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CONTENTS

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TASK 4.1 REVIEW OF THE SUSTAINABILITY CRITERIA

1. INTRODUCTION

As part of the BIOMASUD PLUS Project, WP 4 seeks to "Improve the sustainability requirements of the BIOMASUD Label".

To do so, the following three tasks are set:

- Task 4.1 Review of Sustainability criteria
- Task 4.2 GHG and Energy Demand balance calculation Methodology
- Task 4.3 Development of BIOMASUD Platform

The scope of Task 4.1 includes reviewing the current sustainability criteria in the BIOMASUD scheme for their update. The review particularly seeks the opportunity of supplementing them with new criteria or parameters. The resulting new set of Sustainability Criteria should include a wide variety of raw materials from very different sources and given that it refers to biomass for domestic consumption, they should be easy to apply for small- and medium-sized enterprises (SMEs).

Approximately, 60% of the European forest area is in hands of small private individuals, families and cooperatives while in 2013, there were 4.4 million farms in the EU-28 that had a standard output that was less than EUR 2 000, while a further 3.1 million farms had an output within the range of EUR 2 000–EUR 8 000. Together these very small and small farms accounted for more than two thirds (69.1 %) of all the farms in the EU-28.

This means that those providing the raw materials that we intend to promote have most of times to struggle to make a living and therefore, the provision of a standard that helps them to increase their revenues through biomass market is important, but at the same time applicable criteria must be in consonance with the capabilities and structure of the sector.

The review of the Sustainability Criteria that will govern the BIOMASUD scheme is carried out in the following stages:

1) Review of existing requirements and sustainability criteria.
2) Creation of a Group of Experts.
3) Development of the first version of the criteria to be introduced.
4) Review of the proposed criteria by the Group of Experts
5) Focus group and Workshop
6) Final version of new Sustainability criteria to be introduced in the BIOMASUD scheme.

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2. STAGES IN THE REVIEW PROCESS

2.1 Review of Existing Requirements and Sustainability Criteria

2.1.1 Overview of the documentation sources

This stage focuses on searching for and selecting key documentation, such as certification schemes standards, research papers or EU reports and legislation concerning sustainability criteria and related matters that have already been produced.

The selected documentation comes from domestic, European or worldwide sources and should have been published within the period 2010-2016.

This documentation has been analysed and studied in detail in order to ascertain current progress and methods in use to define Sustainability Criteria, especially those focused at the bio-energy sector.

The objective is to identify different requirements, criteria and indicators that could be taken into consideration in the new set of Sustainability Criteria for the BIOMASUD scheme.

All the documents that have been selected and evaluated are sorted below following a chronological order according to their date of issue (please use the LINK to view document):

- 25.02.2010 **EUROPEAN COMMISSION. "**Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling". LINK

- 20.10.2010 **EUROPEAN COMMISSION.** "Regulation (EU) No. 995/2010 laying down the obligations of operators who place timber and timber products on the market." Timber Regulation. LINK

- 26.11.2010 **PEFC INTERNATIONAL. "**Requirements for certification schemes. PEFC ST 1003:2010: Sustainable Forest Management – Requirements". LINK

- 21.11.2011 **WORLD BIOENERGY ASSOCIATION**. "Sustainable Biomass for Energy – WBA Verification Scheme." LINK

- 01.04.2012 **VITO NV**. FINAL REPORT "Benchmarking biomass sustainability criteria for energy purposes". Study carried out under the authority of the European Commission, Directorate General for Energy. LINK

- 28.09.2012 **BIOMASUD.** "Handbook for the quality label of domestic solid biofuels" v12. LINK

- 13.02.2013 **EN 16214:2013** "Sustainability criteria for the production of biofuels and bioliquids for energy applications - principles, criteria, indicators and verifiers". LINK

- 10.05.2014 **ISO 17225-6:2014 "**Non-woody pellets for non-industrial use". LINK

- 28.7.2014 **EUROPEAN COMMISSION.** Commission staff working document. SWD (2014) 259 final. "State of play on the sustainability of solid and gaseous biomass used for electricity heating and cooling in the EU." LINK

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- 16.09.2014 **FORESTS ISSN 1999-4907.** Forests 2014, 5, page 2163-2211 – Article: "Legal Harvesting, Sustainable Sourcing and Cascaded Use of Wood for Bioenergy: Their Coverage through Existing Certification Frameworks for Sustainable Forest Management." LINK

- 22.12.2014 **UK GOV.** Department of Energy and Climate Change. "Woodfuel Guidance: Woodfuel Advice Note and Risk based Regional Assessment: A Checklist Approach". LINK

- 26.03.2015 **SUSTAINABLE BIOMASS PARTNERSHIP (SBP)** Framework:

  - Standard 1. Feedstock Compliance Standard. V1. LINK
  - Standard 2. Verification of SBP - Compliant feedstock. V1. LINK
  - SBP Glossary of Terms and Definitions. V1 LINK

- 01.06.2015 **Roundtable of Sustainable Biomaterials (RSB) "**Low ILUC Risk Biomass Criteria and Compliance Indicators". LINK

- 22.07.2015 **FSC®.** International Standard. FSC-STD-01-001 V5-2 EN: "Principles and Criteria for Forest Stewardship". LINK

- 02.07.2015 **FOREST EUROPE.** "Updated Pan-European Indicators for Sustainable Forest Management". LINK

- 01.09.2015 **ISO 13065:2015** Sustainability criteria for Bioenergy. LINK

- 02.07.2015 **FOREST EUROPE.** "Comparative table of indicators. Improved list from Vienna 2003 vs Updated list Madrid 2015". LINK

- 30.07.2015 **STANDING FORESTRY COMMITTEE.** Ad hoc working group on Sustainable Forest Management Criteria and Indicators. Final Report. LINK

- 01.08.2015 **ENPlus. "**Quality Certification Scheme for Wood Pellets. Handbook for countries not managed by any national licenser/supporter. Part 4: Sustainability Requirements Version 3.0". LINK

- 29.03.2016 **NETHERLANDS ENTERPRISE AGENCY.** "Sustainability criteria for solid biomass. Public Consultation Dutch Verification Protocol". LINK

- 09.08.2016 **International Sustainability and Carbon certification** ISCC 202 "Sustainability requirements" LINK

2.1.2 Key Documentation: Findings on Sustainability Criteria

After studying this documentation, it is of interest to highlight that the sustainability criteria for biomass currently defined and included in the various documents consulted are mainly focused on biomass from forests and large-scale industrial use, so we have no previous experience concerning diverse biomass and small-scale domestic use to follow up. Following, a summary of those most important documents and findings is provided.

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I. European Commission Reference Documents

- The **European Commission in their COM (2010) 11** "REPORT from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling" consider that:

Chapter 2.1 Sustainability in production (land management, cultivation and harvesting):
(…) "In Europe, sustainable agricultural production is regulated through the environmental cross-compliance requirements in the Common Agricultural Policy (CAP). Forest management is regulated at national level, with policy guidance through the EU Forestry Strategy and international processes such as the Ministerial Conference for the Protection of Forests in Europe (MCPFE - FOREST EUROPE)".
Chapter 2.2 Land use, land use change and forestry accounting:
"Deforestation, forest degradation and a number of other practices can result in a significant loss of terrestrial carbon and/or significant changes in productivity (e.g. harvesting practices that result in excessive removal of litter or stumps from the forests). Emissions related to land use, land use change and forestry (LULUCF), are reported by all Annex 1 countries (…) but accounting methods as applied under the Kyoto Protocol need to be improved. International climate change negotiations are ongoing to decide accounting methods for LULUCF under a new international agreement. (…) Proper global LULUCF accounting can make an important contribution in the context of the sustainable production of biomass".
Chapter 3.2 Recommended sustainability criteria:
"1. According to Article 17(1) of the Renewable Energy Directive, wastes and certain residues should only be required to fulfil the requirements of Article 17(2), i.e. the greenhouse gas performance criteria". (…) "It is recommended that the greenhouse gas performance criterion is not applied to wastes, but to the products for which default greenhouse gas emission values have been calculated as listed in Annex II".
Chapter 3.3 Scope of application of the criteria:
"is recommended that national sustainability schemes apply only to larger energy producers of 1 MW thermal or 1MW electrical capacity or above. Placing requirements on small-scale producers to prove sustainability would create undue administrative burden, although higher performance and efficiency should be encouraged".
Annexes
Annex I – Methodology for calculating greenhouse gas performance of solid and gaseous biomass used in electricity, heating and cooling. Annex II – Typical and default values for solid and gaseous biomass if produced with no net carbon emissions from land use change

- Related to COM (2010) 11, the **Commission Staff Working Document,** published the SWD (2014) 259 Final, "State of play on the sustainability of solid and gaseous biomass used for electricity, heating and cooling in the EU". About this SWD (2014) 259, we would like to highlight:

Chapter 4. Promoting Sustainable Biomass Production and Use:
(…) "Despite the many benefits associated with biomass use in electricity, heating and cooling (see section 2.1), there are a number of sustainability risks that need to be properly managed by both economic operators and Member States. These risks include: unsustainable feedstock production (forest and agricultural biomass); emissions from land use, land use change and forestry (LULUCF); lifecycle GHG emission performance; indirect impacts; inefficient bioenergy generation; and air emissions."
Chapter 4.1. Ensuring sustainable feedstock production Forest biomass. (…)
"With respect to the issue of forest biomass sustainability, it should be recognized that the development of SFM criteria measurable is not yet sufficiently advanced for use throughout all life-cycle phases at EU-level. To this

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end, the Commission is currently working to develop 'objective, ambitious and demonstrable' SFM criteria that can be applied in different policy contexts regardless of the end use of forest biomass. Such exercise will be carried out in close consultation with Member States and stakeholders and building on internationally agreed criteria (FOREST EUROPE - SFM Criteria).
Once developed, the EU-wide SFM criteria could be used to demonstrate the first life-cycle phase of sustainability of forest biomass for energy and other uses. Furthermore, under the 'Forest Europe' process, the EU is supporting the implementation of sustainable forest management, thus contributing to strengthen forest protection and management in the wider European region (including in biomass trading partners such as Russia)"

- Also at EU level, the **EU Timber Regulation (995/2010)**, which entered into force in March 2013, addresses the risk that forest biomass (for all uses, not just energy) has been harvested in contravention of the legislation applicable in the country of harvest. This measure prohibits the placing on the EU market of illegally harvested timber or timber products, including wood fuels such fuel wood, wood chips and pellets, and lays down mandatory obligations on suppliers to exercise due diligence when placing domestic or imported timber or timber products produced on the EU market.

  Accordingly, economic operators are expected to have a system in place that provides information about the wood and wood-based products that are supplied for the first time on the internal market for distribution or use in the course of a commercial activity. The implementation of the EU Timber Regulation should contribute to ensuring sustainable production of biomass used in the EU heat and power sector, as long as sustainability requirements are part of the legislation of biomass producing country.

- The Study **"Benchmarking biomass sustainability criteria for energy purposes (April 2012)"** carried out by VITO VN under the authority of the European Commission, Directorate General for Energy 2011/TEM/R/190, includes:

Appendix II Forestry Management and Biodiversity

"In terms of Forestry Standards that require certification in forestry management, the Program for the Endorsement of Forestry Certification (PEFC) and the Forest Stewardship Council (FSC) are represented in the EU.
Both standards consider issues on biodiversity, soil, water, management and in the case of FSC carbon stocks. Table 1 presents the main criteria and principles of the PEFC and FSC standards, and two voluntary national standards, the Dutch Green Gold Label Program (Forest Source Criteria) and the UK Forestry standard.
The biodiversity principles vary among the standards but all of them look at the following topics:

a) Conservation: of biodiversity, threatened species, ecosystems,
b) Forest management or integrity (e.g. considering water, soil)
c) Enhancement: of habitats, landscape
d) Description of species, of ancient forests and semi-natural forests,
e) Impacts: on ecosystems, forest functions, exotic species"

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II. Forest Certification Schemes

Forest certification arose out of the need to control the destruction of the world's forest resources, particularly in tropical areas. Thus, at Earth Summit held in Rio de Janeiro in 1992 environmental NGOs, along with many government organisations, pushed strongly for international agreements and legislation to tackle the problem of deforestation and forest degradation. As a result, a number of non-legally binding Forest Principles and an agenda which set out action programmes for sustainable development for the next century, arose.

In 2009, a definition of Sustainable Forest Management was developed by the Ministerial Conference on the Protection of Forests in Europe (FOREST EUROPE), and has since been adopted by the Food and Agriculture Organization (FAO). It defines sustainable forest management as:

The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.

In simpler terms, the concept can be described as the attainment of balance – balance between society's increasing demands for forest products and benefits, and the preservation of forest health and diversity. This balance is critical to the survival of forests, and to the prosperity of forest-dependent communities.

Today, forest certification has become widely accepted as being a necessary requirement for forest owners, not only to demonstrate responsible forest management but also, to gain access to markets that are increasingly demanding certified timber. In this sense, third-party certification became an important tool to improve forest product procurement practices became leading to comprehensive wood and paper policies that include factors such as the protection of sensitive forest values, thoughtful material selection and efficient use of products. These certificates are also a tool that helps concerned consumers to verify that the products they are purchasing come from a sustainable managed forests. Globally, the two largest umbrella certification programs are:

* Programme for the Endorsement of Forest Certification (PEFC) * Forest Stewardship Council (FSC)

Following is a recent statistic on the implementation of forest certification, FSC and PEFC in our consortium's countries:

FOREST CERTIFICATION	FSC (ha)*	PEFC (ha)*	TOTAL**
Global	194,091,969	300,980,838	225,072,807
Europe	93,592,182	93,773,034	187,365,216
Total Project Area	5,349,011	3,122,849	8,471,860
Croatia	2,039,241	-	2,039,241
Greece	-	-	-
Italy	85,816	811,040	896,856
Portugal	372,071	256,369	628,440
Slovenia	260,269	49,204	309,473
Spain	241,536	2,006,236	2,247,772
Turkey	2,350,078	-	2,350,078

**As of March 2017*

*** Total expressed is the net sum of both sources. Please note that real number of certified hectares may be smaller as sum is not discriminating those areas holding a dual FSC/PEFC certificate, and thus their corresponding number of hectares may be duplicated.*

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a) PEFC, the Programme for the Endorsement of Forest Certification

PEFC is an international non-profit, non-governmental organization dedicated to promoting Sustainable Forest Management (SFM) through independent third-party certification. It works throughout the entire forest supply chain to promote good practices over forest resources and to ensure that timber and non-timber forest products are produced with respect for the highest ecological, social and ethical standards. Thanks to its eco-label, customers are able to identify products from sustainably managed forests.

PEFC is an umbrella organization. It works by endorsing national forest certification systems developed through multi-stakeholder processes and tailored to local priorities and conditions. Each national forest certification system undergoes rigorous third-party assessment against PEFC's unique Sustainability Benchmarks to ensure consistency with international requirements.

These benchmarks have been developed based on internationally-recognized, ongoing and long term, intergovernmental processes, as FOREST EUROPE, for the promotion of SFM to ensure compliance with globally agreed requirements. In addition, the benchmark criteria are regularly revised through multi-stakeholder processes involving participants drawn globally from civil society, business, governments, labour and research institutions to take account of new scientific knowledge, societal change, evolving expectations and to incorporate latest best practice.

The Standard PEFC ST 1003:2010 specifies the Sustainable Forest Management – Requirements. The specific Criteria for SFM standards are:

- *Criterion 1*: Maintenance and appropriate enhancement of forest resources and their contribution to the global carbon cycle
- *Criterion 2:* Maintenance of forest ecosystem health and vitality
- *Criterion 3*: Maintenance and encouragement of productive functions of forests (wood and non-wood)
- *Criterion 4:* Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems
- *Criterion 5:* Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water)
- *Criterion 6:* Maintenance of other socio-economic functions and conditions
- *Criterion 7:* Compliance with legal requirements

PEFC is the world's largest forest certification system, with more than two-thirds of the total global certified area certified to its Sustainability Benchmarks.

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b) FSC, The Forest Stewardship Council

FSC is a global, not-for-profit organization dedicated to the promotion of responsible forest management worldwide. They enable businesses and consumers to make informed choices about the forest products they buy, and create positive change by engaging the power of market dynamics.

Their members include some of the world's leading environmental NGOs (WWF and Greenpeace), businesses (Tetra Pak and Mondi PLC) and social organizations (the National Aboriginal Forestry Association of Canada), as well as forest owners and managers, processing companies and campaigners, and individuals.

Together these diverse voices define best practices for forestry that addresses social and environmental issues. The membership consensus sets the FSC Principles and Criteria - the standards of forest management which are environmentally appropriate, socially beneficial and economically viable.

Their membership has three chambers –environmental, social and economic– that have equal rights in decision-making. Also, members represent either North or South sub-chambers.

The FSC Principles are:

- *Principle 1*: Compliance with Laws
- *Principle 2*: Workers' Rights and Employment Conditions
- *Principle 3:* Indigenous Peoples' Rights
- *Principle 4:* Community Relations
- *Principle 5*: Benefits from the Forest
- *Principle 6:* Environmental Values and Impacts
- *Principle 7:* Management Planning
- *Principle 8*: Monitoring and Assessment
- *Principle 9*: High Conservation Values
- *Principle 10*: Implementation of Management Activities

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III. Guidelines from Biomass related institutions

The article "Legal Harvesting, Sustainable Sourcing and Cascaded Use of Wood for Bioenergy: Their Coverage through Existing Certification Frameworks for Sustainable Forest Management" (Richard Sikkema et al - Forests 2014, 5, 2163-2211), targeted to provide an inventory of developments of certification schemes for sustainable biomass production, following recent EU legislation (both formalized and under development). It states that one main pillar is the EU Timber Regulation for legal harvesting, a second one is the EU's 2010 recommendations for sustainable woody biomass sourcing for energy and the third one is the EU Waste Directive.

This article also benchmarks the coverage of this (draft) legislation, when wood product certificates for sustainable forest management (SFM) are used as proof of the related legislative requirements.

The article studies North America, as it is a major biomass supplier to the EU-28. Together with existing forest legislation in the US and Canada, SFM certificates are actively used to cover the EU's legislation. However, North American forests are only partially certified with fibers coming from certified forests which are referred to as forest management (FM) fibers. Other certified fibers should come from complementary risk assessments downstream in the supply chain (risk based fibers).

The benchmark concludes that:

(a) FM fiber certification by the Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC) international standards show the highest level of coverage with EU's (draft) legislation;

(b) There is insufficient coverage for risk based fibers by FSC Controlled Wood (FSC-CW), PEFC Due Diligence (PEFC-DD), or SFI-fiber sourcing (SFI-FS).

Other weaknesses identified for elaboration of a proper framework to cover sustainability are:

(c) The need of alignment in definitions, such as for primary forest, high carbon stock, and wood waste (cascading);

(d) Imperfect mass balance (fiber check downstream) needs to be solved, as non-certified fiber flows are inadequately monitored;

(e) Add-on of a GHG calculation tool is needed, as GHG life cycle reporting is not covered by any of the SFM frameworks."

The previous article poses main questions about the requirements of sustainability criteria for biomass. Among the rest of documentation being reviewed in this report regarding sustainability criteria, the following is considered of high interest:

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a) The World Bioenergy Association (WBA)

WBA is the global organisation dedicated to supporting and representing the wide range of actors in the bioenergy sector. Its members include national and regional bioenergy organisations, institutions, companies and individuals.

The purpose of WBA is to promote the increasing utilisation of bioenergy globally in an efficient, sustainable, economic and environmentally friendly way. Since its foundation in May 2008 WBA has been working to address a number of pressing issues including certification, sustainability, standardisation, bioenergy promotion, and the debates about bioenergy´s impact on food, land-use and water supply.

WBA joins with the world's solar, wind, geothermal and hydro associations on the global level in the International Renewable Energy Alliance. To help provide a clear frame of reference on which to base its activities the WBA has commissioned production of three reports on a number of key aspects of biomass to energy within a global perspective:

- Global Potential of Sustainable Biomass for Energy
- Certification Criteria for Sustainable Biomass for Energy
- Biomass for Energy versus Food and Feed, Land Use Analyses and Water Supply

Their Sustainable Biomass Verification Scheme (Edit.2- **2011**) includes:

Chapter 1. Introduction and Goal.
"The purpose of the World Bioenergy Association (WBA) is to promote the increasing utilization of bioenergy globally in an efficient, sustainable, economically and environmentally appropriate way". (…) "The minimum universal criteria were developed after comparing the standards, principles, criteria and indicators developed by the existing and emerging voluntary standards around the world. Instead of creating a totally new verification scheme, we comply with existing or upcoming standards. By doing this, the meta standard scheme is built on existing experiences in better management practices and roundtables, with international consultation".
Chapter 3 Verification Scheme
Chapter 3.2.1 Sustainability Verification Requirements. "The goal of the following verification scheme for biomass is to secure the sustainability criteria for biomass. The minimum universal criteria were developed from a scientific report comparing the standards, principles, criteria and indicators developed by the existing and emerging voluntary standards around the world". (…) . The result is a proposal of 15 criteria listed below:
• Criterion 1: The use of chemicals (FSC Principle 6.6 and 6.7; PEFC Principle 2; IWPB Principle 4, GBEP Principle 2 and 4) • Criterion 2: Forest/land management planning (FSC Principle 7; PEFC Principle 1; IWPB Principle 2; GBEP Principles 3 and 8) • Criterion 3: Forest/land monitoring (FSC Principle 8; PEFC Principle 2; IWPB Principle 2; GBEP Principle 8) • Criterion 4: Contribution to local prosperity related to forest/land management, and the protection of employees (FSC Principle 2, 4; PEFC Principle 6; IWPB Principle 8; GBEP Principles 10 and 12) • Criterion 5: Provision of information to increase public awareness of management, planning, operations+ and/or+ outcomes (FSC Principle 7, 8 and 9; PEFC Principle 1; IWPB Principle 2 and 8; GBEP Principles 3 & 10) • Criterion 6: Protection of areas of particular historic, cultural or spiritual value (FSC Principle 3 and 9; PEFC Principle 6; IWPB Principle 3; GBEP Principles none)

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- Criterion 7: Maintenance or enhancement of the economic viability of operations (FSC Principle 5 and 10; PEFC Principle 3 and 6; IWPB Principle 2; GBEP Principles 10 to 14)
- Criterion 8: Maintenance of biological diversity (FSC Principle 1; PEFC Criterion 4; IWPB Principle 3; GBEP Principle 7)
- Criterion 9: Protection of areas of high ecological value (FSC Principle 3 and 10; PEFC Criterion 4 and 6; IWPB Principle 3; GBEP Principle 2)
- Criterion 10: Protection of the soil and prevention of erosion. (PEFC Criterion 1, 3 and 5; IWPB Principle 4 and 5, GBEP Principle 2)
- Criterion 11: Protection or enhancement of water quality (FSC Principle 6; PEFC Principle 1; IWPB Principle 5; GBEP Principle 5)
- Criterion 12: Regeneration following harvesting (PEFC Criterion 10; PEFC Principle 2 and 4; IWPB Principle 2; GBEP Principle 3, 6 and 17)
- Criterion 13: The rights of children (Unicef, The Convention on the Rights of the Child. IWPB, Principle 8)
- Criterion 14: Recognition and respect for the customary and traditional rights of indigenous/local people (FSC Principle 1, 2 and 3; IWPB Principle 7 and 8; GBEP Principles 9, 10 and 12)
- Criterion 15: GHG and Energy Balance (IWPB Principle 1; GBEP Principles 1, 4 and 18)

If any of the producers has already a label based on an existent scheme, the verification will focus on criteria that those schemes don't match."

b) The Department of Energy and Climate Change of UK Government

They published on December **2014**, as a part of their "Woodfuel Guidance", the "Woodfuel Advice Note" and the "Risk based Regional Assessment: A Checklist Approach".

The "Woodfuel Advice Note" sets out the woodfuel land criteria as defined in the Timber Standard and describes how generators and installations can comply with the criteria.

Chapter 1 Introduction

1.1 The UK government announced its decision to bring in sustainability requirements for the use of feedstocks that are virgin wood or made from virgin wood, for reporting purposes from April 2014. These requirements are mandatory for receiving support under the Contracts for Difference (CfD) and are to be made mandatory (subject to Parliamentary approval) for receiving incentives under the Renewables Obligation (RO) and under the domestic and non-domestic Renewable Heat Incentive (RHI).

1.2 The Timber Standard for Heat and Electricity (the Timber Standard) sets out the woodfuel land criteria for claimants under the RO, CfD and RHI. This guidance document and the associated Timber Standard Mass Balance and Consignment, and the Risk-Based Regional Assessment: A Checklist Approach document interpret how generators and installations can comply with these criteria. The Timber Standard draws upon the principles set under the UK government Timber Procurement Policy (UK-TPP). The principles cover a range of social, economic and environmental considerations that are part of good sustainable forest management practices and are based on internationally agreed criteria". (FOREST EUROPE, UNCED & ITTO)

Chapter 4. Evidence – Timber Standard Category A and B.

4.1 Two types of evidence are accepted as supporting claims that woodfuel is "legal and sustainable":

- Timber Standard approved schemes, also known as Timber Standard Category A (TS Cat A) evidence.
- Bespoke evidence, also known as Timber Standard Category B (TS Cat B) evidence

4.3. The Timber Standard Category A are voluntary third-party certification schemes benchmarked by the UK Government as meeting the woodfuel land criteria set out in the Timber Standard. At time of writing, these are the same schemes as recognised under Category A evidence of the UK-TPP, namely the Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC). Ofgem will be benchmarking other independent certification schemes against the woodfuel land criteria. An up to date list of independent certification schemes recognised as providing Timber Standard Category.

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4.9 Timber Standard Category B bespoke evidence is all forms of credible evidence other than independent certification schemes that indicate that the forest source meets the woodfuel land criteria. The "Risk-Based Regional Assessment: A Checklist Approach" document is one approach to help woodfuel buyers and suppliers provide such evidence".

c) The Sustainable Biomass Partnership (SBP)

The Sustainable Biomass Partnership (SBP) was formed in 2013 by European utilities that are using biomass, mostly in the form of wood pellets or chips, in large thermal generating plants. Biomass-fired power and heat generation is seen as an important technology for achieving the EU's 2020 renewable energy targets and EU member states are adopting their own national approaches to ensuring that the biomass used is legally and sustainably sourced.

SBP's objective is to develop the tools necessary to demonstrate that, as a minimum, solid biomass used for energy production meets these national requirements. The SBP Framework is designed as a clear statement of principles, standards and processes necessary to demonstrate such compliance. Wherever possible, the Framework takes into account and builds on existing regulatory mechanisms and on voluntary certification standards already applied to other forest product streams or to other biomass sources. SBP published in March **2015** their Framework Standard, with following definitions:

- "SBP-approved Chain of Custody (CoC) Systems: These are currently the Forest Stewardship Council (FSC®), Programme for Endorsement of Forest Certification (PEFC) and Sustainable Forest Initiative (SFI) Chain of Custody systems. Note: SBP approval of the SFI Chain of Custody System will be reviewed in March 2016 if it has not been endorsed by PEFC at that date.
- SBP-approved controlled feedstock systems: These are currently Forest Stewardship Council (FSC®) Controlled Wood, and Programme for Endorsement of Forest Certification (PEFC) Controlled Sources.
- SBP-approved Forest Management Schemes: These are currently FSC® and PEFC-endorsed Forest Management Schemes."

Standard 1: Feedstock Compliance Standard. Chapter 5 Principles and criteria	
Principle 1. Biomass feedstock is legally sourced	▪ Criterion 1.1: The Supply Base is defined. ▪ Criterion 1.2: The forest owner and manager hold legal use rights to the forest (CPET L1). ▪ Criterion 1.3: There is compliance with the requirements of local, national and applicable international laws and the laws applicable to Forest Management (CPET L2). ▪ Criterion 1.4: All applicable royalties and taxes have been paid (CPET L3). ▪ Criterion 1.5: There is compliance with the requirements of CITES (CPET L4). ▪ Criterion 1.6: Harvesting does not violate traditional or civil rights.
Principle 2. Biomass feedstock is sustainably sourced	▪ Criterion 2.1: Management of the forest ensures that features and species of outstanding or exceptional value are identified and protected (CPET S8c). ▪ Criterion 2.2: Management of the forest ensures that ecosystem function is assessed and maintained through both the conservation/set-aside of key ecosystems or habitats in their natural state, and the maintenance of existing ecosystem functions throughout the forest (CPET S5 & 8b). ▪ Criterion 2.3: Management of the forest ensures that productivity is maintained (CPET S6).

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Principle 2. Biomass feedstock is sustainably sourced	▪ Criterion 2.4: Management of the forest ensures that forest ecosystem health and vitality is maintained (CPET S7). ▪ Criterion 2.5: Management of the forest ensures that legal, customary and traditional tenure and use rights of indigenous peoples and local communities related to the forest, are identified, documented and respected (CPET S9). ▪ Criterion 2.6: Appropriate mechanisms are in place for resolving grievances and disputes, including those relating to tenure and use rights, to Forest Management practices, and to work conditions (CPET S10). ▪ Criterion 2.7: The basic labour rights of forest workers are safeguarded (CPET S11). ▪ Criterion 2.8: Appropriate safeguards are in place to protect the health and safety of forest workers (CPET S12). ▪ Criterion 2.9: Regional carbon stocks are maintained or increased over the medium to long term. ▪ Criterion 2.10: Genetically modified trees are not used"
Standard 2: Verification of SBP-compliant Feedstock:	
Chapter 2. Scope. "This document (Standard 2: Verification of SBP-compliant Feedstock) sets out how Biomass Producers (BPs) shall verify feedstock inputs against the SBP requirements, including those specified in Standard 1, the Feedstock Compliance Standard."	

d) Netherlands Enterprise Agency (NEA)

In February 2016, Netherlands Enterprise Agency published the **"SDE+ sustainability requirements for solid biomass"**. In this paper the sustainability requirements are structured as follows:

1 Requirements placed on the end-user	**P1 – Reduction of greenhouse gas emissions** The use of biomass must lead to a substantial reduction in greenhouse gas emissions calculated across the entire chain in comparison to the use of fossil fuels.
2 Biomass categories	**1. Woody biomass from large forest management units (500 has or more)** Branches, tops, trees and primary felling residues sourced directly from forests of 500 ha or larger. Unused wood that has the same composition as wood growing in the forest and that has not been mixed with or contaminated by foreign materials or substances.
	2. Woody biomass from small forest management units (less than 500 has) Branches, tops, trees and primary felling residues sourced directly from forests of less than 500 ha. Unused wood that has the same composition as wood growing in the forest and that has not been mixed with or contaminated by foreign materials or substances.
	3. Residues from nature and landscape management Biomass residues (branches, tops, trees) produced during the course of managing urban and rural green spaces and nature areas, other than forests designated for the preservation, restoration or enhancement of specific natural, recreational or aesthetic functions. These also include biomass residues produced during routine maintenance of public green spaces and parks.
	4. Agricultural residues Residues directly from agricultural businesses. Short rotation crops are excluded, with the exception of the residues hereof.
	5. Biogenic residues and waste flows Waste flows and residues from the agri-food and wood industry (secondary residual waste) and tertiary residual waste such as post-consumer wood waste.

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3 Requirements for residues from nature and landscape management and agriculture	**P2** – Soil quality in case of use of residues from nature and landscape management and agriculture. Soil quality must be maintained and where possible improved.
4 Requirements for carbon and land use changes	**P3** – Maintenance of carbon sinks **P4** – Carbon debt **P5** – Indirect Land Use Change (ILUC)
5 Requirements for sustainable forest management	**P6** – Legislation and regulations **P7** – Biodiversity **P8** – Regulatory functions **P9** – Production functions **P10** - Contribution to the local economy **P11** - Management system **P12** - Group or regional association

IV. European standards

a) EN 16214 Sustainably produced biomass for energy applications—Principles, criteria, indicators and verifiers for biofuels and bioliquids.

This family of standards has been developed in four separate but connected parts:

- Part 1: Terminology
- Part 2: Conformity assessment including chain of custody and mass balance
- Part 3: Biodiversity and environmental aspects
- Part 4: Calculation methods of the GHG emission balance using a life cycle analysis

In particular ***Part 2 on Conformity assessment*** including chain of custody and mass balance provides a practical scheme to complete an assessment of a bio-product's conformity with the Renewable Energy Directive. This includes requirements for economic operators and also auditors who will be responsible for checking the compliance of these economic operators. This part of the standard also specifies a 'chain of custody' as required by the RED - part 1: terminology. The overall development of BIOMASUD certification scheme will be in consonance with this approach when asking for a minimu management system.

Part 3 on Biodiversity and environmental aspects is out of the scope of our sustainability criteria since provides guidance on agricultural areas where limits on the cultivation and harvesting of biomass apply. However, our material categories are not focused on energy crops but on forest woody biomass and agro-industrial by-products.

Part 4 on Calculation methods of the GHG emission balance using a life cycle analysis clarifies many aspects of the GHG balance methodology that is included in the RED. This part provides a detailed and practical guide to GHG calculations for use by all economic operators. In this sense it provides particular support for the development of task 4.2 within BIOMASUD PLUS project framework

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b) *ISO 17225-6 Non-woody pellets for non-industrial use*

The objective of the ISO 17225 series is to provide unambiguous and clear classification principles for solid biofuels and to serve as a tool to enable efficient trading of biofuels and to enable good understanding between seller and buyer as well as a tool for communication with equipment manufacturers. This part of ISO 17225 supports the use of graded non-woody pellets for residential, small commercial and public buildings as well as industrial energy generation applications, which require classified pellet quality.

However, this is focused on agro-pellets and does not cover very well other materials. In addition it is a quality standard and it does not take in account sustainability issues.

2.1.3 Conclusions

As a result of this study we have been able to identify those points that are considered as most important by all of these existing documents. We try to show the general purpose of the document and where they incise.

The EU expresses directly as part of its communications that the condition of Small and Medium Enterprises must be taken in account when launching new sustainable criteria, especially when talking about new solid biofuels that need to consolidate in the market. This is, for instance, the case for olive stones and nut shells.

Wood pellets and wood chips, although having a more established market, mainly rely on the work of thousands of SMEs within the forestry and woodworking industry. In a same way both almond/nut shell and olive stone are by-products coming in general from small family businesses. Therefore, this is a key conditioning when establishing the final criteria, since to support the application of BIOMASUD PLUS tool, it must be ensured that the holders of the raw material, the biomass producers and traders, have a real chance of implementing a certification system, which can't be too burdensome.

After our thorough review, we found that when evaluating sustainability criteria most of the systems took in account all, or at least, major part of the following issues:

- ✓ Compliance with laws
- ✓ Forest ecosystems socio-economic functions
- ✓ Forest ecosystems health (biodiversity, soil and water)
- ✓ Enhance productive functions of forests
- ✓ Protection of high-value areas
- ✓ Indigenous people rights
- ✓ Worker's rights
- ✓ Management plans and monitoring
- ✓ GHG and energy balance
- ✓ Reduce burdens for SMEs
- ✓ Use of chemicals
- ✓ Invasive species

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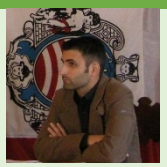
2.2 Creation of a Group of Experts

The BIOMASUD PLUS project has created a Group of Experts in order to be more complete and have different points of view about the new criteria. The group is composed of expert members from the consortium but also external representatives of stakeholders.

Each of the partners in the Consortium proposed a number of candidates to be invited to participate in the Group of Experts. Afterwards the coordinator provided partners with the full list of candidates for validation. Once the list was agreed the text was sent to a group of 14 experts from the 7 countries applying for BIOMASUD scheme in their territories.

The list of members of the Group of Experts, including a short remark of their expertise, is given below:

Nominated by (Partner)	MEMBER GROUP OF EXPERTS	EXPERTISE
AIEL – ITALY	Mr. Massimo Negrin	 Forest Technician at AIEL (Associazione Italiana Energie Agroforestali). He coordinates the group of professional biomass producers. He produced technical papers in the field of sustainability of woody biomass for energy use within the project Biomass Trade Centre 2. He realized for AIEL, with ENAMA (subject certifier) a manual for the certification of wood bio-fuels in the Italian market. The certification scheme is BIOMASSPLUS and establishes the criteria for the certification of wood pellets, wood chips and briquettes, also in terms of environmental sustainability (CO2 emissions).
AVEBIOM-PEFC-SPAIN	Ms. Irene Carrascón	 Degree in Forest Engineering from Universidad Politécnica de Madrid and a Master in Sustainability from AENOR (Spanish Association for Standardization) where she is in charge of the activation of new certificates for new products related to environment and in particular with wood forestry sector. Head of Auditors for: - Sustainable Forest Management (PEFC and FSC schemes) - Due Dilligence Systems - ENplus pellet certification - Soild biofuels certification. BIOMASUD - Wood phytosanitary certification under NIMF 15 - Environmental management ISO 14001 - GHG verification ISO 14064
AVEBIOM-PEFC-SPAIN	Ms. Belén Alejandre Moysi	Agricultural engineer; specialized in Bionergy, specifically in Solid Biomass. More than 10 years in different companies dedicates to the management and logistics of biomass. Belonging to the working group for standardization CTN 164 (solid fuels). Currently professional activity in Axpo Iberia (subsidiary of the Energy Swiss Company "Axpo") and within

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Nominated by (Partner)	MEMBER GROUP OF EXPERTS	EXPERTISE
		the Biomass Departament (National Management); Coordinator between Axpo Biomass Department and Energy Efiiciency Department. Sustainability is one of the most important priorities of projects, processes and fuels involved.
AVEBIOM-PEFC-SPAIN	Ms. Raquel Ramos	 PhD Chemical Engineer. Chief of the Thermal Conversion Process Unit at the Spanish Center of Renewable Energies (CEDER-CIEMAT). This unit targets the generation of knowledge to support the development and implementation of advanced combustion and gasification systems - with special emphasis on those systems based on Fluidized Bed Technologies- and gas treatment, cleaning and separation systems that answer to both technological requirements targeting that those gases are capable of being used in engines, turbines and fuel cells, as well as to overcome existing and future environmental constraints.
CBE – PORTUGAL	Mr. José de Jesús Gaspar	Assistant Professor, Department of Forest Resources of the College of Agriculture from Coimbra Polytechnic, since 1990. President of the Coimbra College of Agriculture between 2010 and 2014. Involved in the Forestry College of Engineers Association (Regional and National). Coordination of forestry courses, bachelor's, master's and more recently CTeSP of Forest Protection. In addition to these functions maintains a continuous connection to the associative movement. Trainer in the areas of geographic information systems, remote sensing and forest inventory. Consultant in several studies and projects with frequent collaboration with enterprises/forest organizations. He holds a degree in Forestry from the University of Trás-os-Montes and Alto Douro; Master in Environmental Remote Sensing at the Aberdeen University; PhD in Sciences Applied to the Environment by Aveiro University. He also has participated in 12 research projects, 20 articles in peer reviewed publications, 50 oral presentations in congresses, 60 bachelors' and MSc thesis supervision.
CERTH - GREECE	Mr. Nikos Damatis	 Managing Director at **Modern Fuels Engineering** where he has served fo 17 years. The company is involved in the areas of biomass processing applications, such as solid biofuels' production (pellets and charcoal briquettes) and engineering consulting in power generation and gasification from biomass. Board Member and **Secretary General of the Hellenic Biomass Association** (HELLABIOM), a non-profit organisation and one of the principal National Associations in the sector of renewable energy sources with some 140 members associated.
GIS - SLOVENIA	Mr. Mitja Piskur	His Master of Science thesis covers aspects of labelling, certification of sustainable forest management and requirements for assuring the legality of wood. He was involved in FSC Chain of custody certificacion in largest Slovenian companies. In the last 5 years, his work has been focused on wood flows analysis and modelling of carbon sequestration in wood products using the principles of Substance Flow Analysis (SFA).

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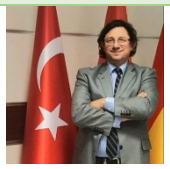
Nominated by (Partner)	MEMBER GROUP OF EXPERTS	EXPERTISE
GIS - SLOVENIA	Mr. Mihael Koprivnikar	Miha Koprivnikar is a forest engineer working at Slovenian chamber of Agriculture and forestry for more than 10 years. He is a head of forestry department and also a responsible person for implementation of PEFC Scheme for private forest owners in Slovenia. He is the leader of PEFC Slovenia called "Zavod za certifikacijo gozdov" based in Ljublijana.
TUBITAK - TURKEY	Mr. Namik Ünlü	 Chief Researcher at TUBITAK MAM Energy Institute, where he has serve for more than 20 years with special focus on Coal and Biomass Combustion and Gasification and Energy efficiency. He has been involved in several project on biomass utilization and conversion as project coordinator. He is responsible for leading the combustion and gasification group with 25 researchers. Mr. Ünlü's PhD thesis and main experience is on biomass torrification and gasification. In the MAM Energy Institute his duties are to prepare and manage projects in the field of clean and efficient use of energy with national or international level, to give contribution to different research projects from the scientific and engineering background, and to give support to different governmental organizations and policy makers in the field of Energy and Industrial processes R&D.
TUBITAK - TURKEY	Ms. Isik Taskiran	She was born in 1966, Eskisehir-Turkey. She graduated from Anatolia University Architect and Engineering Faculty in Eskisehir 1988. She graduated from the Master of Science study programme on Energy and Thermodynamics in Science Institute of Eskisehir Osmangazi University in 1996. She studied on the utilization from solar energy in the heating of green houses where producing forest saplings. She has been working for General Directorate of Forestry (GDF) since 1990. She has got the Doctorate degree on the Energy and Thermodynamics in Science Institute of the Eskisehir Osmangazi University in 2008. She was assigned to be a member for GDF's Bioenergy Working Group. She prepared a report on the Status of Forest Biomass in the Renewable Energy in 2008. She worked in the Climate Change and Bioenergy Working Group of GDF between the years 2008 and 2011. She participated to be a key person and a researcher person on behalf of GDF in the Wood Energy Training Network Project which financed by Leonardo da Vinci finance Programme of European Commission. She worked some other projects on woody biomass and bioenergy in GDF. She participated to two workshops of Forest Europe (MCPFE) on "sustainability criteria" for forest biomass production, including bioenergy, 18-19 February 2009, Vaduz, Liechtenstein and on the "strategies for increased mobilisation of wood resources from sustainable sources" 16 to 18 June 2009, Grenoble, France. Already she works at the Foreign Relations, Training and Research Department of General Directorate of Forestry

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Nominated by (Partner)	MEMBER GROUP OF EXPERTS	EXPERTISE
TUBITAK - TURKEY	Mrs. Berrin Engin	Her experience is based on thermal conversion (combustion, gasification) of solid fuels (coal, biomass feedstocks), sold fuel characterization, gas analysis, tar analysis, simulation of thermal systems. She has been working as a researcher in the Energy Institute of Marmara Research Center since 2006. She finished her MSc. degree in Chemical Engineering on the title of "Investigation of Thermal Behaviour of Various Biomass Sources" and has been working in several national and international research projects on energy issues. Her PhD thesis is about "Oxy-combustion of Lignite and Biomass in a laboratory scale Circulating Fluidized Bed Combustion System".
TUBITAK - TURKEY	Mr. Hayati Olgun	Prof. Dr. Hayati Olgun graduated as a Mechanical Engineer from Karadeniz Technical University. He got his MSc and PhD degrees in Mechanical Engineering at Karadeniz Technical University. He has carried out his post-doctorate studies at Newcastle University, Department of Chemical and Process Engineering (UK) on biomass gasification. He worked as a senior researcher at TUBITAK MRC Energy Institute from 1999-2012. He has been working in Solar Energy Institute of Ege University as a full professor since 2012. His experience is based on biomass energy and fuel characterization, coal/biomass combustion and gasification systems, renewable energy systems (especially small hydro, solar energy and biomass energy), power systems, energy conservation, optimization and simulation of thermal systems and fuel processing. He was a country member of Turkey in Task 32 Combustion and Co-Firing of IEA during 2010-2012. He is the author of more than 50 publications in journal papers and conference proceedings. He managed several international and national projects.
ZEZ- CROATIA	Mr. Petar Ćurić	From 2006 to 2008, Mr. Petar Ćurić worked as an expert associate in Croatian Forests Ltd., in the Department of Forest Management. From 2008 he works in the Croatian Chamber of Economy – Agriculture, Food Industry and Forestry Department as the General Secretary for Forestry and Wood industries Association. This position involves several roles: a) Services to Chamber's professional forestry and wood producers Association and Affiliation b) Professional presentations for different interest groups (producers exporters, scientist) c) Coordination of client's demands towards economy policy in Croatian forestry and wood sector d) Assistance to senior staff involved in making of regulations and directives for Croatian forestry and wood industry. He has a vast experience in statistical data analysis and evaluation of business opportunities including providing of business information for domestic and foreign clients, international fairs organisation and logistics, promotional brochures and foreign delegation hosting.

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Nominated by (Partner)	MEMBER GROUP OF EXPERTS	EXPERTISE
ZEZ- CROATIA	Mr. Stjepan Car	After graduating in 1972, Mr. Stjepan Car worked in Koncar- Electrical Engineering Institute for 18 years, and eventually got his PhD. He was a member of Koncar d.d. board in charge for corporative development for 8 years and president of administration of Koncar Institute for electric engineering for 15 years. He was retired in 2014. He published over 80 scientific and expert articles, is the coauthor of 3 patents and is the author of monography "50 years of Applied Scientific Researches and Development in the Field of Electrical Engineering. From 2006, he teaches Management in electrical engineering on the Faculty of Electrical Engineering and Computer Sciences in University of Zagreb. He held over 40 different lectures in different conventions. He was awarded with national lifetime achievement award for technical culture and order of Croatian Daystar with the face of Nikola Tesla.

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2.3 BIOMASUD PLUS: Sustainability Criteria

Based on the study previously conducted, in this stage we have looked more profoundly at the possibility of including different approaches and advancements made in regard to sustainability criteria for biomass into the BIOMASUD scheme.

We considered that directly applying the requirements and sustainability criteria developed by the initiatives we had assessed was not appropriate, but on the contrary, we do consider they should be adapted to the determining factors that define biomass referred to in the BIOMASUD PLUS Project.

The main determining factors identified are:

- **Raw materials**: Wide variety of raw materials and sources
- **Use**. Domestic. Small plants
- **Type of producer:** Small and medium enterprises
- **Geographic scope:** Mediterranean
- **Geo-political scope:** EU and non-EU.
- **Cost/Benefit issues**: limited financial possibilities in small companies regarding cost/benefit efficiency in the application of sustainability criteria.

2.3.1 Creation of Biomass Categories

Given the diversity of raw materials and sources included today in the BIOMASUD scheme and considering the possible incorporation of new materials, a classification of biomass depending on type and source is proposed.

In order to define the categories of raw materials in BIOMASUD PLUS, we used the systematic classification included on page 4 of the Netherlands Verification Protocol and on page 22 of the UK Gov - Woodfuel Advice Note as the bases.

We have taken into account that the afore-mentioned documents relate to mechanisms established by a government to regulate the collection of public premiums in the scope of large industrial facilities for consuming biomass from sustainable sources, usually in the form of pellets or chips.

On the other hand, the BIOMASUD scheme is a voluntary and non-governmental certification mechanism and therefore is not directly linked to the collection of public premiums. Furthermore, it applies to very diverse types of biomass produced in the Mediterranean area, intended for domestic consumption, i.e. on a small scale, and which generally has a very slight position on the market.

Table 1 below shows the Classification of Biomass as defined within the framework of the BIOMASUD PLUS project.

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Table 1 BIOMASUD PLUS Biomass Categories

Nº	Biomass Categories	Definition	i.e. Materials
1	Woody biomass from forest and other wooded land management.	Roundwood, Tops, branches, stumps or root systems, trees and primary felling residues sourced directly from forest or other wooded land.	Wood, bark, shrubs
2	Woody biomass from Urban or Agricultural areas	Roundwood, Tops, branches and trees produced during the course of managing urban areas or agricultural areas. (Trees outside the forest - TOF)	Wood (urban round wood, olive tree prunings, vineyard prunings.), bark
3	Non Wood agricultural residues	Residues directly from agricultural areas. Short rotation crops are excluded, with the exception of the residues hereof.	Green plants, stalks, straws.
4	Secondary and tertiary agro-forestry materials	Waste flows and residues from agri-food and wood industry (secondary residual waste) and tertiary residual waste such as post-consumer wood waste.	Pine nut and almond shells, pine cones, Corncobs, olive stones, pich pits.
***Source**: Authors*			

This classification allows specific sustainability criteria to be defined for each category. Certain criteria will be general in character, i.e. applicable to all materials, while others shall have a specific character and therefore apply only to certain categories of biomass.

2.3.2 Selection of Sustainability Principles

Sustainability principles include all those aspects related to production and trade. The current BIOMASUD Scheme only includes the Principles of GHG and Energy Demand as Sustainability Criteria and both are applied evenly to all materials included today (chips, pellets, olive pits, pine cones and almond shells, pine and hazel nuts).

However, legislative advances and other private initiatives to promote the sustainability of biomass make it desirable to incorporate aspects related to the legal origin of wood and the sustainable management of the territory from which biomass comes as basic principles of the BIOMASUD Scheme.

For that reason, and after a thorough analysis, we have pre-selected the following Principles of Sustainability to be incorporated as part of the BIOMASUD scheme:

- **Principle 1:** Greenhouse gas emission balance
- **Principle 2:** Energy demand
- **Principle 3:** Prevention of illegal logging practices NEW
- **Principle 4:** Forest Sustainable management NEW
- **Principle 5:** Carbon
- **Principle 6:** Land use

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I. BIOMASUD sustainability principles already in force

Current methodologies in the BIOMASUD label for calculating biofuel energy production costs (energy demand) and GHG emission savings have been extended to the entire supply chain and improved with relevant existing methodologies. The result of this work has been included in Deliverable D4.2.

In order for it to be taken into account in that work, the consortiums highlights the fact that according to the "Report from Commission COM(2010)11 Final.3.2.1", "it is recommended that the GHG performance criterion is not applied to wastes but to the products for which default GHG emission values have been calculated, as listed in Annex II".

Principle 1: Greenhouse Gases (GHG)

The use of biomass shall lead to a substantial reduction in greenhouse gas emissions in comparison to the use of fossil fuels. The development of specific methodology for the development of this principle has been addressed within task 4.2 in this project.

In order to adapt current calculation to the new Renewable Energy Directive, the updated BIOMASUD methodology used to quantify GHG emissions from now on will follow the option that combines the use of actual values with default values coming from EC's Joint Research Center (JRC) input database. This method will apply for residential solid biomass fuels produced from typical SUDOE EU region biomasses extending the scope to the whole biomass fuel chains.

Both the GHG emissions and the energy used in the whole chain, including from harvesting to the obtaining of the biomass to its use in the production of heat or electricity by final consumers are accounted. The calculation methodology will be integrated in a computer package (task 4.3) within the BIOMASUD platform, allowing producers and distributors to carry out the calculation of the energy and emissions generated and savings produced along the entire solid biomass fuels studied.

According to BIOMASUD standard the reduction of greenhouse gas emissions thanks to the use of certified biomass as a substitute for natural gas shall be a minimum of 70%, calculated following the above mentioned methodologies.

If pilot experiences conduct to the confirmation that the reduction achieved may be above 70%, then the indicator corresponding to this standard will be modified accordingly to new proven results.

Principle 2: Energy Demand

The aim of this principle is to ensure that the energy consumed in the process of preparing and transporting biomass is clearly lower than the energy that biomass contains. The development of specific methodology for the development of this principle has been addressed within task 4.2.

The calculation of the energy demand includes all the energy consumptions from the field to the final consumer. The energy consumptions are evaluated by both, the producer/distributor and by the final consumer.

The assessment of energy demand by the final consumer includes the energy demanded by the

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producer/distributor and the energy demanded in the biofuel transport (diesel consumed) from the producer/distributor to the location of the final consumer, calculated by the network analysis within the application.

For the producer, the energy demand is estimated in the different supply stages:

(a) The energy consumed in the stages from field to factory is due to diesel consumption. The calculation of the energy demand has been obtained directly from lower heating value on dry basis (MJ/kg) of diesel fuel taken from BioGrace Project database[1].

(b) The electricity consumption in the pre-treatment plant is calculated using the annual final energy, in kWh/year, coming from the bills. This final energy is transformed into primary energy applying the Primary Energy Factor (PEF) of each country.

(c) The heat consumed in the pre-treatment plant is calculated considering the lower heating value (dry basis, MJ/kg) of the fuel used for drying, taken from BioGrace Project database. Different fuels can be selected in the application.

According to BIOMASUD standard the energy used in transporting raw materials to the production facility and the energy used in the process of preparing and conditioning biofuel may not exceed 40% of the energy contained in the fuel (PCI on wet basis).

If pilot experiences conduct to the confirmation that the energy used may be below the abovementioned 40%, then the indicator corresponding to this standard will be modified accordingly to new proven results.

[1] BioGrace. Harmonised calculations of biofuel greenhouse gas (GHG) emissions in Europe. http://biograce.net/

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Principle 3: Prevention of Illegal Logging Practices - EUTR

The prevention of illegal logging practices, and therefore the application of the European Union Timber Regulation (EUTR) which refers to all biomass from trees, regardless of whether it comes from forest, plantation or urban sources, is considered to be a basic principle of sustainability.

Illegal logging is a pervasive problem of major international concern. It poses a significant threat to forests as it contributes to the process of deforestation and forest degradation, which is responsible for about 20% of global CO_2 emissions, threatens biodiversity, and undermines sustainable forest management and development including the commercial viability of operators acting in accordance with applicable legislation.

The reference is Regulation 995/2010 of the European Parliament and of the European Council dated 20 October 2010, which bans the marketing of illegally logged timber or products derived from such timber and sets out obligations applicable to operators and traders [European Timber Regulation, EUTR]. This regulation defines legal wood as wood that has been logged in accordance with the law applicable in the country where it is logged.

Following the publication of Regulation 995/2010, the various national Regulations and legislation were approved to enable its full application within the realm of the European Union as from 3rd March 2013. Being a European Union Regulation, this criterion is a legal obligation for all countries participating in the project except Turkey. Nonetheless, in Turkey Forest Law 6831 is a legal obligation, punishing in article 108 the harvest, transport or trade of illegal wood with strong capital fines.

Regardless of this difference in its legal application, as far as the BIOMASUD PLUS project is concerned, **the prevention of illegal logging is established as a basic principle in all countries applying the BIOMASUD scheme and with it**, the need to implement a **due diligence system (DDS)**, on entities acting as "operators" and of traceability system for "traders", in order to prevent the use of materials from illegal logging. Therefore, for the purposes of BIOMASUD PLUS certificate EUTR principles will also apply to biomass coming from Turkish origin.

EUTR article 2 includes the definition of:

Operator	Refers to any legal entity or individual person that places timber or timber products on the market; i.e. operator is considered to be those entities that put either logged or imported wood or wood-based products on the European Union market for the first time.
Trader	Any legal entity or individual person who, in the course of a commercial activity, sells or buys on the internal market timber or timber products already placed on the internal market.

Each operator shall maintain and regularly evaluate the due diligence system which it uses, except where the operator makes use of a due diligence system established and supervised by a monitoring organisation. In order to implement such a DDS, access should be provided to data concerning each supply, assessment performed of the risk that it comes from an illegal source, and where necessary, risk mitigation measures applied as appropriate. Thus, data on each supply should be made available,

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which includes the species and country of origin. The assessment of risk should contemplate the origin and complexity of the relevant supply chain.

Only wood with a negligible risk of coming from illegal logging sources may be marketed. Risk assessment can be evaluated against different indicators:

(a) The Index of Perceived Corruption (IPC) published by Transparency International is often used as an indicator of risk regarding the country from which the wood originates. Countries with an IPC rating under 50 are considered to be high risk. https://www.transparency.org/news/feature/corruption_perceptions_index_2016

(b) The variation of forest land cover in each country is also an item of interest in the implementation of a due diligence system. The following graph, taken from the FAO report, shows how forest land cover varied in the period 1990-2015.

As we can see in Figure 1 below, at global level, deforestation and forest degradation continue, whereas European and North American forests are increasing.

Figure 1 *Forest land cover variation 1990-2015.* ***Source:*** *FAO 2015*

The following table provides relevant information for the application of BIOMASUD PLUS Principle 3 "Prevention of Illegal Logging practices".

Table 2 CPI and Forest Extension Variation indexes per participating country

BIOMASUD PLUS	EUTR	CPI	FAO variation in forest land extension 1990-2015 1,000 ha/year (%)
Croatia	Yes	51	+2.9 (+0.2%)
Greece	Yes	46	+30.2 (+0.8%)
Italy	Yes	44**	+68.3 (+0.8)
Portugal	Yes	63	-10.2 (-0.3%)***
Slovenia	Yes	60	+ 2.4 (+0.2%)
Spain	Yes	58	+184.3 (+1.2%)
Turkey	Yes*	42	+83.7 (+0.8%)

Source*: Authors*

(*) EUTR legislation only applies to EU member countries, however under this Project, the so-called EUTR Principle is applicable to all countries, including Turkey.

(**) Complementary indexes validated by Transparency International available. Source: Study by University of Goteborg.

(***) Reduction resulting mainly from high number of wildfires

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The certification or other third party verified schemes that include verification of compliance with applicable legislation may be used as a mean to recognise good practices in the forestry sector during the risk assessment procedure.

- In the case of "operators", holding a PEFC/FSC Chain of Custody certificate means the compliance with this Principle 3. Other systems as own operated DDS or DDS under the recognition of a monitoring organization will be audited to verify compliance of principle 3.

- In the case of “traders”, holding a PEFC/FSC Chain of Custody certificate means the compliance with this principle 3. If not holding such certificate an updated register of suppliers and clients is compulsory for the trader. This register will be audited to verify the truthfulness of data.

Principle 4: Sustainable Management

The sustainable management of the territory from which the biomass comes is another key Principle in the definition of sustainability criteria for BIOMASUD PLUS scheme. The application of this principle will obviously vary according to the type of land which the biomass comes from.

a) Forests and other wooded lands (Category 1)

As far as forests are concerned, there exists a huge wealth of knowledge and work that has been carried out within FOREST EUROPE to define Forest Sustainability Criteria and Indicators.

FOREST EUROPE (the brand name of the Ministerial Conference on the Protection of Forests in Europe) is the Pan-European, voluntary, high-level political process for dialogue and cooperation on forest policies in Europe. FOREST EUROPE develops common strategies for its 47 signatories (46 European countries and the European Union) on how to protect and sustainably manage their forests. Since 1990, the collaboration of the ministers responsible for forests in Europe has had great economic, environmental and social impact at national and international level. FOREST EUROPE has led to achievements such as the guidelines, criteria and indicators for sustainable forest management.

With the aim of agreeing on how to manage forests in Europe, the FOREST EUROPE process periodically hosts ministerial level conferences at which ministerial commitments and resolutions are adopted.

The political decisions and resolutions made under FOREST EUROPE are voluntary, but by endorsing those commitments, countries demonstrate their willingness and interest to protect and sustainably manage their forests.

Thus, commitments endorsed by the ministers serve as a framework for implementing sustainable forest management in European countries, adapted to their national circumstances and implemented in a manner that is coherent with the rest of the region, while simultaneously strengthening international cooperation.

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Since the first set of Pan-European Indicators for Sustainable Forest Management was adopted in Lisbon 1998 and improved in Vienna in 2003, experience has shown that criteria and indicators are a very important tool in European forest policy. The updated list of indicators, endorsed by the ministers at the 7th Ministerial Conference in Madrid 2015, is the result of a wide participatory process and the work of the Advisory Group.

All the countries taking part in the Project are Signatories of the FOREST EUROPE project, which means that those Criteria and Indicators are fully applicable in the entire area where the BIOMASUD scheme is implemented. The List of the latest Pan-European Criteria and Indicators is attached hereto as Annex 1.

b) Non-forest lands (Category 2 and 3)

The group of non-forest lands applies to those biomass in the following categories:

- Category 2: woody biomass from Urban or Agricultural areas
- Category 3: Non Wood agricultural residues

In the case of non-forest lands, the principle of Sustainable Management focuses on ensuring the maintenance or improvement of soil quality.

With this purpose, a code of good practices should be set in force in order to avoid the lack of nutrients richness and poorness of soil structure derived from the extraction of biomass.

The avoidance of mixture with other types of waste should be addressed as part of the quality management practices within BIOMASUD general scheme of work.

The general principles that run the code of good practices for non-forest land must include the following points:

- The prevention and control of erosion.
- The maintenance and improvement of soil nutrient balance and prevention of salinization.
- Maintaining and improving soil organic matter, PH and structure.
- Maintaining and improving soil biodiversity.

This will be assessed through a documented soil management plan registering the annual application of good agricultural practices taking care of above points. These good practices may be based in management practices such as the use of best available technologies in terms of agricultural machinery, best planning of agricultural works and machinery to prevent soil compactation/erosion, the optimum selection of species, optimum space between individuals, execution of planting on slopes to reduce risk of soil erosion, crop rotation or intercropping and water management techniques.

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III. BIOMASUD new sustainability criteria in discussion

In addition to the 4 basic principles of GHG, Energy demand, EUTR and SM, we consider appropriate to study the potential development of other principles of sustainability for biomass, referred to or included in the documentation and schemes we studied at the outset.

Among them, there are 2 specific issues that the consortium has considered as especially relevant:

Carbon – Maintenance of Carbon Stocks: The creation of a specific principle related to Carbon storage targets to ensure maintenance or increase of carbon stock levels in the long term while minimising the potential impact that the use of biomass may generate in medium and long term.

Land Use - Low Indirect Land Use Change (ILUC) risk: The creation of a principle related to ILUC risk targets to ensure that the production of biomass does not lead to new changes in land usage and/or displacement of crops.

However, in the documentation we studied, except for that covered within the framework of the Pan-European Criteria and Indicators, the development of specific criteria related to these two principles is still generally in a very early stage.

Both, principle 5 and 6 are appropriated but they present difficulties when defining criteria as well as during the verification procedures especially on micro level (e.g. small forest holdings). This is a huge challenge since our BIOMASUD standard mainly targets SMEs.

Regarding principle 5, the calculation of carbon sequestration is quite complex and this complexity increases with small scale assessments being more appropriate for large scale environments (e.g. country, region, EU 28 …).

In addition, uneven age structure of forest could affect carbon stock during specific periods of time, meaning additional costs and lower incentives for small and medium enterprises to join the scheme.

Regarding principle 6, the development and verification of criteria would require intense monitoring, data collection and a huge effort in calculation for implementation on micro level.

The “Dutch Verification Protocol” establishes a specific guideline stating that the Land Use Principle is only applicable to woody biomass from large forest management units (500 ha or more) and even in their case, the indicators for ILUC are still under development.

Therefore, in light of current status, **BIOMASUD scheme has developed a minimum set of criteria and indicators to assess principles 4 and 5. However, this criteria and indicators will be only considered for experimental implementation after BIOMASUD PLUS kick-off.**

In the case of existing pilot experiences about the application of those criteria on Principles 4 and 5, BIOMASUD will evaluate the difficulties and convenience/inconvenience for implementation of such principles as major auditable points, taking in account new advances in the field, for a further implementation of those criteria as evaluable audit points.

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Principle 5: Carbon

This principle will only be addressed in an experimental basis for pilot experiences. Therefore its compliance or not does not prevent from the issue of BIOMASUD Plus certificate.

Biomass shall not be obtained from land with high carbon stock. General indicators are:

- **Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles shall be ensured**. In the case of Forests, BIOMASUD will follow SFM Pan-European Criteria, which states that conversion of forests to other types of land use, including conversion of primary forests to forest plantations, shall not occur unless in justified circumstances where the conversion:

  a) is in compliance with national and regional policy and legislation relevant for land use and forest management and is a result of national or regional land-use planning governed by a governmental or other official authority including consultation with materially and directly interested persons and organisations; and

  b) entails a small proportion of forest type; and

  c) does not have negative impacts on threatened (including vulnerable, rare or endangered) forest ecosystems, culturally and socially significant areas, important habitats of threatened species or other protected areas; and

  d) makes a contribution to long-term conservation, economic, and social benefits.

  On the other hand the conversion of abandoned agricultural and treeless land into forest land shall be taken into consideration, whenever it can add economic, ecological, social and/or cultural value.

- **Biomass shall not be obtained from peatlands:** Peatland soils are soils with horizons of organic material (peat substrate) of a cumulative thickness of at least 30 cm at a depth of down to 60 cm. The organic matter contains at least 20 mass percent of organic carbon in the fine soil.

The use of biomass from peatland, is only allowed if evidence is provided that the cultivation and harvesting of that raw material does/did not involve drainage of previously undrained soil.

- **Biomass shall not be obtained from wetlands:** Wetlands is land covered with or saturated by water permanently or for a significant part of the year as laid down in the Convention on Wetlands of International Importance, especially as Waterfowl Habitat, adopted on 2 February 1971 in Ramsar (Ramsar Convention on Wetlands)

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Principle 6: Low Indirect Land use Change (ILUC) risk

This principle will only be addressed in an experimental basis for pilot experiences. Therefore its compliance or not does not prevent from the issue of BIOMASUD Plus certificate.

While biofuels are important in helping the EU meet its greenhouse gas reductions targets, biofuel production typically takes place on cropland which was previously used for other agriculture such as growing food or feed. ILUC describes the effect when existing agricultural land is used for biofuel production and the existing agricultural production is displaced onto new land, previously non-cropland, such as grasslands and forests.

Indirect land use change may lead to loss of biodiversity and additional GHG emissions, negating the greenhouse gas savings that result from increased biofuels because grasslands and forests typically absorb high levels of CO2. This is a core issue for current EU policies related to sustainability criteria for biofuels and their role to mitigate climate change.[i]

In 2015 new rules came into force which amend the current legislation on biofuels – specifically the Renewable Energy Directive and the Fuel Quality Directive - to reduce the risk of indirect land use change and to prepare the transition towards advanced biofuels. The amendment:

- Limits the share of biofuels from crops grown on agricultural land that can be counted towards the 2020 renewable energy targets to 7%
- Sets an indicative 0.5% target for advanced biofuels as a reference for national targets which will be set by EU countries in 2017
- Harmonises the list of feedstocks for biofuels across the EU whose contribution would count double towards the 2020 target of 10% for renewable energy in transport
- Requires that biofuels produced in new installations emit at least 60% fewer greenhouse gases than fossil fuels
- Introduces stronger incentives for the use of renewable electricity in transport (by counting it more towards the 2020 target of 10% for renewable energy use in transport)
- Includes a number of additional reporting obligations for the fuel providers, EU countries and the European Commission.

The ILUC Directive[2] defines low ILUC risk biofuels and bioliquids as follows: 'biofuels and bioliquids the feedstocks of which were produced within schemes which reduce the displacement of production for purposes other than for making biofuels and bioliquids and which were produced in accordance with the sustainability criteria for biofuels and bioliquids set out in Article 17.'

For this purpose, new policies target biofuels produced from biomass that is created additionally to current and future agricultural production levels, in a way that the displacement of food and feed is avoided. This can be achieved through:

[2] Directive (EU)2015/1513

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- The increase of crop yields through improved inputs and management practices, including better fertilisation, irrigation, seeds and equipment.
- The increase of biofuels based on agriculture by-products and residues.
- The expansion of agriculture on previously non-used/underused land or non-agricultural land with low carbon stocks and low biodiversity value.

NOTE: Equally to Carbon Stock Principle, when talking about forests BIOMASUD PLUS will follow SFM Pan-European Criteria, specifically Criteria 1 stating that maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles shall be ensured. Therefore conversion of forests to other types of land use, including conversion of primary forests to forest plantations, shall not occur unless in justified circumstances.

On the other hand the conversion of abandoned agricultural and treeless land into forest land shall be taken into consideration, whenever it can add economic, ecological, social and/or cultural value.

When talking about other biomass categories, to the moment only a first approach to calculate ILUC risk have been developed by ECOFYS, RSB (Roundtable of Sustainable Materials) and WWF (Low Indirect Impact Biofuels [LIIB] methodology), while no other specific methodology is operative. LIIB methodology propose two main options to reduce ILUC risk:

(1) Increasing crop yields, compared to a reference date, through improved inputs and management practices, including better fertilisation, irrigation, seeds and equipment.

(2) Expanding agriculture on previously non-agricultural land, in a certain reference date, with low carbon stocks and low biodiversity value.

RSB standard also includes a third option based in the use of waste/residues

(3) Operators demonstrate that raw material used for biofuel/biomaterial is derived from existing supply chains (e.g. food production, wood processing, etc.) and do not require dedicated production out of arable lands.

Any of these approaches are quite difficult to monitor and verify in the short term. Moreover, these methodologies are not recommended for small areas since the difficulty, complexity and costs for monitoring would result in an impossible-to-apply standard for our target users.

Having this in mind, for the purpose of BIOMASUD project the evaluation of ILUC risk through the application of LIIB methodology or an equivalent method (e.g. a detailed ILUC risk management plan) will be considered as a positive input for certification but not compulsory.

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2.3.3 Proposal of BIOMASUD PLUS Sustainability Principles, Criteria and Indicators

The following table summarises the Sustainability Principles applicable in the BIOMASUD scheme for each category of material. A more complete table showing both criteria and indicators for each BIOMASUD PLUS principle is available at the end of section 2.6.

It is important to note that although Principles 4 (carbon Stock) and 5 (ILUC) are voluntary and will be only addressed under pilot experiences, in the case of those biomass within category 1, both principles are addressed as part of the Sustainable Forest Management criteria. Therefore, in their case having a PEFC, FSC or equivalent certificate will also support the compliance with principles 4 and 5.

In the improbable case of biomass within category 1, not covered by PEFC, FSC or equivalent SFM certificate, principles 4 and 5 can be addressed under a voluntary scheme as in the case of the other categories.

Table 3 Sustainability Principles that apply to the defined Biomass Categories

	SUSTAINABILITY PRINCIPLES					
BIOMASUD PLUS Biomass Categories	**GHG Principle**	**ENERGY DEMAND Principle**	**LEGAL LOGIN Principle**	**SUSTAINABLE MANAGEMENT Principle**	**CARBON STOCK Principle**	**LAND USE Principle (Low ILUC risk)**
Woody biomass from forest management and other wooded land	Yes	Yes	Yes	Yes (SFM)	Yes (SFM)**	Yes (SFM)**
Woody biomass from Urban or Agricultural areas	Yes	Yes	No*	Yes (soil quality)	Pilot experiences	Pilot experiences
Non Wood agricultural residues	Yes	Yes	n/a	Yes (soil quality)	n/a	n/a
Secondary and tertiary agro-forestry residues	Yes	Yes	n/a	n/a	n/a	n/a
	TASK 4.2 Review		***TASK 4.1***			

***Source**: Authors*
**EUTR refers to timber. Due to immature implementation of this Regulation in the case of timber coming from urban forest and agricultural land, in the scope of the BIOMASUD Scheme is considered that this EUTR Criterion only refers to timber coming from Forest. In a future development of the scheme could be necessary to revise this approach*
***No specific Criteria developed for forest and other wooded land since this principles are already covered and developed by FOREST EUROPE Sustainable Criteria and Indicators, which are included in SFM certification schemes*

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2.4 Review of the Criteria by the Group of Experts

Until the Final Version of the new Sustainability Criteria to be introduced in the BIOMASUD PLUS Scheme is available, the following documents and drafts has been prepared:

- WD 0 – Working Draft 0, proposed by the coordinator to the partners.
- WD 1 - Working Draft 1 – first version agreed upon by the partners
- Group of Experts Comments – Contributions and comments made by the Experts about the WD1
- Focus Group Reports – Reports on the outcome of the various Focus Group meetings.
- ED – Enquiry Draft, version resulting from the assessment carried out by the partners of the Expert Group Comments and Focus Group Reports.

The document "WD 1 - D4.1 Review of the Sustainability Criteria" represented the first version of the Sustainability Criteria agreed upon by the partners in accordance with section 2.4 "Definition of Sustainable Criteria". This document was effectively provided to the members of the Group of Experts for their consideration.

The Group of Experts was given a model form on which to fill in their comments and remarks about it. With a due date of 15 calendar days, they performed their review providing the coordinator with their remarks. All the comments and remarks received where compiled in Annex 2.

Main advices were focused in the importance of taking in account the nature of non-wood companies providing solid biofuels such as almond or nut shell and olive stones. Their inexperience in standardization, must be taken in account in order to avoid those criteria that could pose administrative or economic burdens for the implementation of the BIOMASUD pus scheme.

The condition of SME of most of the companies operating in the business flow must be also considered with the same purpose. The objective is to start implementing a scheme and make up the minds of operators to understand and accept the importance and convenience of the sustainability criteria. This must be done in a step by step approach in order to avoid rejection of the market operators.

2.5 Focus group and Workshop

A "Focus group" is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a product, service, concept, advertisement, idea, or packaging. Questions are asked in an interactive group setting where participants are free to talk with other group members.

The focus group consists of sustainability expert stakeholders, certification body, politicians, green groups and Sectorial associations. It is advisable to have members of the Group of Experts participating in the focus group at country level.

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Each partner submitted their "WD 1 - D4.1 Review of the Sustainability Criteria" - Preliminary Report and contributions from the Group of Experts via email to their identified Focus Group, and then a meeting was arranged in order to discuss the points in the report and gather opinions and new criteria for inclusion in the scheme.

As coordinator PEFC proposed a series of questions to be raised in the various Focus Groups, while each organiser guided the meeting increasing the effort on those questions and issues to debate considered as most relevant to the Group.

One meeting has been held in each country, organised by each of the partners according to the following table:

Country	Host Partner	Date of Event	Attendees
SPAIN	AVEBIOM CIEMAT PEFC	08/02/2016 MADRID	- ASPAPEL - AVEBIOM - Baskegur-PEFC Euskadi - CEDER-CIEMAT - Centro de la propiedad Forestal de Cataluña / PEFC Cataluña - CESEFOR - COSE - ESCRA / PEFC Asturias - Gobierno de Aragón - Gobierno de Cantabria - Junta de Castilla y León - PEFC Galicia - PEFC Spain
PORTUGAL	CBE	21-28/04/2016 MIRANDA DO CORVO	- APEB (Association of Biomass for Energy Producers). - CBE/DEFE Biomass Energy Centre - CBE.LEBS (CBE's Specialized Solid Biofuels Laboratory) - CELPA (Portuguese Paper Industry Association) - CFFP/PEFC Portugal - ESAC Professor José Gaspar - EUROPAC - FORESTIS (Portuguese Forestry Association) - FSC Portugal - ICNF (Portuguese Inst. for Nature Conservation and Forests) - Pinewells - SGS Portugal - UNAC (Union of the Mediterranean Forest) - 2bforest
ITALY	AIEL	25/03/2017 AREZZO	- AIEL - BEE TECHNOS - CONSORZIO FORESTAL - ETIFOR - SOCIEDAD COOPERATIVA AZ EIO - Studio Africis - UNITUS DAFNE - Universitá di Padua
SLOVENIA	GIS	01/03/2017 LJUBLJANA	- Agricultural institute of Slovenia, KIS - Bureau Veritas o.o. - Geodetic Institute of Slovenia, GIS

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			- UI BF
TURKEY	TUBITAK	27/02/2016 TUBITAK	- 3AR Enerji & Kimya - Çamkiri Karatekin Üniv - CATES EÜAS - Dogus Pirina Yagli MAD - EGE Üniversitisi Günes Enerjisi Enstitüsü - ISTAÇ - Istanbul Üniversitesi Orman Müh - ITÜ - Karadeniz Tarimsal Arastirma Enstitüsü - Sakorya Üniv. - Terralab - Trio Teknik Cihazlar - TÜBITAK MAM ÇTÜE - TÜBITAK MAM EE - YTU
GREECE	CERTH	07/04/207 ATHENS	- Aenaon Bioenergy - Alfa Wood - Athena Innovation - BioALTEN - Bioenergy & Environment Cluster (CluBE) - Buildeco - Centre for Renewable Energy Sources (CRES) - Elaiourgiki Volou - S. Aneroussis & Co. - University of Applied Sciences of Thessaly (TEI Thessaly)
CROATIA	ZEZ	09/02/2017 ZAGREB	- Croatian Chamber of Agriculture - Ebanka - Ecooleum d.o.o. - EIHP - Ekonerg - Green Energy Cooperative - HEP Group - Lega d.o.o. - NRH - Okit d.o.o. - TerraHub - University of Zagreb - UNDP AltFinLab

Following each Focus Group meeting, a brief report was prepared by the country host, containing details of the organisation of the event, attendees and a summary of the results obtained in regard to the Sustainability Criteria presented. This briefings can be consulted in **Deliverable 7.16**. A summary of the main findings provided below:

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FOCUS GROUP	MAIN FINDINGS AND REMARKS
SPAIN	- Quality standardization of any biomass intended to be commercialized is considered essential, particularly regarding aspects such as calorific value, amount of ash, degree of humidity, etc. Standardization allows the characterization and homogenization of the product and is a key tool to enter markets and gain consumer confidence, especially at domestic level. - The methodology used in the classification of the materials, Table 1 of WD1-D4.1, is supported, since it allows the adaptation of the Principles and Criteria to the typology of the biomass. - Principle 1: option 2 selected; It is considered that the LCA must start from the moment the by-product or residue has been generated - Principle 2: The account of fuel consumptions and materials shall include only the "consumptions" of fuels and materials and not the carbon footprint of the buildings - The inclusion of principle 3 is positively considered and it is seen as an input to improve BIOMASUD scheme. - Principles 5 and 6 are not well developed to the data and could pose important burdens for the development of BIOMASUD. The group proposes to postpone the inclusion of these principles
ITALY	- The principles behind a sustainable wood energy supply chain are: o Legality and responsibility in social and environmental issues; o Environmental safeguard; o Local development; o Economic efficiency.
PORTUGAL	- All Focus Group members consider that it is advantageous to include sustainability criteria in the BIOMASUD certification system. However, some are of the opinion that the scheme cannot be too complicated, mentioning the fact that the European Commission itself, in its COM (2010) 11, states that "is recommended that national sustainability schemes apply only to larger energy producers of 1 MW thermal or 1MW electrical capacity or above. Placing requirements on small scale producers to prove sustainability would create undue administrative burden, although higher performance and efficiency should be encouraged - The application of Pan European criteria for the demonstration of the sustainability of forest management is considered of major relevance - It is important to include relevant, credible and implementable sustainability criteria in the certification system for BIOMASUD solid biofuels, adjusted to each type of biomass - it is important to ensure that the sustainability criteria should reflect the conditions attached to each biofuels and not to the specific conditions of the energy unit where will be used - The comparison of greenhouse gas emissions from the use of biomass with fossil fuels is wrong and misleading because they are two completely different realities. Under any circumstances, these fuels will release GHG into the atmosphere regardless of their energy use. Their comparison with fossil fuels is irrelevant. The irrationality of its use depends on economic conditions and any distortion of that rationality must be avoided at all costs through mechanisms that promote market distortion - The ENERGY DEMAND Principle should take into account not only the energy inherently contained in the biomass but also the entire energy balance of the utilization system. Economic rationality must be considered and this is external to the nature of biomass and inherent to the installation itself and the supply area - There is a disparity between the principles of sustainability required for forest origin biofuels and those of agricultural origin

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TURKEY	- In Turkey, there should be a local organization who will coordinate the product and supply certification. It has already been emphasized that foreign approval companies are both very expensive and that it is very difficult to control the supply network due to the language problem. - The quality standards applicable in Europe should be discussed for the applicability to wastes in Turkey. - The establishment of biomass waste disposal sites in agricultural areas and the disposal of waste materials after they have been classified in these stations are essential, and that this process should be carried out by municipalities or government designated institution - Legislation needs to be developed in order to expand the use of biomass in Turkey. With carbon taxation and additional tax exemptions for industrial consumers, it is important that a biomass should be compared to coal in the event of a financial disposal. - It is proposed that a European Biofuel Technology Platform exists in Europe and a platform like this can be established in Turkey
SLOVENIA	- The participant's response was in general positive. They welcomed the idea of the project but they exposed the complexity and multidisciplinary of the BIOMASUD scheme - It was proposed to divide the biomass categories on HIGHER QUALITY biomass (solid Mediterranean biomass with less emission) and on LOWER QUALITY biomass (agricultural biomass like straws and residues from agricultural areas that causes much more emissions); and to adjust the sustainability criteria according to these two types. - Caution in removal of residues from forest and agricultural land as residues are also organic fertilizers for the ground and most of the nutrients are stored in leafs and small branches. - Is it the product that will be controlled or the company's system or combined certification? Furthermore, the question on cost of certification was raised. Participants were unanimous about the principles and criteria in the document "Review of the sustainability criteria" - the principles can remain but criteria should be limited and should be simple and possible to control. - Principle 1: option 2 must be taken. Formation of by-product is in the production and therefore greenhouse gas emissions are evaluated from there. - The usage of buildings and machines is nearly impossible to take into an account for the carbon footprint (especially when we are considering by-products).
GREECE	- It is remarkable that the categories of biomass types in the sustainability criteria are much broader in scope compared to the types of fuels that the BIOMASUD label is actually establishing fuel quality criteria for. - "aquatic biomass" should be included as a separate category, since it can be quite relevant for Mediterranean countries - Some criticism regarding the use of a principle burdening biomass with more GHG saving requirements compared to fossil fuel alternatives was voiced - Principle 1: The GHG calculation for the BIOMASUD label should not take into account a full LCA for biomass residues and by-products o Current requirement for GHG savings compared to natural gas (70%) could not be commended, because no specific examples of savings achieved by the use of BIOMASUD fuels (e.g. olive stones) o What exact point the auditor would verify the emission reduction? audit will take place at the production site while consumption takes place at a residence which can be located in a variable distance from the fuel producer o Not necessary to harmonize the required GHG savings for BIOMASUD with the proposed limits in the new proposed RES Directive since scope is different in terms of scale

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- Some considerations should be made for the cases of biomass fuel producers which market both food and non-food biomass and for which the latter represents a considerable part of their revenue

- Principle 2: Proposed to be excluded
  - LCA emissions related to the use of machinery, infrastructure, etc. during the transformation / production process should not be included in the calculation of GHG emissions.
  - Using the energy balance creates an additional administrative burden during the audit; additionally, there is no similar requirement in the EU wide proposed sustainability schemes for solid biofuels or in another solid biofuels certification schemes
  - This principle may penalize solid biofuels vs fossil fuel equivalents and more specifically biofuels requiring forced drying before they are put in the market vs. those not requiring
- Principle 3: No specific comments
- Principle 4: agreement with this principle
  - A specific definition of soil quality should be provided
  - In the long term soil quality may be difficult to monitor, specifically when sourcing from different agricultural sites with different soil features. A very good traceability system should be considered. CERTH has experienced in applying methodology based on the De Martonne Annual Aridity Index evaluation of four parameters: 1) soil organic carbon, 2) soil slope, 3) soil texture and 4) climate conditions. It is difficult to apply or even impossible in the framework of an audit.
  - Even ENplus producers have not to meet specific quantitative targets in terms of wood certified. Stricter criterion is NOT recommended for BIOMASUD.
- Principle 5 and 6: No specific criteria for their evaluation were included. This should be done if targeted to be applied.
- The reasons for inclusion of forest wood biomass in the BIOMASUD certification scheme and the emphasis on forest biomass in the sustainability criteria is not clear, since e.g. wood pellets, are already covered by well-established certification schemes, such as ENplus and DINplus, and no specific provisions or remarks for this specific category in Mediterran countries.
- BIOMASUD is targeted to SMEs and this must be taking in account when adopting final criteria
- The BIOMASUD label includes an auditing step by an independent entity. Therefore, any documents required for the sustainability aspects of the audit should be clear and readily available

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2.6 Final definition of Sustainability Criteria

Once the BIOMASUD PLUS consortium has considered the comments of the group of experts as well as the considerations of national focus groups, it has finally come up with the final definition of Sustainable Criteria for each of BIOMASUD PLUS principles.

Each Principle will be verified against the compliance of the different criteria and indicators defined as the main tool to monitor compliance for both BIOMASUD holders and auditors.

2.6.1 Definitions

The following definitions will apply to BIOMASUD PLUS certification scheme:

Nº	Biomass Categories	Definition	i.e. Materials
1	Woody biomass from forest and other wooded land management.	Roundwood, Tops, branches, stumps or root systems, trees and primary felling residues sourced directly from forest or other wooded land.	Wood, bark, shrubs
2	Woody biomass from Urban or Agricultural areas	Roundwood, Tops, branches and trees produced during the course of managing urban areas or agricultural areas. (Trees outside the forest - TOF)	Wood (urban round wood, olive tree prunings, vineyard prunings.), bark
3	Non Wood agricultural residues	Residues directly from agricultural areas. Short rotation crops are excluded, with the exception of the residues hereof.	Green plants, stalks, straws.
4	Secondary and tertiary agro-forestry materials	Waste flows and residues from agri-food and wood industry (secondary residual waste) and tertiary residual waste such as post-consumer wood waste.	Pine nut and almond shells, pine cones, Corncobs, olive stones, pich pits.

***Source**: Authors*

2.6.2 Principles 1 GHG reduction

Criterion 1.1 Ensuring GHG reduction

Indicator 1.1.1: The reduction of greenhouse gas emissions thanks to the use of certified biomass as a substitute for natural gas shall be a minimum of 70%. This threshold was established in the previous BIOMASUD project and it's the one in force on the Handbook v13. With the feedback of the Pilot Actions of WP6, the threshold will be revised for the next edition of the Handbook. It takes into account the emissions produced when transporting the raw materials to the manufacturing facility and those generated in the process of preparing and conditioning the biofuel.

The methodology to assess this indicator is developed in BIOMASUD PLUS handbook.

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2.6.3 Principle 2 Energy Demand

Criterion 2.1 Reduced Energy Demand

Indicator 2.1.1 The energy used in transporting raw materials to the production facility and the energy used in the process of preparing and conditioning biofuel may not exceed 40% of the energy contained in the fuel (PCI on wet basis). This threshold was established in the previous BIOMASUD project and it's the one in force on the Handbook v13. With the feedback of the Pilot Actions of WP6, the threshold will be revised for the next edition of the Handbook.

The methodology to assess this indicator is developed in BIOMASUD PLUS handbook.

2.6.4 Principle 3: Prevention of illegal logging practices - EUTR

Criterion 3.1. Implementation and maintenance of a Due Diligence System (DDS) to ensure compliance with EUTR.

This criterion is only applicable to operators of category 1 products. As the EUTR lays down, a DDS is a set of procedures and measures that serve as an instrument to ensure the legality of wood and wood-based product supplies and shall contain:

- Access to data about the supply of timber and timber products, including species and origin.
- Risk assessment, according to the above data and the information listed in the actual EUTR regulation.
- Risk mitigation measures when risk is not assessed as negligible.

Operators may choose to establish their own DDS or use the mechanism established by a monitoring organisation.

To verify with this criterion, one of the following indicators shall be identified:

Indicator 3.1.1 A recognized PEFC, FSC or equivalent certificate is in force.

Indicator 3.1.2 A Due Diligence system operated by a recognized monitoring organization is in force.

Thus, all entities that are operating a DDS in accordance with the requirements of a recognized Monitoring Organizations (MO) and all entities that have a PEFC, FSC or equivalent CoC certificate that covers the biomass within the scope of the certificate can be considered as in compliance with Criteria 3.1. In the case that such certificates or DDS endorsed by MO do not exists, indicator 3.1.3 must be properly verified.

Indicator 3.1.3 Legal source certificate or own DDS that should be verified by BIOMASUD auditors.

Criterion 3.2. Guarantee product traceability to ensure compliance with EUTR.

This criterion is applicable only to Traders (as defined in EUTR regulation. Please refer to section 2.3.2/II/Principle 3 in this document) of category 1 products. The EUTR establishes that Traders must

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be able to identify:

a) the operators or traders who have supplied the timber and timber products; and

b) Where applicable, the traders to whom they have supplied timber and timber products.

Traders shall keep the information referred to in paragraph 1 for at least five years and shall provide that information to competent authorities when requested to do so.

Indicator 3.2.1 A recognized PEFC, FSC or equivalent Chain of Custody certificate is in force

PEFC, FSC or equivalent Certification Schemes enable guarantees that the products included in the scope of the certificate are covered by traceability system that covers EUTR requirements. Thus, all entities that have a PEFC, FSC or equivalent CoC certificate covering the biomass within the scope of the certificate can be considered as in compliance with Criteria 3.2. In the case that such certificates do not exist indicator 3.2.2 must be properly verified.

Indicator 3.2.2 When no recognized PEFC, FSC or equivalent CoC certificate is endorsed, a register of purchases and sales, together with supplier and client names is kept for at least five years.

Criterion 3.3. Applicable to category 2 products. Guarantee legal practices for woody biomass from urban or agricultural areas .

Indicator 3.3.1 A harvest permit, an urban forest area maintenance permit or similar order issued for local authorities is in force. In the case of agricultural areas a management plan for woody biomass is required.

2.6.5 Principle 4: Sustainable Management

Criterion 4.1 Sustainable Forest Management (SFM)

The Pan-European Criteria and Indicators approved in the ministerial processes within the framework of FOREST EUROPE are adopted. The six Pan-European criteria for SFM that describe the different aspects of sustainable forest management in Europe are taken as main indicators of compliance.

Fulfillment of Pan-European SFM policies and criteria can be evaluated through a set of 45 indicators (34 quantitative and 11 qualitative). A complete list of verifiers to guarantee the compliance of each of these Pan-European criteria is provided in Annex 1"Updated Pan-European Indicators SFM 2015"

- *SFM Pan-European Criteria 1:* Maintenance and appropriate enhancement of forest resources and their contribution to **global carbon cycles**.
- *SFM Pan-European Criteria 2:* Maintenance of forest ecosystems' **health and vitality**.
- *SFM Pan-European Criteria 3:* Maintenance and encouragement of **productive functions** of forests (wood and non-wood).

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- *SFM Pan-European Criteria 4:* Maintenance, conservation and appropriate enhancement of **biological diversity** in forest ecosystems.

- *SFM Pan-European Criteria 5:* Maintenance, conservation and appropriate enhancement of **protective functions** in forest management (notably soil and water).

- *SFM Pan-European Criteria 6:* Maintenance of other **socio-economic functions** and conditions.

A valid PEFC or FSC FM certificate of the forest area shall be considered enough in order to demonstrate the compliance with SFM requirements.

Indicator 4.1.1 A recognized PEFC, FSC or equivalent Sustainable Forest Management (SFM) certificate is in force.

Criterion 4.2 Soil Quality must be maintained or improved if possible.

Soil quality shall be maintained and where possible improved, for which, best practices are applied for the maintenance or improvement of soil and soil quality in relation to production or management objectives, as these have been included in a management plan.

Indicator 4.2.1 A management plan is in force providing the guidelines to apply best practices for the maintenance or improvement of the soil and soil quality in relation to production or management objectives.

2.6.6 Principles 5 Carbon stock

Given the characterisation of biomass built into the BIOMASUD Scheme and the scant previous experience of other systems in the application of these Principles, we consider it is most appropriate in the current review of the scheme for the Criteria associated with the Principles of Carbon and Land Use (low ILUC risk) not to be developed independently.

In the case of biomass from forests, compliance with these principles is ensured by applying the following Pan European Criteria and Indicators:

Criterion 5.1: Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles.

Indicator 5.1.1: Forest management practices safeguard the quantity and quality of the forest resources in the medium and long term by balancing harvesting and growth rates, and by preferring techniques that minimise direct or indirect damage to forest, soil or water resources. Area and growing stock of forest and other wooded land, classified by forest type will be monitored periodically to ensure their maintenance and enhancement.

Holding a PEFC, FSC or equivalent SFM certificates meet the compliance of this indicator

Indicator 5.1.2: Appropriate silvicultural measures are taken to maintain or reach a level of the growing stock that is economically, ecologically and socially desirable. Carbon stock and carbon stock

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changes in forest biomass, forest soils and in harvested wood products will be monitored periodically to ensure their maintenance and enhancement.

Holding a PEFC, FSC or equivalent SFM certificates meet the compliance of this indicator

Criterion 5.2: Production of biomass does not destroy carbon sinks such as peatlands or wetlands

Indicator 5.2.1: Land sourcing biomass was not classified as peatland on 1 January 2008, unless it can be demonstrated that the production and harvesting of the biomass does not result in water depletion of a formerly undrained soil.

Indicator 5.2.2: Land sourcing biomass was not classified as wetland on 1 January 2008, unless it can be demonstrated that the production and harvesting of the biomass does not result in water depletion of a formerly undrained soil.

2.6.7 Principles 6: Low Indirect Land Use Change (ILUC) risk

Criteria 6.1: Conversion of forests to other types of land use, including conversion of primary forests to forest plantations, shall not occur.

Indicator 6.1.1: On average less than half the volume of the annual roundwood harvest from forests is processed as biomass for energy generation. This indicator is only applicable to category 1 (forest and other wooded lands).

Criteria 6.2: Biomass sourced from new bioenergy plantation systems that were planted after 1 January 2008 must have a demonstrably low ILUC risk.

This criteria is only applicable to category 2 (Woody biomass from Urban or Agricultural areas) in an experimental basis. This means that the non-compliance with this criteria shall not prevent from the endorsement of BIOMASUD PLUS certificate. Nonetheless the compliance with this criteria shall trigger a specific mention within BIOMASUD certificate.

A monitorization of such certificate holders including special mention to ILUC criteria will be done in order to improve methodologies to evaluate low ILUC risk.

Indicator 6.2.1: Low ILUC risks has been calculated using the LIIB methodology and requirements (LIIB = Low Indirect Impact Biofuels) or an equivalent method and a valid certificate is in force.

Indicator 6.2.2: A low ILUC risk monitoring plan is in force with a target timeline of at least 6 years. The plan must include the methodology to ensure (a) crop yield increases. The plan shall be evaluated every 2 years in order to assess if low ILUC risk objectives are met.

Criteria 6.3 The conversion of abandoned agricultural and treeless land into forest land is taken into consideration, whenever it can add economic, ecological, social and/or cultural value.

Indicator 6.3.1: A low ILUC risk monitoring plan is in force including the economic assessment of the addition of more than 3-year-non-used lands as a tool to increase carbon stocks.

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2.6.8 Summary of principles and applicable criteria

			CATEGORIES			
			C1	C2	C3	C4
SUSTAINABILITY PRINCIPLES	**Criterion**	**INDICATORS**	Woody biomass from forest and other wooded land management	Woody biomass from Urban or Agricultural areas.	Non Wood agricultural residues.	Secondary and tertiary agro-forestry materials.
GHG Principle	**C1.1 Ensuring GHG reduction**	**I1.1.1:** The reduction of greenhouse gas emissions thanks to the use of certified biomass as a substitute for natural gas shall be a minimum of 70%. It takes into account the emissions produced when transporting the raw materials to the manufacturing facility and those generated in the process of preparing and conditioning the biofuel.	YES	YES	YES	YES
ENERGY DEMAND Principle	**C2.1 Reduced Energy Demand**	**I2.1.1** The energy used in transporting raw materials to the production facility and the energy used in the process of preparing and conditioning biofuel may not exceed 40% of the energy contained in the fuel (PCI on wet basis).	YES	YES	YES	YES
LEGAL LOGIN Principle	**C3.1. Implementation and maintenance of a Due Diligence System (DDS) to ensure compliance with EUTR.**	**I3.1.1** A recognized PEFC, FSC or equivalent certificate is in force. **I3.1.2** A Due Diligence system operated by a recognized monitoring organization is in force. **I3.1.3** Legal source certificate or own DDS that should be verified by BIOMASUD auditors.	Yes	n/a	n/a	n/a
	C3.2. Guarantee product traceability to ensure compliance with EUTR.	**I3.2.1** A recognized PEFC, FSC or equivalent Chain of Custody certificate is in force **I3.2.2** A register of purchases and sales, together with supplier and client names is kept for at least five years.	Yes	n/a	n/a	n/a

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			CATEGORIES			
			C1	C2	C3	C4
SUSTAINABILITY PRINCIPLES	**Criterion**	**INDICATORS**	Woody biomass from forest and other wooded land management	Woody biomass from Urban or Agricultural areas.	Non Wood agricultural residues.	Secondary and tertiary agro-forestry materials.
	C3.3. Guarantee legal practices for woody biomass from urban or agricultural areas.	**I3.3.1** A harvest permit, an urban forest area maintenance permit or similar order issued for local authorities is in force. Woody biomass management plan in agricultural areas.	n/a	YES	n/a	n/a
SFM Principle	**C4.1 Sustainable Forest Management (SFM)**	**I4.1.1** A recognized PEFC, FSC or equivalent Forest Management certificate is in force	Yes	n/a	n/a	n/a
CARBON STOCK Principle	**C5.1: Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles.**	**I5.1.1**: Forest area. Area of forest and other wooded land, classified by forest type **I5.1.2**: Forest carbon. Carbon stock and carbon stock changes in forest biomass, forest soils and in harvested wood products.	Yes (SFM)	n/a	n/a	n/a
	C5.2: Production of biomass does not destroy carbon sinks such as peatlands or wetlands	**I5.2.1:** Land sourcing biomass was not classified as peatland on 1 January 2008, unless it can be demonstrated that the production and harvesting of the biomass does not result in water depletion of a formerly undrained soil. **I5.2.2:** Land sourcing biomass was not classified as wetland on 1 January 2008, unless it can be demonstrated that the production and harvesting of the biomass does not result in water depletion of a formerly undrained soil.	YES (SFM)	YES	n/a	n/a

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			CATEGORIES			
			C1	C2	C3	C4
SUSTAINABILITY PRINCIPLES	**Criterion**	**INDICATORS**	Woody biomass from forest and other wooded land management	Woody biomass from Urban or Agricultural areas.	Non Wood agricultural residues.	Secondary and tertiary agro-forestry materials.
LAND USE Principle	**C6.1: Conversion of forests to other types of land use, including conversion of primary forests to forest plantations, shall not occur.**	**Indicator 6.1.1:** On average less than half the volume of the annual roundwood harvest from forests is processed as biomass for energy generation. This indicator is only applicable to category 1.	YES (SFM)	PILOT EXPERIENCES	n/a	n/a
	C6.2: Biomass sourced from new bioenergy plantation systems that were planted after 1 January 2008 must have a demonstrably low ILUC risk.	**I6.1.1:** Low ILUC risks has been calculated using the LIIB methodology and requirements (LIIB = Low Indirect Impact Biofuels) or an equivalent method and a valid certificate is in force. **I6.1.2:** A low ILUC risk monitoring plan is in force with a target timeline of at least 6 years. The plan shall be evaluated every 2 years in order to assess if low ILUC risk objectives are met.	Yes (SFM)	PILOT EXPERIENCES	n/a	n/a
LAND USE Principle	**C6.3 The conversion of abandoned agricultural and treeless land into forest land is taken into consideration, whenever it can add economic, ecological, social and/or cultural value.**	**I6.3.1:** A low ILUC risk monitoring plan is in force with a target timeline of at least 6 years, including the economic assessment of the addition of more than 3-year-non-used lands as a tool to reduce carbon risk.	PILOT EXPERIENCES	PILOT EXPERIENCES	n/a	n/a

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ANNEXES

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No.

Annex 1

Updated Pan-European Criteria

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Madrid Ministerial Declaration

25 years together promoting Sustainable Forest Management in Europe

We, as representatives of the Signatories of FOREST EUROPE, at the 7th Ministerial Conference on the Protection of Forests in Europe, held in Madrid on 20-21 October 2015,

1. ACKNOWLEDGING the achievements of FOREST EUROPE in its 25 years of existence and EMPHASISING the status of FOREST EUROPE as the voluntary high level political process for forests in Europe that has contributed to the strengthening and implementation of sustainable forest management in Europe.

2. REITERATING the vision that all European forests are vital, productive and multifunctional[1].

3. REAFFIRMING the mission of FOREST EUROPE to enhance the cooperation on forest policies in Europe under the leadership of ministers, and to secure and promote sustainable forest management with the aim of maintaining the multiple functions of forests crucial to society.

4. ACKNOWLEDGING that sustainable forest management is a successful framework concept whose implementation has increased benefits from forests to society in Europe and contributed substantially to addressing global and regional challenges, notably climate change and social and economic development.

5. REAFFIRMING that forests are important for sustainable development and TAKING NOTE of the important role that forests play in the well-being of European society.

6. RECOGNISING that European forests are vital in combating climate change and that adaptation of forests to climate change will be necessary to ensure a sustained mitigation effect and TAKING NOTE that the expanding forest area as well as sustainably managed forests in Europe provide carbon sequestration and storage in forest biomass and soils, as well as in forest products.

7. HIGHLIGHTING the protective role of forests for preventing land degradation and desertification by stabilizing soils, reducing water and wind erosion, and maintaining water and nutrient cycling in soils.

[1] FOREST EUROPE vision as in the Oslo Ministerial Decision: European Forests 2020

8. WELCOMING the progress made on the implementation of sustainable forest management in the pan-European region, and an increase of the number of countries with improved national forest policy instruments, such as National Forest Programmes, as reflected in the State of Europe's Forests 2015 report; while ACKNOWLEDGING the need for further improvement of forest related information.

9. WELCOMING the progress made towards the achievement of the Goals for European Forests and the European 2020 Targets, EMPHASIZING the need to continue working towards the FOREST EUROPE's vision, and ACKNOWLEDGING the need for further implementation and improved information on progress made towards the goals and 2020 targets.

10. REAFFIRMING the role and contributions of sustainably-managed forests to the green economy by creating green jobs and improving human well-being and social equity, while improving ecosystem services and significantly reducing environmental risks.

11. RECOGNISING that forest management must adapt to challenges such as increasing temperatures, the variability of rainfall, more extreme events, including storms, floods, fires, droughts, pests and diseases and that forests must be actively managed to secure their multifunctionality as well as increase their productivity in the context of a rapidly changing environment.

12. TAKING INTO ACCOUNT the work undertaken at the global level concerning forests and sustainable forest management, and also progress made in the fields of climate change, biodiversity, desertification as well as sustainable development that may have a significant impact on forest policies.

13. WELCOMING the progress made in the achievement of the global objectives on forests in the region while REGOGNISING the challenges ahead[2].

14. FURTHER WELCOMING the ministerial declaration and resolution of the eleventh session of the United Nations Forum on Forests (UNFF) on the International Arrangement on Forests (IAF) beyond 2015 and the invitation addressed to the regional actors to strengthen the collaboration with UNFF within IAF.

[2] Ref. UNECE/FAO study "Forests in the ECE region: Trends and challenges in achieving the Global Objectives of Forests".

As representatives of the Signatories of FOREST EUROPE, we commit ourselves to:

Addressing global challenges at the regional level

15. Raise awareness of the importance of forests in the post-2015 development agenda as a key contributor to sustainable development, and in particular of their contribution to the achievement of several of the sustainable development goals and targets.

16. Enhance the role of forests, sustainable forest management and the use of forest- based products in mitigating climate change.

17. Continue efforts to adapt forests to climate change through sustainable forest management.

18. Strengthen the use of sustainable forest management tools developed by FOREST EUROPE[3] particularly in the future climate change regime.

19. Promote the role of sustainable forest management in landscape restoration to contribute to sustainable development in a broader context and in the strive to achieve a land degradation-neutral world.

20. Enhance the sustainable use of goods and services from forest ecosystems and the development of agroforestry, which have the potential to make the rural population less vulnerable to the potential impacts of desertification and land degradation.

21. Monitor and report on the achievements in the implementation of the goals and targets of European Forests 2020[4].

22. Increase efforts to raise awareness on the multifunctionality of forests and the benefits they offer to society, as well as to increase the efforts on communicating the importance of sustainable forest management in managing and protecting forests in Europe.

23. Work towards integrated, holistic and cross-sector approaches with other related areas such as climate change, biodiversity, desertification water and plant health, and other sectors such as energy, agriculture, rural development and construction which may impact on the forest sector, in order to strengthen synergies.

24. Increase efforts to enable the mobilization of financial resources from all sources to support sustainable forest management inter alia through enhancing research and development of new products and services related to forests with the view to improve profitability of the forest sector.

[3] Such as Pan-European Criteria and Indicators for sustainable forest management, Pan-European Operational Level Guidelines for sustainable forest management, MCPFE Approach to National Forest Programmes in Europe, Pan-European Guidelines for Afforestation and Reforestation.

[4] Oslo Ministerial Decision: European Forests 2020.

Pan-European and National Actions

25. Provide regional inputs to the work of the International Arrangement on Forests through the United Nations Forum on Forests.

26. Strengthen cooperation with relevant regional and global actors, inter alia, by requesting the Liaison Unit to carry out work to this end.

27. Endorse the updated pan-European indicators for sustainable forest management (Annex 1) as adopted by the Expert Level Meeting on 1st July 2015 in Madrid, Spain, and use them in forest policy, forest monitoring, as appropriate, and for collaboration with other sectors.

28. Further develop and update policies and tools for sustainable forest management in order to adapt them, where appropriate, to changing circumstances and to make them fit for addressing new regional and global challenges.

29. Invite other sectors to use the pan-European criteria and indicators for forest related assessments.

30. Use subsets of the pan-European criteria and indicators as appropriate for communicating the achievements of sustainable forest management, and explore the possibilities for various applications for them, notably in relation to other policy areas.

31. Work together as well as with relevant international organisations when appropriate on elaboration and implementing approaches for evaluation of sustainability in forest management.

32. Strengthen the fruitful cooperation and collaboration with other processes on criteria and indicators for sustainable forest management, pursuing joint efforts to continue streamlining reporting requirements.

Annex 1 to Madrid Ministerial Declaration:

UPDATED PAN-EUROPEAN INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT

as adopted by the
FOREST EUROPE Expert Level Meeting
30 June – 2 July 2015, Madrid, Spain

Introduction

This document contains the updated set of pan-European indicators for sustainable forest management (SFM) both quantitative and qualitative.

Since the first set of pan-European indicators for sustainable forest management in 1998 and its improvement in 2003, experience has shown that criteria and indicators are a very important tool for European forest policy. Based in the improvement of knowledge and data collection systems as well as the current and upcoming information needs an update of the indicators is needed. Thus, the Expert Level Meeting (ELM) on January 2015 decided to update the existing set of pan-European indicators for SFM.

An Advisory Group, representing countries and relevant organizations expertise in Europe, was set up to facilitate the updating process, a participatory process to consult with countries and stakeholders was established (through two online consultations and a workshop) and a wide range of experts were consulted. The first online consultation was conducted from mid-December 2014 to end of January 2015, the second online consultation on March 2015 and the FOREST EUROPE Workshop on Updating the Pan-European Indicators for SFM was held on April 2015 in Madrid.

The updated list of indicators, as presented, is the result of this participatory process and the work of the Advisory Group. It is presented in the framework of the existing criteria and structured following a linkage between the qualitative and the quantitative indicators' proposal.

The new indicators (2.5 Forest land degradation, 4.7 Forest fragmentation, 4.10 Common forest bird species) need to be further elaborated before implementation, and measurement methods should be subject to an in-depth review and discussion at the implementation stage. During the next reporting period, pilot projects to check the availability, feasibility and reliability of data of the referred indicators should be carried out.

Additional information on rationales, international data providers, measurement units, current periodicity of data availability as well as underlying definitions, as contained in the supplementary documents "Background Information for the Updated Pan-European Indicators for Sustainable Forest Management" and "Relevant Definitions Used for the Updated Pan-European Indicators for Sustainable Forest Management"[5], to be further developed.

[5] The final report of the Advisory Group, the supplementary documents and related information of the updating process can be found at: http://www.foresteurope.org/content/updating-pan-european-set-indicators-sfm.

	No.	Indicator
Forest policy and governance	1	National Forest Programmes or equivalent
	2	Institutional frameworks
	3	Legal/regulatory framework: National (and/or sub-national) and International commitments
	4	Financial and economic instruments
	5	Information and communication

Criteria	No.	Indicator	Full text
Criterion 1: Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles	C.1	Policies, institutions and instruments to maintain and appropriately enhance forest resources and their contribution to global carbon cycles	
	1.1	Forest area	Area of forest and other wooded land, classified by forest type and by availability for wood supply, and share of forest and other wooded land in total land area
	1.2	Growing stock	Growing stock on forest and other wooded land, classified by forest type and by availability for wood supply
	1.3	Age structure and/or diameter distribution	Age structure and/or diameter distribution of forest and other wooded land, classified by availability for wood supply
	1.4	Forest carbon	Carbon stock and carbon stock changes in forest biomass, forest soils and in harvested wood products
Criterion 2: Maintenance of Forest Ecosystem Health and Vitality	C.2	Policies, institutions and instruments to maintain forest ecosystems health and vitality	
	2.1	Deposition and concentration of air pollutants	Deposition and concentration of air pollutants on forest and other wooded land
	2.2	Soil condition	Chemical soil properties (pH, CEC, C/N, organic C, base saturation) on forest and other wooded land related to soil acidity and eutrophication, classified by main soil types
	2.3	Defoliation	Defoliation of one or more main tree species on forest and other wooded land in each of the defoliation classes
	2.4	Forest damage	Forest and other wooded land with damage, classified by primary damaging agent (abiotic, biotic and human induced)
	2.5	Forest land degradation[6]	Trends in forest land degradation

[6] Requires to be further developed and checked under which Criterion (2 or 5) better fits.

Criteria	No.	Indicator	Full text
Criterion 3: Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood)	C.3	Policies, institutions and instruments to maintain and encourage the productive functions of forests	
	3.1	Increment and fellings	Balance between net annual increment and annual fellings of wood on forest available for wood supply
	3.2	Roundwood	Quantity and market value of roundwood
	3.3	Non-wood goods	Quantity and market value of non-wood goods from forest and other wooded land
	3.4	Services	Value of marketed services on forest and other wooded land
Criterion 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems	C.4	Policies, institutions and instruments to maintain, conserve and appropriately enhance the biological diversity in forest ecosystems	
	4.1	Diversity of tree species	Area of forest and other wooded land, classified by number of tree species occurring
	4.2	Regeneration	Total forest area by stand origin and area of annual forest regeneration and expansion
	4.3	Naturalness	Area of forest and other wooded land by class of naturalness
	4.4	Introduced tree species	Area of forest and other wooded land dominated by introduced tree species
	4.5	Deadwood	Volume of standing deadwood and of lying deadwood on forest and other wooded land
	4.6	Genetic resources	Area managed for conservation and utilisation of forest tree genetic resources (in situ and ex situ genetic conservation) and area managed for seed production
	4.7	Forest fragmentation[7]	Area of continuous forest and of patches of forest separated by non-forest lands
	4.8	Threatened forest species	Number of threatened forest species, classified according to IUCN Red List categories in relation to total number of forest species
	4.9	Protected forests	Area of forest and other wooded land protected to conserve biodiversity, landscapes and specific natural elements, according to MCPFE categories
	4.10	Common forest bird species[8]	Occurrence of common breeding bird species related to forest ecosystems
Criterion 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water)	C.5	Policies, institutions and instruments to maintain and appropriately enhance of the protective functions in forest management	
	5.1	Protective forests – soil, water and other ecosystem functions - infrastructure and managed natural resources	Area of forest and other wooded land designated to prevent soil erosion, preserve water resources, maintain other protective functions, protect infrastructure and managed natural resources against natural hazards

[7] Requires to be further developed and tested.

[8] Requires further development and testing for consideration.

Criteria	No.	Indicator	Full text
Criterion 6: Maintenance of other Socioeconomic Functions and Conditions	C.6	Policies, institutions and instruments to maintain other socioeconomic functions and conditions	
	6.1	Forest holdings	Number of forest holdings, classified by ownership categories and size classes
	6.2	Contribution of forest sector to GDP	Contribution of forestry and manufacturing of wood and paper products to gross domestic product
	6.3	Net revenue	Net revenue of forest enterprises
	6.4	Investments in forests and forestry	Total public and private investments in forests and forestry
	6.5	Forest sector workforce	Number of persons employed and labour input in the forest sector, classified by gender and age group, education and job characteristics
	6.6	Occupational safety and health	Frequency of occupational accidents and occupational diseases in forestry
	6.7	Wood consumption	Consumption per head of wood and products derived from wood
	6.8	Trade in wood	Imports and exports of wood and products derived from wood
	6.9	Wood energy	Share of wood energy in total primary energy supply, classified by origin of wood
	6.10	Recreation in forests	The use of forests and other wooded land for recreation in terms of right of access, provision of facilities and intensity of use

$\sum$ = 34 quantitative indicators + 11 qualitative indicators (total 45 indicators)

Annex 2

Summary on Comments from Experts

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No.

Group of Experts Comments

Date: 28/12/2016	Document: **Working Draft 1**	Project: **BIOMASUD Plus. Deliverable 4.1 Review of Sustainability Criteria**

Expert	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment[1]	Comments	Proposed change	Observations of the Task 4.1 Coordinator
MN	0.general	0		We do not have anything specific to report within the prepared text, if not from the point of view of the general concept related to principles 4, 5 and 6, absolutely acceptable but should not make it too difficult to apply the standard. To ensure the application of BIOMASUDplus tool, it must be ensured that the holders of the raw material, the biomass producers and traders, have a real chance of implementing a certification system, which can't be too burdensome. In our opinion does not have to get across the concept that only biofuels from certified FSC o PEFC chain of custody can access the BIOMASUDplus certification. And certainly needed to demonstrate That the origin of raw material and product and legal, in accordance a The provisions from the various national and international regulations on harvesting intensity.		Considered
SC	0.general	0		I have not any comments on proposal of the Review of the sustainability criteria.		
MK	0. general	0		Biomass from Mediterranean has better quality due to it's high density	Consider a minimum density for biomasudplus for fire wood (not for pellets) maybe a limit of 600 kg/m3?	Partially Considered
MP	1.	Page 3	ge	The scope of project is focused on small and medium enterprises. It is important factor which influences the selected sustainability criteria in whole document. I think that this general orientation should be even more emphasised.		Considered
ND	4.1.1	pp. 3-15	ge	Section needs to be a bit more reader friendly	4.1.1 could be divided into sub-paragraphs to enhance legibility and understanding, e.g.: 4.1.1.1 Overview of Documentation Sources (from page 3 to page 5) 4.1.1.2 Key Documentation Findings on Sustainability Criteria (from page 5 to page 15)	Considered
ND	4.1.1	pp. 3-5	ed	Further reading links in blue colour don't seem to work on pdf version of the document	Re-establish hyperlinks on respective headings of the document	

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IC	4.1.1	Page 3	ge	There are some other documents/initiatives that might have been taken into consideration in the first stage in the review process. For example: - ISCC 202 Sustainability requirements, available at http://www.iscc-system.org/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/content/documents/ISCC-Zertifizierungs-Prozess/Zertifizierung/Systemdokumente/ISCC_EU/ISCC_202_Sustainability_Requirements_3.0.pdf&t=1480590001&hash=1a4a39712e9169eb6a8c00f123074ead39168d5f - UNE-EN 16214-1:2013 Criterios de sostenibilidad para la producción de biocombustibles y biolíquidos para aplicaciones energéticas. Principios, criterios, indicadores y verificadores. Parte 1: Terminología. - UNE-EN 16214-3:2013 Criterios de sostenibilidad para la producción de biocombustibles y biolíquidos para aplicaciones energéticas. Principios, criterios, indicadores y verificadores. Parte 3: Biodiversidad y aspectos ambientales relacionados con fines de protección de la naturaleza. - EN 16214-4:2013 Biomasa producida de forma sostenible para aplicaciones energéticas. Principios, criterios, indicadores y verificadores para biocombustibles y biocarburantes. Parte 4: Métodos de cálculo del balance de emisiones de gases de efecto invernadero usando el análisis de ciclo de vida.	Consider the proposed documents/initiatives	Considered
ND	4.1.1	pp. 5-15	te	Documentation research demonstrates limited reference to non-woody biofuels	Reference to sustainability criteria derived from EN 14961-6 (being superseded by ISO 17225-6:2014 Non-woody pellets for non-industrial use) could be made	Considered

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JG	4.1.1	Page 6 / Parag 8	ed	Broader context	Instead of: good practice– good practices and instead of Forest – forest resources	Considered
IC	4.1.1	Page 6 – parag 8	ed	Mistake found: Thanks to its eco-label, *customers and customers* are able to….	Correct mistake	Considered
IT	4.1.1	Table	te	FSC Certificated forest area of Turkey has been written to be 2.365.753 ha that this value is a little less than current situation at the table in the page 9.	Current situation of FSC certificated forest area in Turkey is 2.367.095 ha	Considered
ND	4.1.1	Table under title “Forest Certification”, p.8	ed	Data clarity	There is no reference to units, most probably surface in hectares (ha) to be mentioned next to figures	Considered
MK	4.1.2	Page 16	ge	Structure of the document – now is in a working version with comments that will be later erased	Page 16 description (chapter 4.1.2) and experts to be put at the beginning of the document.	Considered
MK	4.1.2	Page 16 Parag 2 and 3	editorial	Paragraph 2 and 3 are comments to be erased		Considered
MP	4.1.3	Page 16 Parag 2	ge	Fully agree with methodology which is focused on adaptation of existing sustainability criteria.		Considered
MP	4.1.3	Page 16 Parag 3	ge	Additional factor for small enterprises might be also cost/benefit issues in the application of sustainability criteria (e.g. costs of laboratory tests in determining soil quality).	Add additional determining factor related to limited financial possibilities in small companies regarding cost/benefit efficiency	Considered
MP	4.1.3	Page 17 a) Table 1	te	Woody biomass from forest management might include also some of the Roundwood sub-categories (according to UNECE definitions) such as pulpwood. Where appropriate bark should also be included in definition of biomass categories.	Add term roundwood in definition of category 1 and 2. Add bark in column i.e. Materials in categories 1, 2 and 4. Add sawmill residues in Column i.e. Materials in category 4.	Partially Considered
JG	4.1.3	Page 17 a) Table 1 nº1	te	Include roots or stumps	Include stumps or root systems, in some sylvicultural systems they are used for energy.	Considered
IT	4.1.3	Table1	ge	Roots, branches and other felling residues which	A 5th Biomass Category can be added under the	Rejected, other

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				obtain from afforestation and industrial plantation areas can be substantial woody biomass source. In addition to this, significant amount of woody biomass can be obtain from forest maintenance activities. Every year plenty of woody biomass is produced to combat with forest fires reducing alive forest cover like maquis shurbland in Mediterranean region. Also, as a live forest cover Rhododendron ponticum L. which prevents growing of forest trees is an important woody biomass source in Black Sea Region.	following name: "Woody biomass from afforestation and industrial plantation areas and forest maintenance activities.	categories have been defined better. No need to include a 5th one
Other - RR	4.1.3	Page 17 a) Table 1	ge	The name of biomass category number 4 seems not to be the most suitable for the biomass type considered. This name could refer to waste as manures, sewage sludge or something like that.	A more appropriate name could be "Secondary and tertiary agri-forestry residues" as suggested in the definition.	Considered
MK	4.1.3	Page 18 b)	editorial	Lack of description and introduction:	Sustainability principles include all aspects of production and trade … I propose that the principles are then listed together as bullet points	Considered
MK	4.1.3	Page 18 b) Principle 3	editorial	The name of principle to be changed	Legal logging practices - EUTR	Considered
MP	4.1.3	Page 18 b) Principle 3	ge	EUTR Principle It might be worth considering some of the aspects of EU TR also for wood/biomass from urban or agricultural areas. E.g. legal permits for harvesting trees or other woody biomass outside forest areas.		Partially Considered
JG	4.1.3	Page 18 b) Principle 3 Parag 7	ge	Include a reference	Should include a short sentence about the relation of illegal logging, and working conditions and promoting workers' health and safety conditions.	Partially Considered
IT	4.1.3	page 19 Parag 2	ge	Forest Law 6831 Numbered prohibits illegal wood cutting in Turkey. 6831 Numbered Forest Law defines legal wood as wood that has been logged in accordance with the law applicable in the country where it is logged.	Being a European Union Regulation, this criterion is a legal obligation for all countries participating in the project except Turkey. In Turkey, Forest Law 6831 Numbered is a legal obligation.	Considered
JG	4.1.3	Page 21 b)	ed	Remove word	Instead of "we consider it appropriate" – we	Considered

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		Principle 4, last parag,			consider appropriate	
ND	4.1.3b	Principle 4(b) Non-forest lands – p.21	te	More attention should be paid to the logistics chain sustainability in non-forest lands (cultivation, harvest, transport, biomass processing and biofuel production, transport to end-user, consumption)	Sustainable management criterion for non-forest lands (i.e. agriculture crop lands, short rotation coppice lands, urban parks, etc.) should address such issues as: responsible management of tree pruning for compost or biofuel through reduction of open fires, collection of bio-waste by certified companies and avoidance of mixture with other types of wastes, e.g. municipal waste.	Considered
MP	4.1.3	Page 21 b) principle 5 Parag 1	ge	Generally principle 5 is appropriate but there might be large difficulties in defining criteria and even more in verification procedures especially on micro level (e.g. small forest holdings). Carbon sequestration issues are quite complex and are more suitable for large scale assessment (e.g. country, region, EU 28 …). There are also some methodological issues as in e.g. forests with uneven age structure and high carbon stocks these stocks might be lower in medium period due to forest structure reason. This would make additional costs and lower incentives for small and medium enterprises to join the scheme.		Considered
MK	4.1.3	Page 21 b) Principle 5		.. also increase in carbon stock levels on long term.	Ensure maintenance or increase of carbon… Note and a question to experts: Using the whole tree logging method on poor soils is not recommended if there is no significant risk of fire hazard. But Mediterranean has generally a big fire hazard- what to do? Can we say anything regarding preventing fire hazard – the biggest risk for carbon?	Partially Considered
MP	4.1.3	Page 21 b) principle 6:	ge	As in comments for Principle 5. Quite complex issue which is more proper for implementation on national level and not on micro level (e.g. forest holding). Intense monitoring, data collection and calculation would be needed for implementation on micro level. This would make additional costs and lower incentives for small and medium enterprises to join the scheme.		Partially Considered

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JG	4.1.3	Page 21 b) Principle 6, 2nd parag,	ed	Change sentence	The term “is still generally in its infancy” is not appropriate in this context, should be replaced by other one.	Partially Considered
MP	4.1.3	Page 22 b) Table 3	te	Regarding comments for principles 5 and 6 we propose not to include these principles in any category.	Replace Yes (SFM) with n/a** or Delete columns CARBON Principle and LAND USE Principle (low ILUC risk)	Partially Considered
Other - RR	4.1.3	Page 22 b) Table 3	ge	Among Sustainability Principles assigned to biomass category number 4, a criterion related to Sustainable Management Principle should be considered.	It could be SFM or something more simplified which consider sustainable management of product in origin in the case of forestry waste (for example in exploitation of products like hazelnut or pine nut). And in the case of agricultural or agri-food waste could be Soil Quality.	Considered
MP	4.1.3	Page 23 c) Principle 3 Criterion 3.1	te	EUTR defines operators and traders.	Replace word Agents with Operators	Considered
MK	4.1.3	Page 23 c) Principle 3 Criterion 3.1	editorial	EUTR is using the term operators (not Agents)	Consider using the term operator as used in EUTR	Considered
JG	4.1.3	Page 23 c) Principle 3 C 3.1	ge	question	Why is not proposed/suggested a country registry system? That should make more difficult to have duplicated records, and communication between certification systems (with the confidentiality assured- because commercial interests). Related with pg 23 principle 3 criterion 3.1	Partially Considered. Not implemented since this would be too complex at this stage
MP	4.1.3	Page 23 c) Principle 3: Criterion 2	ge	EU TR requests DDS for every operator regardless of third party certificates. I thing scheme should follow general approach as set in EU TR. However possessing CoC certificates could be used as part of DDS and certificates are of great help in complying with EU TR.	Rewrite last paragraph in order to fully comply with EU TR.	Partially Considered
IC	4.1.3	Page 23 c) Principle 3 Last parag	te	It is stated in the document that entities in compliance with criteria 3.1. and 3.2. are “exempt from being reaudited”.	Substitute by the following: *A valid PEFC or FSC CoC certificate that covers the biomass within its scope or a valid DDS*	Considered

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				It is not clear. It is mentioned in the document for the first time the concept of audit and certification. In order to make it clearer it is needed to add a clarification in the document regarding the context for audit and certification. Moreover it should be clarified that those entities are exempt from being reaudited against those specifid requirements, but they are not exempt from being audited against other criteria.	*certificate issued by a monitoring organization may be considered enough in order to demonstrate the compliance with Criteria 3.1 or 3.2.*	
IC	4.1.3	Page 23 Principle 3	te	Clarifications are needed in order to state which entities can be considered in compliance with criteria 3.1. and 3.2.	All entities that are operating a DDS in accordance with the requirements of a recognized Monitoring Organizations and all entities that have a PEFC, FSC or equivalent CoC certificate that covers the biomass within the scope of the certificate can be considered as in compliance with Criteria 3.1 or 3.2.	Considered
IC	4.1.3	Page 24 c) Principle 4 C 4.1. last parag	te		Substitute by the following: *A valid PEFC or FSC FM certificate of the forest area may be considered enough in order to demonstrate the compliance with SFM requirements*	Considered
MP	4.1.3	Page 24 c) Principle 4 Criterion 4.2	ge	In order to get objective data on soil quality and trends intensive sampling would be only relevant and objective way. This might pose high costs to small enterprises and cost burden might be too high to be of interest for small entities.	This Criterion should be also financially assessed before inclusion in Sustainability Criteria for BIOMASUD label.	Considered

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