorsed by the 7th Forest Europe Ministerial Conference on the Protection of Forests in Europe held in 2015 in Madrid. This Ministerial Resolution calls for the development of guidelines for the promotion of green jobs in the forest sector in the pan-European region: subsequently incorporated into the Forest Europe Work Programme for 2016-2020, through which the signatory countries and the European Union provided the mandate to prepare these Guidelines.

The Guidelines build on the outputs of the UNECE/FAO Team of Specialists on Green Jobs in the Forest Sector (Joint UNECE/FAO/ILO Expert Network) (UNECE, 2018) and the Forest Europe Expert Group on Green Jobs, Education and Training Systems.

The above-mentioned Madrid Ministerial Resolution describes green jobs as, "decent and connected to the management and use of forests and to environmentally-friendly production processes based on goods and services from sustainably managed forests." The UNECE/FAO Team of Specialists on Green Jobs defines a green forest job as one that, complies with the principles of sustainable forest management; contributes to a green economy; and is involved in manufacture of forest products and/or in the performance of forest services (UNECE, 2018). These definitions provide the foundation for the Guidelines.

The present draft benefited from review, comments and suggestions by the UNECE/FAO Team of Specialists as well as from a public consultation during the UNECE/FAO Workshop on Green Forest Jobs held in Geneva in September 2018, which included participants from the Russian Federation and Member States from Central Asia and Caucasus.

To check the relevance of the recommendations to the entire UNECE region, the Joint Section consulted experts from Canada, Turkey and USA.

The Guidelines were presented to the 41st session of the Joint UNECE/FAO Working Party on Forest Statistics, Economics and Management which took place in Geneva on 27-29 March 2019.

The Joint Working Party approved the “Joint ECE/FAO/Forest Europe Guidelines on the Promotion of Green Jobs in Forestry” as an official publication and advised the Joint Section to incorporate an executive summary and the comments resulting from the group work during the session. The meeting appreciated the cooperation and coordination of the work with Forest Europe.

The present text incorporates comments received during the 41<sup>st</sup> session of the Joint Working Party.

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## 1. INTRODUCTION

Over the last decade, sustainable development has made a comeback as the pivotal paradigm for the future of humanity. The United Nations Conference on Sustainable Development, Rio+20 in 2012 and the Paris Climate Agreement in 2015 underscored the urgent need to place environmental sustainability at the core of sustainable development. For the first time, a global, integrated development agenda has emerged in the form of the Sustainable Development Goals (SDG). The SDG 8 and SDG 15 explicitly address the roles of decent work and of forests in sustainable development and highlight the inter-relationships between SDGs. SDG 8 is one of the broadest-based of the SDGs, encompassing a host of different issues, ranging from modern slavery, child labour and labour rights to gender diversity, green skills, and access to financial services. In forestry it is important to work out where biggest impacts and the most influence may be. It might be safe working conditions, multidisciplinary forestry education and gender diversity.

The Green Economy (UN Environment and Rio+20) and Green Growth (OECD a.o.) have emerged as alternative pathways to economies that meet aspirations and are socially inclusive yet ensure that humanity stays in the safe space of planetary boundaries.

Forests are one of the earth's largest renewable resources and provide vital environmental services. They are central to any development path built around a green economy and green growth. There is growing realization that the labour market and green jobs play a crucial role in achieving the transformation to truly sustainable economies. The experience of a rapidly growing number of countries and work by the ILO have shown that greening of economic sectors will only be possible if due attention is paid not only to growth in environmental goods and services but also to greening processes and to a work organization and skills development that enable this transformation. Where the transformation is successful, green economies create more and better jobs than traditional growth models (ILO, 2018b; ILO, 2013b; Poschen, 2015).

The present Guidelines are intended to assist stakeholders in the forestry sector of UNECE Member States and signatories of Forest Europe to successfully navigate the transition. For simplicity, the term 'member states' in the remainder of the Guidelines refers to both these groups.

### 1.1. DEFINITIONS

The terms used in the present Guidelines are defined as follows:

- **Forest worker:** "Any person engaged in forestry". (Safety and health in forestry work: An ILO code of practice, ILO 1998a);

- **Forest workforce:** “All persons employed in the forestry sector or unemployed, but available for and seeking work in the sector in line with ILO definitions of employment and unemployment” (ILO, 2013 pp.29-30);
- **Decent work:** “Decent work sums up the aspirations of people in their working lives. It involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men<sup>2</sup>” (ILO, 2018a);
- **Green economy:** “An inclusive green economy is one that improves human well-being and builds social equity while reducing environmental risks and scarcities’ (UN Environment, 2018)’;”
- **Green jobs**  
To achieve consistency with definitions used by other sectors, by statistical offices and organizations, the Guidelines adhere to the definitions adopted by the ILO and the International Conference of Labour Statisticians:
  - “Green jobs are decent jobs which (i) reduce consumption of energy and raw materials; (ii) limit greenhouse gas emissions; (iii) minimize waste and pollution; (iv) protect and restore ecosystems; and (v) enable enterprises and communities to adapt to climate change. They help to reduce the environmental impact of economic activity, ultimately leading to environmentally, economically and socially sustainable enterprises and economies.” (ILO, 2013b).
  - The term ‘green jobs’ refers to a subset of employment in the environmental sector<sup>3</sup> that meets the requirements of decent work (i.e. adequate wages, safe conditions, workers’ rights, social dialogue and social protection). The decent work dimension of jobs in the environmental sector may be measured according to relevant indicators selected from the ILO manual on Decent Work Indicators (ICLS, 2013);

## 1.2. PURPOSE AND SCOPE OF THE GUIDELINES

The Guidelines are for use by forest stakeholders in member states to identify and meet existing and future workforce requirements at both operational and practical levels to enable forests and

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<sup>2</sup> In 2008 the International Labour Conference unanimously adopted the ILO Declaration on Social Justice for a Fair Globalization which institutionalizes the Decent Work concept and sets out a Decent Work Agenda (ILO, 2008).

<sup>3</sup> “Activities in agriculture, fisheries and forestry can be considered as environmental if environmentally sustainable technologies and practices are used” (ICLS 2013).

the forestry sector to play a full role in a green economy, and within it in a circular and bio-economy, and in sustainable development.

Stakeholders include authorities in forestry and related sectors at various levels, private as well as state-owned enterprises in forestry, education (both vocational and university) and training providers, labour administration, trade unions and associations of forest workers, and other stakeholders in the labour market linked to forests, their products and services.

The Guidelines are not prescriptive, in recognition of the diversity and heterogeneity of the UNECE region. Instead, they offer a menu of suggestions/ideas that may be appropriate to varied national conditions.

The Guidelines' recommendations are not addressed to specific stakeholders, as conditions vary widely between member states in terms of institutional settings, attribution of competencies and institutional capacities. National stakeholders will be best placed to identify who to engage in implementing the Guidelines and to encourage cooperation between stakeholders.

The Guidelines aim to:

- help operationalize the political commitments of member states to sustainable forest management, to the contribution forests make to greening economies and to sustainable development, including the Rovaniemi Action Plan, with respect to the development and deployment of human resources;
- assist countries to develop skilled, motivated forestry workforces that can realize the full potential of forests in green economies.

The Guidelines:

- offer suggestions in terms of principles, policy and operational objectives as well as orientation for putting them into practice;
- maintain a clear link to the intended broader objectives of sustainability and green economy;
- use available evidence and reflect good practice;
- aim to be concise, but as clear, specific and operational as possible.

**The scope** of the Guidelines is primary forest production of goods and services, including jobs linked to new upstream and downstream goods and services in the green economy, such as forest-based recreation and tourism, health and education, but excluding further processing of traditional wood and non-wood products<sup>4</sup>.

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<sup>4</sup> The scope thus includes 'Forestry and logging' according to the International Standard Industrial Classification of All Economic Activities (ISIC) of the United Nations statistics division (ISIC Re.4 Division 02) but also services derived from forests which may not be produced by the sector itself, such as health, education, recreation and tourism.

The vital role of the forest products industry in generating revenue and incentives for sustainable forest management in a circular and bio-economy is fully acknowledged. The present Guidelines are, however, limited to forestry, in view of the complexity of the subject and the broad range of stakeholders. Extending the Guidelines to the whole forest sector, including wood processing, is desirable and may feature in future work of the UNECE and FAO and others.

National Forest Programmes or their equivalents, bio-economy and other sectoral and cross-sectoral strategies, international or national standards and certification schemes, vocational education and university programmes as well as industry driven initiatives, could support the implementation of these Guidelines and promote policy coherence and multi-stakeholder cooperation to address forestry workforce topics.

### 1.3. PREMISES ON WHICH THE GUIDELINES ARE BASED

#### FORESTS AND FORESTRY IN GREENER ECONOMIES: POTENTIAL AND LIMITATIONS

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Forests already play a key role as a major source of renewable raw material and in providing ecosystem services such as carbon storage and capture, water and soil protection, conserving biodiversity, as well as in health and recreation. The potential exists to play an even greater role in greener, more sustainable economies across the UNECE region.

The ability to fully play their role in greener economies will be critical for the appreciation of forests and of the forestry sector in times when the economic and political weight of the sector is falling relative to other parts of the economy.

Meeting political and society's expectations for forests and the forestry sector will depend heavily on having a skilled, motivated and enabled workforce at every level. This workforce is absent or only partly available at present. On current trends, there is a serious risk that it will not be available in the future. Unless greater attention and foresight are given to human resources requirements, the forestry sector may not be fit for purpose in the 21st century.

#### THE FORESTRY WORKFORCE IN SUSTAINABLE FORESTS AND IN A GREEN ECONOMY

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The management and use of forests (traditional forestry with a strong focus on wood production) is being redefined through a broader range of more specific and more demanding criteria for sustainability by society and markets alike. This applies particularly to the increased emphasis on social criteria and requirements to meet standards for decent work in forests.

Mechanization, further development of supply chains for forest products and increasing use of information and communication technology and automation will continue to reduce the number of people employed in traditional forestry. Most of these job losses will occur in rural areas. Although adopting some innovative, efficiency-increasing technologies may impact negatively the number of workplaces at a particular phase of the production cycle, only a profitable and

competitive forest sector can provide stable and decent job opportunities. The competitiveness of the forest sector and its value chains are preconditions for maintaining and/or creating decent work opportunities.

The sector can be competitive only with a well- trained and skilled workforce. Technological change, but also new conditions caused by climate change and requirements about sustainability (biodiversity, water and soil protection, competition between different forest uses) have and will continue to significantly alter job requirements at all levels.

The growing demand for environmental services from forests and higher investment in the maintenance and restoration of natural assets, create new business and job opportunities. These lie in the forestry sector and also in upstream or downstream value chains, including carbon forestry, water focused forestry, environmental education, medical uses, recreation, and nature tourism. Employment in these activities may well increase while the number of jobs in traditional forestry continues to shrink. This may lead to a new balance within the workforce, with more management and technical positions as well as greater service orientation than today.

Skills requirements will continue to evolve significantly with modified profiles in traditional forestry and many new ones.

Traditional forestry will require more competencies in technology, the ability to cope with the impacts of climate change (more calamities with more prevention needed and more frequent and dangerous salvaging operations, different management regimes, new species composition), more holistic approaches (integrating/balancing competing uses), managing interfaces, participation and conflict (e.g. with local population, NGOs, supply chains). Management and business skills – often weak among providers of services to forestry today – will become critical in the future.

New, more specialized profiles will emerge in growing services such as carbon, energy, biodiversity foresters, environmental health practitioners, nature tourism managers and guides. Specialized technical knowledge as well as entrepreneurial skills are likely to be required.

The workforce that will need to deal with this evolution of occupational profiles and skills requirement, is ageing. In Europe, more than one-third of all forestry workers are over 49 years old (Forest Europe, 2015a).

Recruitment of high potential new entrants has been a challenge for the forestry sector for decades. This is likely to persist or even increase, given ageing populations in most UNECE countries, further urbanization and working conditions and career prospects in forestry which are often less attractive than alternative employment opportunities.

Traditional forestry may be subject to significant constraints in parts of the UNECE region (e.g. restrictions on timber harvest in public forests to protect biodiversity, expansion of protected

areas). This may require measures to ensure just transitions for workers made redundant by such restrictions.

## GREEN ECONOMY, GREEN GROWTH, THE CIRCULAR ECONOMY AND BIOECONOMY AS MAJOR OPPORTUNITIES FOR THE FORESTRY SECTOR

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By embracing change, the forestry sector will:

- expand and diversify economically, including into the emerging circular and bio-economies.
- reinforce the benefits from forests and boost their contribution to environmental and social sustainability.
- strengthen its visibility, the public support for forests and the forestry sector and its political influence.
- enhance its attractiveness as a place to work.

### 1.4. ACTION AREAS, FORMAT AND STRUCTURE OF THE GUIDELINES

These Guidelines present five action areas for the forestry workforce and green jobs allowing them to seize opportunities in a green economy:

1. Identify current and emerging workforce issues, shortcomings and opportunities.
2. Take measures to ensure the workforce in forestry and logging is fit for purpose, given the new requirements for sustainable forest management.
3. Assess the likelihood and scope of temporary or permanent disruptions in forest operations and the need for just transitions for affected workers and communities.
4. Take measures to seize the expanding, new economic and job opportunities for forestry beyond timber production arising in a green economy.
5. Address the persistent recruitment problems with retaining workers and attracting high potential new entrants into the forestry workforce to meet future requirements in traditional and non-traditional forestry.

For each of these five areas, guidance is presented in a standard outline<sup>5</sup> which spells out:

- what the issue is;
- what guiding principles apply (ideally derived from authoritative political guidance)
- what objectives are relevant;
- what evidence there is regarding risks and recommended practices and what the potential consequences of inadequate practices are;
- recommended practices and actions.

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<sup>5</sup> This outline is borrowed from the acclaimed FAO Model Code of Forest Harvesting Practices, in particular chapter 7 on the workforce <http://www.fao.org/docrep/V6530E/V6530E00.htm>

A final section (in boxes) offers hints to relevant references to background documents as well as further guidance and examples of good practice.

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## 2. GUIDANCE ON FIVE ACTION AREAS

### 2.1. AREA 1 WORKFORCE DATA, INFORMATION, ANALYSIS, STRATEGIES FOR HUMAN RESOURCES DEVELOPMENT

In a region as large and diverse as the UNECE region, challenges and opportunities presented by green jobs in forestry differ widely from one country to another. It is thus essential to be able to identify those with the highest relevance for each country or context.

#### WHAT IT IS - THE FORESTRY WORKFORCE AND GREEN JOBS IN FORESTRY

Forest conservation, management and the production of forest goods and services, including forest ecosystem services, require effective management and administration, just like any other business. Personnel will normally include managers, administrative and support staff, planners, engineers and supervisors as well as workers who carry out the operations. Workers include field supervisors, forestry and engineering technicians, machine operators and their assistants, mechanics who repair and maintain machinery and manual workers. Personnel often include direct employees as well as contractors and service providers. Migrant and seasonal workers can be an important part of the forest workforce.

There are about 620,000 jobs (full-time equivalent) in forest operations in Europe. In addition, the official employment statistics often do not include private forest owners and their family members or members of local communities. Hence, forestry in Europe provides income and jobs for considerably more people than indicated by reported full-time equivalents. A quarter of the forestry sector workforce is estimated to be self-employed or a business owner (Forest Europe, 2015a). Forestry employment in the United States stood at 159,000 in 2016 (U.S. Bureau of Labor Statistics, 2018) and about 40,000 in Canada (Statistics Canada, 2018). Most countries have experienced a continuous decline in the number of workers due to increased productivity, in some cases accelerated in the wake of the great global recession in 2008.

The International Conference of Labour Statisticians adopted a universal definition of green jobs by in 2013 (ICLS, 2013). Adapting this definition to the sector, green jobs in forestry are those that:

- meet criteria for decent work;
- contribute directly to the production of an environmental good or service;
- or are responsible for an environmental process (avoidance or reduction of an environmental impact).

Criteria for decent work have been agreed by the 187 member States of the ILO. The ILO has developed a set of measurable indicators to facilitate assessments<sup>6</sup>. Many countries have established desirable or mandatory values for indicators in legislation and/or policies. A growing number of countries and economic sectors have generated national decent work profiles as a way of tracking the volume and quality of jobs.

## GUIDING PRINCIPLES

- Monitor continuously the adequacy of the current workforce, and identify shortcomings in a timely manner that allows future needs to be anticipated and sufficient lead time for adjustments;
- Consult widely with stakeholders, and encourage regular dialogue, including with representatives of workers and contractors.

## OBJECTIVES

- Make readily available reliable, sector-wide data on the status of the forestry workforce and green jobs in forestry to inform dialogue among stakeholders;
- Engage and consult relevant stakeholders in the sector as well as educational and training institutions, labour authorities, forest certification bodies, and representatives of clients and users of forests about the status of the workforce and possible shortcomings and contribute to human resource development;
- Develop dialogue and implement sector-wide human resources development plans and strategies. (Rovaniemi Action Plan, Action C.0.1).

## EVIDENCE AND THE POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

Any economic sector needs to know the size, composition, age structure and job profiles of its workforce to design and implement human resource development policies and strategies.

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<sup>6</sup> For the purpose of measuring and monitoring decent work, the ILO has developed a framework which covers ten substantive elements which are closely linked to the four strategic pillars of the Decent Work Agenda, that is, (i) International labour standards and fundamental principles and rights at work (ii) Employment creation (iii) Social protection and (iv) Social dialogue and tripartism: (i) employment opportunities; (ii) adequate earnings and productive work; (iii) decent working time; (iv) combining work, family and personal life; (v) work that should be abolished; (vi) stability and security of work; (vii) equal opportunity and treatment in employment; (viii) safe work environment; (ix) social security; and (x) social dialogue, employers' and workers' representation. These 10 substantive elements represent the structural dimensions of the decent work measurement framework under which both statistical and legal framework indicators on decent work are organized and classified (ILO, 2013a).

Quality data on forestry employment have always been difficult to obtain, reflecting the dispersed, often seasonal nature of work, the presence of migrant workers and the high share of sub-contracting, self-employment and informal work. A recent paper on assessment of green and decent jobs in forestry in the UNECE region confirmed that there are few remaining specialists collecting data, analyzing it and carrying out research on employment (Kastenholz 2014). This has made it even more difficult to gather reliable, consistent workforce data, which has only been compounded by forestry's importance as an economic sector declining. Moreover, labour force and establishment surveys relying on sampling capture the sector less well. Tacit knowledge among actors in the sector is often an important complement or even substitute for other sources of data and information.

Faced with an ageing population and fewer new labour market entrants, there is a serious risk that forestry will not be able to adapt its current workforce and recruit talent in accordance with its future needs. Quality information and foresight will be essential to navigate a more difficult labour market.

## RECOMMENDED PRACTICES AND ACTIONS

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- **Consider the benefits of periodically collecting and gathering data** on the current workforce to enable evidence-based policy and decision making with an appropriate breakdown of categories by:
  - function, gender, race/ethnicity, age, educational and training attainment, employment status (salaried employee, self-employed, entrepreneur), wage/income levels, occupational accidents and health status, working hours. Where migration is significant, it should be identified explicitly;
- **Make efforts at a national level to improve the availability, reliability and representativeness of data** related to the social aspects of SFM and forest sector workforce issues, in particular, through cooperation with the labour administration. **Make use of all available sources of data**, including administrative records, inventories; regular statistical surveys and censuses; and specialized statistical surveys and censuses, including subsample surveys;
- Where other data are scarce, **use ad-hoc blue-ribbon surveys, research outcomes, results from certification audits and dialogue with representatives of forest owners, workers and contractors, as well as other appropriate sources to identify possible issues;**
- **Make use of modelling techniques to assess future workforce demand and supply**, ideally taking into account productivity increases and reflecting age and gender profiles as well as current and future skills profiles in workforce projections;
- **Establish and maintain consultation and dialogue mechanisms on workforce development and green jobs in forestry, e.g. sectoral skills councils**, with all relevant actors and stakeholders in the sector to provide the mapping of labour market needs in forestry and their integration to the lifelong learning system at national level;

- **Formulate, adopt and implement national (and where appropriate sub-national, local and enterprise level) human resources and green jobs development strategies** with quantitative targets and regular monitoring linked to data collection.

#### **Further guidance and examples of good practice**

For further guidance on data collection see GAIN Training Guidebook - How to measure and model social and employment outcomes of climate and sustainable development policies, Green Jobs Assessment Institutions Network, 2017, ILO, Geneva. Chapter 2 of the Guidebook includes examples of green jobs surveys conducted, including in the UNECE Region (though not specific to the forestry sector).

See an example of a prospective blue-ribbon survey regarding new and emerging green job opportunities in Switzerland (Bernasconi, 2018). Finland has developed a partnership between Statistics Finland and the Natural Resources Institute (LUKE) to monitor ambitious growth targets for its bioeconomy by periodically collecting data. Relying on the national accounts, data are presented by sub-sector on output, value added, trade, investment and employment (LUKE 2019).

The site is available in English: The Finnish Bioeconomy in Numbers:

<https://www.luke.fi/en/natural-resources/finnish-bioeconomy-in-numbers/>

Links are available to searchable data bases including the forestry sector.

## 2.2. AREA 2 MAKING THE WORKFORCE IN TRADITIONAL FORESTRY FIT FOR PURPOSE

The major economic, social and environmental trends affecting the forestry sector over the coming decades have important implications for workforce development. Globalization and technology change will continue to put economic pressure on the supply chain. Mechanization, the use of advanced information and communications technology as well as outsourcing to contractors are likely to continue or accelerate. At the same time, there are heightened expectations of society and customers about the sustainability of forest management and operations. This includes environmental and visual impacts, but also working conditions and increased attention to decent work. This has put a spotlight on working conditions and the quality of jobs and identified the need for improvement (Rovaniemi Action Plan, UNECE 2013). Responding to these changes also requires modifications in occupational profiles. They will often be more demanding, thereby exacerbating existing skills gaps.

The Action Plan identified other areas for improvement in of forest management and operations, to meet the more-demanding requirements for biodiversity protection, soil and water conservation as well as climate change adaptation.

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### 2.2.1. IDENTIFYING CHANGES IN JOB REQUIREMENTS AND OVERCOMING SKILLS GAPS

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#### WHAT IT IS – SKILLS FOR GREEN JOBS IN TRADITIONAL FORESTRY

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Skills are the knowledge, aptitude and competences necessary to perform a task. Skills are acquired, maintained and developed throughout a person's life from basic education through vocational and higher education to continuing education. Skills development can promote innovation, investment and competitiveness, which in turn feed back into social development, thus creating a virtuous cycle (ILO, 2010). The greening of economies leads to significant changes in occupational profiles and thus in skills requirements (ILO, 2018b). In the forestry sector these range from environmental and social impact assessment, biodiversity, water and soil conservation, low impact machine use and forest road construction to CO<sub>2</sub> sequestration and adaptation to climate change, including fire prevention and management.

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#### GUIDING PRINCIPLES

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- Education, initial training, life-long learning and re-training opportunities respond to and enable the major changes that are ongoing and anticipated in the forestry sector and in the transition to a green economy (ILO/OECD, 2012; Hetemäki, 2014);

## OBJECTIVES

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- All workers, including contractors and migrant workers have the competences to perform the job assigned to them in the implementation of sustainable forest management and utilization;
- Develop the capacities (skills, information, institutional framework) of all stakeholders (workforce, private sector, administrations) to implement sustainable forest management and forest protection and monitor progress in its implementation (Rovaniemi Action Plan, Action: E.0.4);
- Identify present and future requirements for forestry education and training of forestry professionals in the region, to prepare for future and emerging challenges (Rovaniemi Action Plan, Objective C.5).

## EVIDENCE AND THE POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

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It has long been recognized that sustainable forest management requires a skilled and motivated workforce (FAO, 1996). In addition to productivity and to environmental performance, skills are also critical for work safety (ILO, 1998a). Recognizing this, all major forest certification systems include the requirement for a skilled workforce.

A global survey on skills for green jobs found that skills shortages are a serious bottleneck for greening economies and enterprises in almost all countries and all sectors (Strietska-Ilina et al., 2011). In the UNECE region, changing requirements within and outside the forestry sector have been identified as among the most important challenges facing the future (BUWAL, 2012). In every sector, including forestry, there is broad recognition of the need to raise skills related to science, technology, engineering and mathematics (STEM) to support green growth (OECD, 2017, ILO, 2015a).

The adoption of an expanded definition of sustainable forest management has led to some new occupations, but primarily to significant changes in existing occupational profiles especially relating to skills associated with environmental performance. For instance, Spain has identified new profiles for forest and environmental agents, including environmental risk assessors, and revised those for forest fire fighters. Estonia has revised profiles for harvester and forwarder operators (ILO, 2018b).

Failure to address skills needs for forestry in a green economy early may lead to lower productivity, environmental underperformance as well as a loss of credibility in markets and among the public. Moreover, it may make the sector less attractive to younger job seekers. As education and training systems have long lead times, the impacts of delayed action could be felt over many years. (Also see area 5 regarding recruitment).

### Assess skills gaps – present and future

- **Establish and maintain fora that allow dialogue and collaboration**, such as sectoral skill councils at national level between forest owners and enterprises, administrations, forest-based industry, service providers, labour administration and trade unions, and education and training institutions (incl. students where relevant) as a fundamental means to detect evolving needs in the labour market and identify responses in education and skill development;
- **Use models**, where good labour market information exists, **to assess the skills match** and identify possible mismatches both in composition of workforce and in skills profiles for individual occupations;
- **Identify priority areas for immediate action** by mapping operations with high environmental impact and skills requirements and gaps associated with them;
- **Promote development of skills** e.g. through international internships of students and teachers/trainers (e.g. by integrating and recognizing work placements abroad and by developing international qualifications), dual training at a national level and other tools as appropriate;
- **Include skills needs identification, training and resourcing of skills development in relevant forest-related strategies, policies and programmes as well as forest and environmental laws;**
- **Ensure appropriate skills of labour inspectors** through cooperation with labour administration.

### Upgrade skills

- **Enter into bi- or tripartite (employers, workers, government) agreements on skills development** to enable a concerted and persistent effort by the sector as a whole;
- **Concentrate initial efforts on upgrading of skills**, raising the motivation for continuous learning adapted to changing conditions, technologies, skills requirements and policy objectives, for all existing forest workers.
- **Give priority to workers performing tasks with major environmental or health and safety risks** such as chain saw operators, machine operators, forest road construction, application of chemicals and fire-fighting;
- In view of an ageing workforce, **intensify further training and re-training**, including new or modified elements of occupational and skills profiles into the curricula;
- **Include the development of skills related to science, technology, engineering and mathematics (STEM) as well as soft skills** (communication, negotiation, conflict management, public participation in policy making, team work, partnering) in forest education and training;
- **Ensure that the training offer, conditions and funding arrangements for skills upgrading enable contractors, migrant workers and smallholder forest owners to participate.** Cost and time effectiveness of training are essential for these groups.

Coordinate training supply in order to achieve good quality training at low cost (Lewark et al, 2011);

- ***Make use of experiences, training material and capacity in other countries*** (see the EuroFire example below).

### **Recognize and certify skills**

- ***Establish or adjust sector-wide competency standards*** and agree how competencies, including requirements related to the green economy, will be assessed, proven and made 'portable';
- ***Facilitate validation of non-formal*** (learning outside formal education) ***and informal learning*** (*learning by doing*), especially for forest workers' qualifications to ensure appropriate skills levels and mobility of the workforce. Review and develop curricula and courses by applying systems for ***international transfer and recognition of learning outcomes, also in vocational education and training***;
- ***Seek international harmonization/recognition of competencies*** especially those competencies focused on coping with major forest disasters, to enhance cooperation and allow workers to be deployed wherever major emergencies arise.

## Further guidance and examples of good practice

Good practice examples for training needs assessment, delivery, financing and skills recognition in the forestry sector are summarized in FAO (2011), including the UK Forestry and Arboriculture Safety and Training Council (FASTCO UK), the Professional Chainsaw Operator Training Program (PCO) of the Ontario Natural Resources Safety Association (ONRSA), Ontario, Canada, the European Chainsaw Certificate, and machine operator training and financing Germany. France has institutionalized skills monitoring and development by establishing an observatory (l'Observatoire National des Emplois et Métiers de l'Economie Verte - ONEMEV) on skills for a green economy and including skills provision and support for innovation in small and medium-sized enterprises in the Act on reclaiming biodiversity, nature and landscapes (ILO, 2018b).

Forest-related sectoral skill councils work at national levels in many European countries. These multi-stakeholder collaborative platforms aim to identify the skills needs and development of competence and qualification profiles. They frequently involve the labour administration and education sectors as well as a wide spectrum of forest sector stakeholders, such as enterprises, policy makers, employers' organizations and trade unions. The EU Blueprint for Sectoral Cooperation on Skills, part of the New Skills Agenda for Europe, provides an overview of the steps leading to the identification of relevant skills and the necessity of multi-stakeholder involvement in this process (<https://ec.europa.eu/social/BlobServlet?docId=16962&langId=en>).

A US study provides an example of the use of labour market data and modelling in assessing skills match and gaps for the green construction and renewable energy sectors (Pollin et al, 2009). More detailed guidance on research into future skills needs for green jobs is available (ILO, 2013c). A research brief summarizing the main issues and ways to deal with them is available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/---ifp\\_skills/documents/publication/wcms\\_168352.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_168352.pdf)

The European Chainsaw Certificate (ECS), based on European minimum standards developed for five different competency levels of chainsaw use gives an example of international harmonization of skills standards (<https://efesc.org/european-chainsaw-certificate/>).

Similarly, ABA International, an international association of training providers and skills assessors which offers skills assessment of for forest workers at international level, is an example of existing systems for international recognition of national certification of forest workers and related qualifications based on harmonized skills standards (<https://aba-skills.com/#work>).

The EuroFire training package for dealing with wildfires has been widely used in Europe and beyond. It provides an example of how new challenges such as the increased risk and intensity of major forest fires in the wake of climate change present an opportunity to upgrade and harmonize skills standards (<https://www.ctif.org/index.php/training-and-tools/euro-fire-multi-lingual-training-tool-forest-fires-wild-fires-and-vegetation>).

To promote geographical mobility and exchange of students and trainees during vocational education and training (including future forest workers), The European Parliament and the Council of the EU adopted European Credit System for Vocational Education and Training (ECVET) enabling international transfer and recognition of learning outcomes in vocational education and training. . Available at: <http://www.ecvet-toolkit.eu/>.

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## 2.2.2. WORKING CONDITIONS MATCHING THE REQUIREMENTS FOR DECENT WORK

Working conditions in the forestry sector should meet the requirements for decent work agreed by the Member States of the International Labour Organization and reflected in the Sustainable Development Goals (in particular SDG 8) as well as in market-based instruments, like public purchasing requirements and international certification standards for sustainable forestry such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC).

Specific requirements for rights at work and working conditions are set by national law, but minimum requirements are universal. They include compliance with the Declaration on Fundamental Principles and Rights at Work (ILO, 1998b) which:

1. Prohibits forced labour.
2. Prohibits child labour.
3. Stipulates non-discrimination at work on grounds of gender, race and other criteria.
4. Supports freedom of association for workers and employers and the right to collective bargaining.

As members of the ILO, UNECE countries are obliged to promote compliance with the Declaration, even if they have not ratified the related International Labour Conventions<sup>7</sup>. In the UNECE region, non-discrimination, in particular on grounds of gender, freedom of association and the right to collective bargaining are the most relevant areas for improvement of fundamental rights.

### NON-DISCRIMINATION (ON THE GROUNDS OF RACE, COLOUR, GENDER, RELIGION, POLITICAL OPINION, NATIONAL EXTRACTION OR SOCIAL ORIGIN)

The following section focuses on gender equality as a long-recognized issue in forestry. Non-discrimination may also include migrant workers or minority groups like indigenous peoples. The recommended actions and practices to foster gender equality might be adaptable to these situations.

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#### WHAT IT IS

Discrimination includes, “any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of

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<sup>7</sup> A guide to ILO Conventions for lay-persons is available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_norm/---normes/documents/publication/wcms\\_318141.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---normes/documents/publication/wcms_318141.pdf)

nullifying or impairing equality of opportunity or treatment in employment or occupation” (ILO, 1958). Gender equality refers to the equal opportunity and treatment of men and women workers. This includes, but is not limited to, equal pay for work of equal value, equality of property rights and access on equal terms to capital, maternity protection, and equal access to education for boys and girls (ILO, 2004). It signifies the fact that both women and men should have equal opportunity to obtain and pursue, “decent work carried out in conditions of freedom, equity, security and human dignity” (ILO, 1975; ILO, 1999; ILO, 2019).

Gender equality and non-discrimination must be considered cross-cutting issues in the strategic objectives of decent work (ILO, 2008). The International Labour Organization explains the rationale behind it: “Gender equality is a matter of social justice and anchored in both a rights-based and an economic efficiency approach”. Gender equality goes beyond non-discrimination. It requires equal access to education, training and employment, including in positions of management and leadership. It aims to overcome traditional segregation of labour markets into ‘male and female occupations’ and provides for equal pay for work of equal value. It takes account of women’s reproductive roles and the need to combine work with family responsibilities (ILO, 2009).

The concept of mainstreaming gender allows for the gender dimension to be integrally included into all political, economic and societal spheres (ILO, 2015b).

"Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in any area and at all levels. It is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal of mainstreaming is to achieve gender equality." (ECOSOC, 1997).

Fully recognizing women’s equal economic rights, economic empowerment and independence is a prerequisite for sustainable development and a fundamental principle for effectively greening economies and achieving the 2030 Agenda (ILO, 2009; ILO, 2018b; UN Women, 2017). The prospects for social justice, economic efficiency, growth and development are improved when all actors of society are involved (ILO, 2009). Closing the existing gender gap will require a conscious effort to increase women’s participation in the green economy (von Hagen and Willems, 2012 as cited by ILO, 2018b).

## GUIDING PRINCIPLES

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- “Responsibility for implementing gender equality rests at the highest levels within agencies, organizations and enterprise in the public and the private sectors;
- Other principles include:
  - Adequate accountability mechanisms for monitoring progress need to be established;

- The initial identification of issues and problems across all area(s) of activity should be such that gender differences and disparities can be diagnosed;
- Gender analysis should always be carried out. Assumptions that issues or problems are neutral from a gender-equality perspective should never be made;
- Clear political will and allocation of adequate resources for gender mainstreaming, including additional financial and human resources if necessary, are important for translation of the concept into practice;
- Gender mainstreaming requires that efforts be made to broaden women's equitable participation at all levels of decision-making;
- Gender mainstreaming does not replace the need for targeted, women-specific policies and programmes, and positive legislation; nor does it do away with the need for gender units or focal points” (ILO, 2002).

## OBJECTIVES

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- Increase the share of women in the forest workforce;
- Ensure equal access to positions at all levels for men and women in agencies, firms and organizations in both the private and public forestry sectors;
- Ensure non-discrimination of women in the workforce (in line with fundamental ILO Conventions C.100 and C.111<sup>8</sup>);
- Improve the retention of female employees in the forestry sector by adapting working conditions to their needs;
- Improve women’s access to benefits from forests, in particular to income generation and forest ownership;
- Ensure equal access for men and women to public participation and decision-making about the use and management of forests.

## EVIDENCE AND POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

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The report, “Time for Action. Changing the Gender Situation in Forestry” prepared by the UNECE/FAO Team of Specialist on Gender and Forestry (FAO 2006) has shown that although women are significant users of forest products, they rarely have input into forestry decision-making, neither at the macro nor the micro level. Even when countries have introduced policies to improve women’s representation in the forestry sector, little has been done to encourage or follow this up and so the situation in most cases remains as it had been before legislation was passed.

Men account for the majority of the forestry workforce in most UNECE countries (Forest Europe 2015a). Men, who make up 80 per cent of workers, usually earn more than their equally-qualified

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<sup>8</sup> C.100: Equal Remuneration Convention, 1951 (No. 100); C.111: Discrimination (Employment and Occupation) Convention, 1958 (No. 111)

female counterparts. Women remain under-represented in the forestry workforce in general and in management positions in the private sector in particular.

“The forestry sector can no longer afford to rely exclusively on the competence of a single gender, especially since:

- women make 80 per cent of the decisions related to household consumption;
- in many countries, there is a relatively high proportion of female forest owners;
- evidence suggests that women are more skeptical of some of the concepts related to forestry and sustainable forest management. The information gleaned from the reasons why women may hold these views could be used to improve sustainable forest management practices and to improve communication strategies about these SFM practices; and
- evidence from other sectors indicates that gender-balanced organizations function more efficiently” (UNECE/FAO Team of Specialists on Gender and Forestry “Time for Action. Changing the Gender Situation in Forestry”, FAO 2006)
- “Affirmative action laws have proven to be successful in many cases in redressing past and continuing sex-based inequalities in the labour market” (ILO, 2009).

## RECOMMENDED PRACTICES AND ACTIONS

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- **Compile relevant national legislation and ILO standards (both fundamental and others if ratified by the country), along with guidance on implementation in forestry and disseminate the information widely among stakeholders;**
- **Develop national gender strategies for the forestry sector** and/or mainstream gender aspects into relevant forest policy strategies (Rovaniemi Action Plan, Action C.0.2);
- **Review gender aspects of the forestry sector in the green economy**, starting from the conclusions and recommendations of Time for action: changing the gender situation in forestry by the UNECE/FAO Team of Specialists on Gender and Forestry (FAO, 2006) and develop further actions as appropriate (Rovaniemi Action Plan, Action E.0.5);
- **Keep relevant parameters under periodic review**, using administrative records, labour force and establishment or ad-hoc surveys. Parameters should include the share of women forest owners and forest workers (including contractors), the share of women in forest-related businesses such as forest recreation and environmental education. For forest workers, specify shares by occupation and compare earnings as well as career trajectories of men and women;
- **Recognize that there are no quick fixes**, that it will take time to change attitudes, and set clear and ambitious targets for change (the UNECE/FAO Team of Specialists on Gender and Forestry proposed the objective of achieving 40 per cent of women members on company and association boards as well as in management within a decade);
- Member States should **actively encourage** all public and private forestry organizations to establish **an appropriate quota system**, particularly for women in management positions;
- **Establish a baseline as well as benchmarks and monitor** women’s participation, status and working conditions (see section 1 on information and data, p.12);

- **Include gender data in annual reports** of all forestry agencies and organizations;
- **Monitor equal treatment** of men and women within **public and private forestry organizations** and correct breaches of the principle of equal pay for equal work where they exist<sup>9</sup>;
- **Make EU structural funds gender responsive** by monitoring access to funding and beneficiaries by gender;
- **Ensure that men and women have equal access to forestry training and education**;
- **Encourage networks of women foresters or forest owners** as fora for debate and support and encourage international exchanges between national networks (UNECE/FAO Team of Specialists on Gender and Forestry recommendation).

## FREEDOM OF ASSOCIATION AND THE RIGHT TO COLLECTIVE BARGAINING

### WHAT IT IS

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During collective bargaining, employers and workers' organizations negotiate the terms of employment and working conditions based on national legislation and ILO Conventions or other international instruments ratified by the respective country. Collective bargaining agreements set out wages and working conditions but may also cover employer-worker cooperation on occupational safety and health or the environment.

Freedom of association and the right to organize are essential preconditions for effective collective bargaining, giving both workers and employers the right to establish and join organizations of their own choosing without prior authorization. Administrative authorities should not interfere with these organizations. Workers should also enjoy protection from anti-union discrimination such as requirements that a worker not join a union or relinquish trade union membership for employment, or dismissal of a worker because of union membership or participation in union activities (ILO, 2014).

Two fundamental ILO Conventions govern these rights: The Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87) and the Right to Organize and Collective Bargaining Convention, 1949 (No. 98).

As fundamental rights, freedom of association and the right to collective bargaining are included in international certification standards for sustainable forest management. They are also included in numerous trade agreements.

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<sup>9</sup> For guidance and good practice examples see <https://www.ilo.org/infostories/Stories/Discrimination/tackling-sex-discrimination-through-pay-equity#header>

## GUIDING PRINCIPLES

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- Uphold freedom of association and the right to collective bargaining in forestry, in line with the relevant ILO Conventions;
- Encourage freedom of association and collective bargaining in the forestry sector.

## OBJECTIVES

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- Increase the share of workers, employers and forest owners who are organized, including among forest contractors and their workers;
- Increase the number and coverage of collective agreements applying to forestry.

## EVIDENCE AND POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

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“Combined with strong freedom of association, sound collective bargaining practices ensure that employers and workers have an equal voice in negotiations and that the outcome will be fair and equitable. Collective bargaining allows both sides to negotiate a fair employment relationship and prevents costly labour disputes. Indeed, some research has indicated that countries with highly coordinated collective bargaining tend to have less inequality in wages, lower and less persistent unemployment, and fewer and shorter strikes than countries where collective bargaining is less established” (ILO, 2014).

Both the organization and practice of collective bargaining in forestry used to be widespread in many UNECE Member States and contributed to improvements in working conditions. Increased outsourcing of operations and the breaking up of the workforce into smaller, dispersed units have significantly reduced organization levels and the practice of collective bargaining (FAO, 2011).

Certification schemes and international trade agreements include respect for the rights to organize and to bargain collectively. If these rights are not respected, it may lead to reputational damage and a loss of market share. Low levels of organization and collective bargaining in forestry limit the ability to generate sector-wide improvements in areas like skills, gender balance or safety and health, and to improve the sector’s attractiveness to job seekers or to seize new opportunities emerging in a green economy.

## RECOMMENDED PRACTICES AND ACTIONS

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- ***Compile relevant national legislation, relevant ILO standards (both fundamental and others if ratified by the country), as well as information on access to recourse and remediation, along with guidance on implementation in forestry and disseminate the***

*information widely among stakeholders. Make information available in easily accessible form to all workers;*

- ***Establish or strengthen fora and mechanisms for dialogue and collective bargaining in forestry*** by involving existing organizations of workers, employers and contractors in periodic reviews of the sector and in the elaboration and implementation of plans and strategies;
- ***Set targets for increased organization and coverage of collective bargaining*** for the sector and for individual establishments and institutions, establish baselines and monitor progress;
- ***Regularly review the status of organization and collective bargaining*** through enquiries with organizations of workers and employers as well as by analyzing audit reports from certifiers and labour inspectorates;
- ***Publicly report the findings of reviews along with the policy of the institution*** in annual reports and on the internet;
- ***Make information about existing organizations and agreements readily*** available in establishments and on the internet;
- ***Provide protection for whistle-blowers*** to encourage reporting of violations of national regulation, applicable international standards and internal directives of enterprises.

#### OTHER FUNDAMENTAL RIGHTS AT WORK

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In addition to non-discrimination, in particular on grounds of gender, and the rights to organize and bargain collectively, other rights at work (see page 21) may be a concern in a national or local context. If this is found to be the case, for example through certification audits or information from whistle-blowers, they should be addressed.

##### **Further guidance and example of good practice**

The measures put in place by the Forestry Commission of Great Britain to reduce the risk of modern slavery (forced labour in the terminology of the ILO Declaration) offer an example of how to do this. Measures include paying a living wage, protection for whistle-blowers, excluding bidders convicted of human trafficking, and regular training of procurement staff. Modern slavery risks and mitigations are considered in each procurement process and incorporated in the selection checks on potential suppliers and contractors: <https://www.forestry.gov.uk/forestry/BEEH-ADTD2N>

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#### WHAT IT IS - OCCUPATIONAL SAFETY AND HEALTH

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Occupational safety and health (OSH), the occurrence of work-related accidents and diseases and their prevention, are key elements of decent work. Statistics on accidents in forestry are scarce and often inadequate, making comparisons and data aggregation difficult. Under-reporting of accidents and injuries is widespread, particularly among self-employed and contractors. Those reliable data that do exist suggest that forestry-related work is among the most hazardous of all non-military activities (Garland, 2018).

The numbers of reported fatal and non-fatal occupational accidents in Europe have fallen over the 25 years from 1993 to 2018. This is due partly to increased mechanization but may also reflect incomplete data, which may be linked to the outsourcing of many forestry operations over the same period. Occupational accidents are highest in countries that are characterized by difficult topography (Forest Europe, 2015a). Mechanization has reduced the frequency of accidents, but the chainsaw continues to be the single most dangerous tool (Visser and Stampfer, 2015). Occupational diseases may become more important in future, owing to a shift towards machine operation, as well as an ageing workforce. Climate change too may result in more high-risk operations such as salvaging timber after windfall, removal of dead trees after fires or insect outbreaks.

OSH regulators rely increasingly on setting objectives and establishing general requirements such as risk assessment or the implementation of OSH best practice rather than specific prescriptions. While this enables greater flexibility and more appropriate solutions in many situations, it is a challenge for small firms, in particular contractors and forest farmers.

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#### GUIDING PRINCIPLES<sup>10</sup>

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- Satisfactory safety and health levels are achieved when a number of closely-related principles have been applied at national, enterprise and worksite levels (ILO, 1998a, figure 1). These principles include compliance with laws and regulations, and a clearly-defined policy which identifies the nature and severity of the risks associated with forestry operations as well as the allocation of responsibility to those persons employed at the levels of management, supervision and execution;
- Differences in the size, scope, economic stability and culture of forestry enterprises cannot be permitted to justify any dilution in applying those general principles. They are essential to promoting safe working conditions that prevent or reduce the risk of injury or ill health;
- The main responsibility for safety and health in forestry work lies with employers. Forest owners, main contractors, local managers and supervisors who control or have a primary responsibility for workplaces must ensure that they are safe and without risk to health;

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<sup>10</sup> See ILO (1998b) Code of Practice on Occupational Safety and Health at Work

- Manufacturers, designers and suppliers of forestry equipment and substances must ensure that products are designed and constructed so that they are safe and without risk to health, when used correctly;
- Workers and employers must work together to ensure compliance with the legal duties imposed upon employers and take all reasonable steps to secure their personal safety and that of any other person who may be at risk as a result of their acts or omissions at work;
- Promoting safety and health in forestry work is the joint responsibility of employers and workers and will benefit from close cooperation.

## OBJECTIVES

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- “Reduce the levels of illness and injury experienced at present by the forestry workforce, taking into account the changes in technology and their implications for occupational health and safety due to the transition to the green economy”. (Rovaniemi Action Plan, Objective C.2);
- “Radically improve the monitoring of occupational safety and health” (Rovaniemi Action Plan, Action C.2.2);
- “Promote and monitor implementation of the FAO Guide to Good Practice in Contract Labour” (Rovaniemi Action Plan, Action C.2.3);
- “Enforce relevant legislation and develop regulations” (Rovaniemi Action Plan, Action C.2.4).

## EVIDENCE AND POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

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Heightened public expectations of markets and about sustainability and decent work reinforce the urgency of addressing the long-standing challenge to improve safety and health in forestry. There is also ample evidence that the cost of accidents and diseases hugely exceeds the cost of preventive efforts, including reporting and analysis (Garland, 2018).

Poor OSH performance is a major contributor to the perception that forest work is dirty, difficult and dangerous. The prospect of accidents and early retirement because of ill health are deterrents for new entrants to the profession. The OSH track record is also a good proxy for overall management and business performance.

## RECOMMENDED PRACTICES

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### Reporting

- **Strengthen** the information base about OSH status and areas for improvement by standardizing **accident and occupational health reporting and expanding its application**

in line with the FAO Guide on Accident Reporting in Forestry (Garland, 2018). At a minimum, reporting should include:

- a reporting requirement on organizations and all sectors;
  - standardized reporting forms, and special forms for forestry;
  - what, when, where and to whom to report, including triggering events and incidents plus record-keeping;
  - a requirement to submit more-detailed information for special surveys and studies;
  - privacy provisions to protect individuals and firms but allowing summaries.
- **Use self-inspection and audits**, in particular in smaller operations where OSH reporting yields only patchy information.

### Institutionalization

- **Create mechanisms for dialogue and cooperation** on OSH status and improvements between forest owners, industry, contractors, workers and authorities, including labour inspectorates, **at sector and enterprise levels**;
- Collaborate with labour inspectorates to identify priority OSH issues and ways to address them.
- **Compile relevant national legislation, relevant ILO standards (both fundamental and others if ratified by the country), as well as on access to recourse and remediation, along with guidance on implementation in forestry and disseminate the information widely among stakeholders.** Make the information available in easily accessible form to migrant workers;
- **Use OSH components of certification schemes for sustainable management** as a way to increase outreach to contractors and forest owners;
- **Make reporting of impacts on OSH a topic for research** and for the definition of best operational practice;
- All entities commissioning or carrying out forest operations should **put in place an occupational safety and health management system** that clearly describes and documents structures and processes. It should be explicit about cooperation with other entities, including contractors and with sub-contractors. All employees of the business should participate in the development, implementation and fulfilment of the occupational management system (ILO, 1998a; FAO, 2011).

### Complementarity with skills development

- **Adequate skills are crucial for safe work performance and** the recommendations in that section (page 18) **should be considered together with the ones on OSH**;
- Use advanced technology to improve OSH, and promote adequate training for works;
- **Provide skills training and certification to contractors and to self-employed**, e.g. fuelwood harvesting by occasional forest workers;
- **Give particular attention prior to working in hazardous situations** like windfall salvaging, even for experienced workers;

### **Further guidance and examples of good practice**

Extensive guidance on accident reporting in forestry is available (Garland, 2018) and for more detailed guidance on safe and healthy work practices (ILO, 1998a).

The ILO Guidelines for Labour Inspection in Forestry includes guidance on self-inspection by enterprises and forest certifiers in addition to practices for labour inspectors (ILO, 2005). A comprehensive tool for self-inspection in contractor businesses and harvesting teams is the WORX tool (FAO, 2011).

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## 2.2.4. WORK ORGANIZATION AND CONTRACTING OF SERVICE PROVIDERS

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### WHAT IT IS

Over the last several decades, forest industries and forest owners have increasingly relied on third parties to carry out forest management and harvesting operations. These contracted service providers carry out a specific operation and act as legally independent businesses. Ideally, “contracts bring together two or more parties for mutual benefits and the combined knowledge and skills of the parties is what makes them work” (Forestry Commission of Great Britain 2014).

Contractors have been central to advances in mechanization and account for the majority of forest operations in most UNECE countries. The transfer of responsibilities has often not been accompanied by a commensurate development of capabilities and skills. High turn-over of contractor staff is a major impediment to the acquisition of competence (FAO 2011).

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### GUIDING PRINCIPLES

- Commissioning parties have a responsibility to ensure that work undertaken by contractors meets fully the duty of care to people and the environment;
- Treat contractors as partners and an essential part of the supply chain in sustainable forestry;
- Business relations should be respectful and as stable and predictable as possible;
- Define clearly and communicate the responsibilities of all parties;
- Allow contractors free access to representative organizations;
- Provide employees of contractors with access to workers’ representative organizations and to collective bargaining;

## OBJECTIVES<sup>11</sup>

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- Contractors are capable of conducting work safely for people and for the environment;
- Contractors are treated as valued partners by others in the forestry sector;
- Contractors are registered businesses and meet minimum standards agreed in the forestry sector and with authorities;
- Contractors are represented by an association and consulted regularly;
- Contractors are capable of investing in upgraded technology and offer attractive workplaces to themselves and to their employees;
- Promote and monitor implementation of the FAO Guide to good practice in contract labour (Rovaniemi Action Plan, Action C.2.3).

## EVIDENCE AND POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

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The emergence of contractors is a result of globalization and regionalization of timber markets and concentration of economic power at the top of forest value chains. Contractor businesses tend to be small, yet have to invest substantial sums in equipment and their existence is thus often economically precarious. In spite of their crucial role for the functioning of supply chains, their political influence to shape the regulatory environment is low (Lewark et al, 2011). Upgrading performance and offering decent work is to a large extent concentrated in contractors and their workers. Low pay, limited job security and occupational safety and health issues all contribute to the poor image of forest work and the recruitment problems that the sector faces.

Neglecting contractors and focusing on the lowest cost offer in the short-term will severely compromise the ability of the forestry sector to improve productivity and remain competitive. This also presents a major reputational risk both vis-a-vis the public and potential job seekers. The sector is unlikely to meet expectations about environmental performance and decent work without upgrading its service providers.

## RECOMMENDED PRACTICES AND ACTIONS

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- **Promote and strengthen contractors' associations** at national and regional levels;
- **Establish regular dialogue** between forest owners, industry, contractors and authorities;
- **Define requirements for the registration of contractors**, including worker qualifications;
- **Establish documentation requirements for contractors** corresponding to the requirements;
- **Use easy self-assessment tools to identify qualification needs** among contractors;
- **Provide contractors with access to business training** in addition to technical training;
- **Coordinate training supply to achieve good quality and low cost** since contractors need training to be cost- and time-effective;

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<sup>11</sup> Adapted from FAO 2011

- **Establish and apply internal guidelines for contracts;**
- **Commissioning parties should support contractor development** and upgrading by engaging in long-term contracts and **paying on time;**
- All commissioning parties should **identify a works manager** responsible for the site and the conduct of the work with clearly-defined responsibilities and authority;
- **Ensure works managers** and other representatives of clients of service providers **are conversant with low impact machine utilization;**
- **Foster international recognition of registration and certification of contractors** to allow easy movement across borders in response to changes in demand.

#### **Further guidance and examples of good practice**

Guide on Good Practice in Contract Labour offers further guidance in much greater detail as well as numerous examples of good practice (FAO, 2011).

As an example of contractor guidelines established by a commissioning party, see Forestry Commission of Great Britain (2014)

[https://www.forestry.gov.uk/pdf/SafeConductofFCContracts.pdf/\\$FILE/SafeConductofFCContracts.pdf](https://www.forestry.gov.uk/pdf/SafeConductofFCContracts.pdf/$FILE/SafeConductofFCContracts.pdf)

### WHAT IT IS

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Achieving sustainable development will require the transformation of economies, adapting production and consumption patterns and changing how natural assets are used. This could have significant repercussions for employment, with job gains in some sectors, the loss of jobs in others and transforming jobs in many. Forestry is likely to experience all of these changes.

Overall, the transformation has created more jobs than have been lost (ILO 2018b, ILO, 2013b, Poschen, 2015). Job losses have tended to fall disproportionately on some sectors, regions and segments of the workforce, often affecting regions and workers with limited alternative employment. There are some significant examples in forestry, such as the limits on timber harvesting in public forests in the Pacific North West of the United States. Logging bans in Asia, including China, have reduced the volumes of timber that can be harvested: China has introduced an almost total ban on harvesting timber in remaining natural forests (ILO, 2012).

Changes in society's expectations for forests and the impacts of climate change may well increase restrictions on forest utilization, especially if major forest disasters like fires, windfall or pest infestations become more common. These situations may increase short-term demand for work in salvage operation and forest restoration, which might then be followed by long periods of low demand for work. Rapid mechanization or automation of forest operations and processing may have similar impacts, particularly in countries with current low levels of mechanization and large workforces.

The forestry workforce in the UNECE region has a high level of tertiary education, but also a disproportionately high share of workers with only primary education, for example 28 per cent in the European Union (EUROSTAT, 2017)). These workers find it difficult to change occupations. Similarly, reductions in the workforce driven by mechanization and automation/digitalization eliminate primarily manual work performed by workers with lower educational attainment. They are likely to live in rural areas with limited options for alternative employment.

The International Labour Conference (ILC) in 2013, the Parties to the UNFCCC in the Paris Agreement in 2015<sup>12</sup> and the OECD (2017) have recognized the need for just transitions for workers and communities. The ILC 2013 spelled out a number of principles that should be applied for a just transition to occur. It noted that, "A just transition for all towards an environmentally

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<sup>12</sup> "Taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities ..."  
Paris Agreement (2015), Preamble.

sustainable economy needs to be well managed and contribute to the goals of decent work for all, social inclusion and the eradication of poverty.” To assist governments, employers and workers, the ILO adopted ‘Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All’ (ILO, 2015a).

## PRINCIPLES FOR A JUST TRANSITION<sup>13</sup>

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“The following principles should guide the transition to environmentally sustainable economies and societies:

- Strong social consensus on the goal and pathways to sustainability is fundamental. ***Social dialogue has to be an integral part of the institutional framework for policy-making and implementation at all levels.*** Adequate, informed and ongoing consultation should take place with all relevant stakeholders.
- ***Policies must respect, promote and realize fundamental principles and rights at work.***
- ***Policies and programmes need to take into account the strong gender dimension*** of many environmental challenges and opportunities. Specific gender policies should be considered in order to promote equitable outcomes.
- ***Coherent policies across the economic, environmental, social, education/training and labour portfolios*** need to provide an enabling environment for enterprises, workers, investors and consumers to embrace and drive the transition towards environmentally sustainable and inclusive economies and societies.
- These ***coherent policies also need to provide a just transition framework for all*** to promote the creation of more decent jobs, including as appropriate: anticipating impacts on employment, adequate and sustainable social protection for job losses and displacement, skills development and social dialogue, including the effective exercise of the right to organize and bargain collectively.
- ***There is no “one size fits all”.*** Policies and programmes need to be designed in line with the specific conditions of countries, including their stage of development, economic sectors and types and sizes of enterprises.
- In ***implementing sustainable development strategies, it is important to foster international cooperation among countries.*** In this context, we recall the outcome document of the United Nations Conference on Sustainable Development (Rio +20), including section VI on means of implementation”.

## OBJECTIVES

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- Reduce the impact of job losses and industry changes on workers and communities and to produce new, green and decent jobs, sectors and healthy communities.

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<sup>13</sup> Adapted from ILO (2015a)

- Detect the need for a just transition, its nature and scale and address the challenges it poses as early as possible.
- Create new job opportunities locally to the fullest extent possible.

## THE POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

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Some communities and regions are over-dependent on the forestry sector and often lack economic alternatives. Local culture, skills profiles and productive networks tend to be closely tied to the forestry sector. Forest industries are often the main or even the only employer and the backbone of the local economy in remoter rural areas. Any reduction in economic activity or job opportunities in the forestry sector, whether temporary or permanent, without any buffer or job replacement can lead to severe deprivation and stagnation within affected communities. The fear of losing jobs and livelihoods can cause workers and communities to resist change, even where change may not only be in the national interest but may also help to secure the community's own future.

## RECOMMENDED PRACTICES AND ACTIONS<sup>14</sup>

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- Establish/strengthen the availability of and access to basic labour market data;
- ***Carry out ex ante assessments of the employment and socio-economic impacts of environmental policies*** to inform policy choices;
- ***Integrate provisions for a just transition in the forestry sector into national plans and policies*** for the achievement of the Sustainable Development Goals and national environmental and climate change action plans;
- Foster policy coherence ***by integrating provisions for a just transition into the agendas of line ministries***, rather than assigning them to only one ministry and promote close collaboration between relevant national ministries, including ministries of economic planning and finance;
- ***Establish/strengthen institutional and technical capacities of regional and local authorities*** to guide the transition, and to address the necessary changes in regional economies;
- ***Provide opportunities for the participation of representatives of employers and workers at all possible levels and stages of the policy process*** through social dialogue and foster consultations with relevant stakeholders;
- ***Encourage and actively engage in collaborative efforts among governments, employers' and workers' organizations***, with the support of international organizations, to effectively incorporate enabling policies for a transition towards environmental sustainability;

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<sup>14</sup> Adapted from ILO (2015a)

- ***Aim at policy coherence*** and consider all key policy areas to address environmental, economic and social sustainability simultaneously: macroeconomic and growth policies, industrial and sectoral policies, enterprise policies, skills development, occupational safety and health, social protection, active labour market policies, rights, social dialogue and tripartism.
- Consider *these measures for achieving a specific just transition*:
  - ***invest in reducing environmental impacts of forest operations or processing, especially*** if, without this, restrictions may be placed on the level of activity;
  - provide ***social protection*** by way of income support for affected workers and their families;
  - enhance labour market prospects of redundant workers through ***retraining and skills development***;
  - ***support worker mobility and relocation if necessary***;
  - ***invest in diversification of local economies*** and create alternative economic and job opportunities;
- ***Formalize just transition plans, assess resource needs and allocate adequate funding.***

#### **Further guidance and examples of good practice**

Experience with transitions is mixed across countries and economic sectors. A number of successful cases from other economic sectors are described in ILO (2013b) and OECD (2017). ILO (2012) also summarizes a successful large-scale transition in the forestry sector in China.

## 2.4. AREA 4 SEIZING AND EXPANDING NEW OPPORTUNITIES FOR FORESTS IN A GREEN ECONOMY

### WHAT IT IS

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The ongoing shift towards a green economy and, within this, the evolution of circular and bio-economies emphasizing greater reliance on renewable resources, offer significant new opportunities for forestry. These go far beyond simply increasing the supply of traditional wood and non-wood products. Wood energy is a traditional product, but new, cleaner technologies are expanding the market and creating new supply chains. There has been major growth in demand for forest-based ecosystem services, human health, recreation, tourism, environmental education and research. These offer opportunities for job creation, but require new skills profiles, work organization and supply chains to deliver them.

These new opportunities should create significant numbers of jobs not only in the forestry sector but also outside it. This may offer new career opportunities to ageing workers and those no longer able to carry out traditional forest work due to the impacts of accidents or diseases. Migrant workers and the long-term unemployed may also benefit.

Green jobs that are generated will need to be environmentally sustainable, provide decent working conditions, and be economically efficient. To stimulate employment, promoted activities need to provide a net gain in employment (jobs created vs jobs lost). Any analysis must examine the whole value-chain, especially if new activities might result in a decrease of employment in traditional operations and examine potential trade-offs between new and traditional activities.

### GUIDING PRINCIPLES

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- Management and utilization of forests should preserve and enhance the provisioning, environmental and social services they provide;
- The benefits from forests should be assessed comprehensively and non-traditional goods and services considered in policy and management decisions to maximize overall benefit and avoid unintended losses and trade-offs, including in employment;
- Valuations should go beyond marketed products and services currently captured in national accounts;
- The results of identification and valuation of benefits should be widely communicated to stakeholders to inform public opinion and policy making.

### OBJECTIVES

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- Map non-traditional forest goods and services and unlock their potential.

- Promote sustainable forestry in rural communities including forest-based entrepreneurship, capacity building and innovation (Rovaniemi Action Plan, Action E.1.5).
- Make use of new opportunities as an alternative career path for workers no longer able to carry out traditional forest work.

## EVIDENCE AND POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

Increasing demand for non-traditional forest products and services is evident. Forests are more valued than ever for environmental services (EUROSTAT 2017). The area of forests devoted to recreational space has increased markedly since the 1990s (Forest Europe, UNECE, FAO 2011). The economic value of such services can exceed that of wood products. In the United Kingdom, for example, the annual expenditure of visitors to woodlands in 2014 was estimated at £2.3 billion, whereas total timber removals were worth £ 223 million (Saraev et al 2017).

Valuations of non-marketed services show that they are a neglected asset and that their potential is underutilized. Forestry is often well positioned to provide economic benefit in rural areas with many small and medium-sized companies, family-owned businesses, and connections to the local community. Payments for environmental services may generate new streams of revenue and investment. Policies considering aspects such as the valuation of the environmental services of forests, and the establishment of economic incentives (e.g. taxation) can boost the creation of new jobs linked to the forest sector (Forest Europe, 2014). In the future, a new balance between traditional forest goods and services and new ones is likely to emerge, often combining both in new packages. Gaps in data and methodology for the comprehensive valuation of forest goods and services continue to exist and this will be an important area for development that supports policy making and management (USDA, 2017).

Environmental and social services are a growing source of new jobs. The European network of Natura 2000 sites is estimated to support between 3.5 - 8 million jobs including 50,000 forestry jobs. If funding were provided to fully restore the environmental status of all sites, it is suggested that an additional 70,000 direct forestry jobs could be created, increasing current employment in forestry in Europe by 10 per cent (Bio Intelligence Service, 2011). Many newly-emerging jobs, particularly in forest-based services, offer opportunities for women. Women are often highly qualified but tend to be self-employed and the jobs can be precarious in terms of income levels and social security coverage (Lewark et al, 2011).

Creating job opportunities will depend on encouragement and support for entrepreneurship in rural environments as well as promotion of local markets and local forest products. Networking and cooperation between different stakeholders will be fundamental to optimize the use of existing resources (Forest Europe, 2014).

Forests in a green economy is a relatively new concept with numerous initiatives and pilot projects under way throughout the UNECE region. A preliminary mapping of green forest jobs in the UNECE region, traditional, newly established as well as future, has identified a range of

emerging opportunities (UNECE, 2018). These include modern wood energy production, forest ecosystem services, agro- and mountain forestry, urban forestry, health, recreation and tourism to environmental education and research. There is a major opportunity to advance faster and with less trial and error by pooling experience and lessons learned.

## RECOMMENDED PRACTICES AND ACTIONS

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### Identify opportunities

- **Map opportunities country-wide and locally and assess their growth potential** as well as complementarity or possible trade-offs with existing and traditional forest uses and services, including through UNECE/FAO Forest Outlook Studies;
- **Explore potential for investing in ecosystem services and habitat restoration** and the related job opportunities;
- **Work towards a long-term policy framework** providing a predictable business environment. Direct policy making at ensuring equal conditions for sectors competing for workforce to encourage long-term investment and development.
- **Assess the economic sustainability as well as quality of newly-emerging jobs;**
- **Map knowledge gaps and barriers.**

### Value benefits<sup>15</sup>

- **Estimate the economic benefits of a given forest and associated management policy**, using available methods for services related to timber, carbon, water, amenities, recreation, and wildlife;
- **Estimate the change in economic benefits** associated with a change in management, regulations, or incentives, or a natural disturbance;
- **Enhance communication with stakeholders about the economic benefits and costs** of potential changes in forest management, including with respect to employment;
- **Monitor management outcomes** in light of comprehensive benefit valuation.

### Mobilize partners and resources to seize opportunities

- **Create dialogue fora and partnerships vertically (sector) and horizontally** (Local Economic Development (LED) and clusters);
- Build public awareness on environmental, social and economic benefits of sustainable forest management and related green jobs to improve the perception of forest-based activities;
- Promote active involvement of rural and urban citizens in the creation and promotion of local markets;

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<sup>15</sup> Adapted from: USDA (2017)

- **Promote cooperation and networking** to create new value chains, local markets and business models thus creating new jobs in the forestry sector. Promote cooperation and networking:
  - **Among forest owners, contractors and self-employed forest workers**, encouraging the establishment of small-scale entrepreneurs and associations to support primary production and creation of local markets.
  - **Among policy makers, researchers, public and private sector**, supporting and making use of innovation hubs as well as developing public-private partnerships and investments in the forestry sector.
  - **Among the forestry sector and other sectors**, looking for new job niches where synergies can contribute to the achievement of policy objectives of other sectors (such as adaptation to and mitigation of climate change, bio-economy development, biodiversity protection), in particular taking into consideration the provisions of the United Nations Strategic Plan for Forests, the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD).
- **Support innovation and entrepreneurship** through entrepreneurship training, business advisory services, venture capital and public procurement;
- **Identify staffing requirements and skills needs and adjust training and recruitment** accordingly;
- **Invest in better education and training of forest owners and managers** to provide them with the necessary skills and know-how, **adapt vocational and university programmes** to reflect the demand for new skills and expertise.
- **Develop incentives, business models and frameworks for value capture** such as payment for ecosystem services as a way of economically sustaining expanded services, taking into consideration the creation of new green job opportunities, e.g. in tourism, recreation and health care, environmental education.
- **Use the opportunity of new lines of benefit and value creation to diversify the professional background, gender and ethnicity of staff** of;
- **Promote forestry jobs in national employment strategies and policies** as providing sustainable products and services for the society.

#### **Promote joint learning**

- **Document local and national experiences** and make them available nationally and internationally;
- **Organize national and international exchanges** on experiences and lessons learned;
- **Pool lessons learned and good practices** on suitable knowledge platforms and incorporate them into education and training;
- **Consider the creation of a community of practice** in the UNECE region. This could involve linking up national knowledge platforms.

### **Further guidance and examples of good practice**

The 'forest dialogues' in Austria and systematic outreach to the public in Luxembourg through a network of forest centres were both reported to the mid-term review of the Rovaniemi Action Plan. Forestry at the centre of local economic development in Germany in the 'Holzketten' case study (Lewark et al, 2011).

The Swedish programme combining the integration of migrants and long-term unemployed with restoration of natural assets in forest is particularly relevant in the current context of intense migration, high unemployment in parts of the UNECE region and a growing gap between urban and rural areas (Karlsson, 2017). Under the programme, the Swedish Labour Market Board funds training and education and short-term employment by the forest agency currently with € 75 million per year. The programme has a relatively high share of women participants (20 per cent). The rate of 60 per cent of successful labour market insertion for migrants compares favorably with the 40 per cent achieved by non-participants. The programme is accompanied by a scientific evaluation.

A number of innovation hubs and platforms have been set up or are under development. These include SINCEREFORSTS (<https://sincereforests.eu/>), a multi-country project to test innovative business models and to develop new policies. An example of a hub to boost entrepreneurship based on eco-system services is ECOSTAR (<https://www.ecostarhub.com/nature-accelerator/>). The winners of a competition of business ideas based on eco-system services receive training and coaching as well as start-up finance from impact investors backing the hub.

## 2.5. AREA 5 RECRUITING, RETRAINING AND RETAINING THE WORKFORCE OF THE FUTURE

### WHAT IT IS

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Recruitment is, 'The process of finding and hiring the best-qualified candidate (from inside or outside an organization) for a job opening, in a timely and cost-effective manner. The recruitment process includes analyzing the requirements of a job, attracting employees to that job, screening and selecting applicants, hiring, and integrating the new employee to the organization'. (See Business dictionary <http://www.businessdictionary.com/definition/recruitment.html>).

In many UNECE member states, the forestry sector has had difficulty for decades attracting enough potential employees, even when there is good availability of young people entering the labour market and rising numbers of women in the labour force. In the United States for example, enrollments in forestry and natural resource peaked in 1996 and then declined for more than 10 straight years, with a loss of 4% of the student population per year until 2007 (Sharik et al., 2015).

The difficulties have been most apparent when recruiting for manual and mechanized forest operations in silviculture and harvesting. The challenge is likely to continue as many UNECE countries experience slowing labour force growth or even decline, along with continued urbanization and a perception of forestry as a mature or declining economic sector.

The changing nature and image of forestry as part of a green economy, the new occupations and skills profiles emerging, the strengthened outreach and visibility of the forestry sector as well as new job vacancies may provide opportunities to address the challenge at all stages in the recruitment process and to link it to the broader repositioning of the forestry sector.

Forest work will need to be safer and better paid with more diverse forest careers, to attract the skilled workforce for a competitive and sustainable forest sector. Technology change and digitalization can address this challenge not only to the benefit of the forest sector but may also help to stem rural population decline.

### GUIDING PRINCIPLES

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- Give priority to attracting high potential new entrants and new skills for the forestry sector and for individual forest institutions and businesses;
- Support a sustained, sector-wide approach and outreach beyond the forestry sector for effective mobilization of the next generation of the forestry workforce;
- The evolution and repositioning of the forestry sector as part of a green economy resonates with the 'millennials' and should be an opportunity to reach new pools of talent, to diversify the skills base and to redress imbalances in the workforce such as gender or ethnicity;

- Working conditions in forestry and in occupations related to the green economy meet decent work criteria and fit with the image of forestry as part of a green economy;
- Improve wages, working conditions and career prospects in the forestry sector and in occupations related to the green economy so they will be attractive in comparison with competing job offers.

## OBJECTIVES

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- Develop long-term workforce renewal plans based on current skills and age profile of the workforce, the identification of current and future skills needs, changes in technology and the evolving balance between traditional and non-traditional products and services and the management and forest operations to deliver them;
- Ensure, jobs in forestry and in the delivery of forest-based products and services related to the green economy meet the requirements of decent work and offer terms and conditions as well as career prospects which are attractive to qualified young job seekers in the respective national and local labour markets;
- Position forestry as a vital part of the green economy, a vibrant, attractive sector and a good place to work in public opinion, in particular among youth, women and migrant workers;
- Ensure the 'pipeline' of students and trainees in the educational and vocational training system matches projected requirements.

## EVIDENCE AND POTENTIAL CONSEQUENCES OF INADEQUATE PRACTICES

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New generations of job seekers are looking for meaning in their work, in addition to an acceptable income, good working conditions and career prospects. The notion of green jobs has appeal and has caught on with the young generation (UNEP, ILO, IOE, ITUC, 2008). A study in the United States (Rouleau et al 2017) found that the environmental stewardship aspect of forestry and related natural resources programs may boost enrollment rates and improve the rates of enrolment of underrepresented minorities. On the other hand, forestry and related natural resources students are hesitant to enroll due to concerns about earning potential and the desire to avoid contentious political issues. Women are hesitant to enroll in a forestry and related natural resources program due to concerns about their gender, work locations, and work conditions.

A failure to evolve, could lock the forestry sector into traditional activities and create a barrier to adopting and deploying new technology and expanding into new economic activity. This would further reduce the economic weight and political influence of the sector. Perhaps more importantly, it would reduce the ability to provide integrated and well-balanced sets of products and services to society as other institutions and sectors take on functions and regulation affecting forests.

## RECOMMENDED ACTIONS

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### Assess future workforce needs

- **Asses the current skills and age profile** of the workforce;
- **Identify current and future skills needs** in light of on-going and expected changes in technology and the evolving balance between traditional and non-traditional forest operations;
- **Identify opportunities to diversify the workforce for gender and race/ethnicity, to integrate migrants and relocate older workers no longer able to perform traditional forestry work**;
- **Draw up long-term workforce renewal plans** in consultation with relevant stakeholders, including forest owners, contractors, workers, education and training institutions.

### Enhance outreach

- **Increase the presence of forestry in basic education** (Karlsson, 2017);
- **Promote role models for women and migrant workers in forestry**, for example by supporting female migrant foresters to participate in public events and environmental education;
- **Use social media and multipliers** to effectively reach youth (Bachler, 2017);
- **Regard projects** such as forest walks, mountain bike facilities, wildlife leaflets and recreational signage, not just as marketing or for meeting environmental obligations, but **as a key tool for recruiting the next generation of foresters**, and design them accordingly for example, describing the role of the local forest manager (Harris, 2016);
- **Work with career guidance and labour exchange services** to reflect the changing nature of forestry work in a green economy in the career information for youth and job seekers.

### Facilitate access

- Ensure that the format, delivery and funding of **vocational education and training** make them **accessible to relevant groups**;
- **Review recruitment processes**, in particular person-specifications, in comparison with the public sector and best practice in other industries, to attract potentially valuable applicants and particularly women. (Harris, 2016).

### Increase retention

- **Periodically review working conditions and career prospects** in the forestry sector and compare them with relevant benchmarks;
- **Collect data over time on men and women** applying, recruited, leaving, and promoted in forestry institutions and companies **to establish trends** to prioritize action on the other recommendations. Distribute the findings for use as a discussion, responses on the importance and feasibility of its recommendations. (Harris, 2016).

### **Further guidance and examples of good practice**

For expanded outreach, a package of audio-visual materials and on-line support has been developed by organizations of agricultural employers in Europe (Bachler, 2017).

Set up with support from the forest industry in the 1970s, the 'Project Learning Tree' has reached a quarter of a million teachers and about a 100 million youth in the United States and Canada. (<https://www.plt.org/>)

An example of rebranding in career guidance is the Canadian forest industry platform 'The greenest workforce'. (<http://thegreenestworkforce.ca/index.php/en/home/>)

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