



Guideline for the procurement of biomass as of October 2024

LEVI STRAUSS & CO.

BEYOND
YOGA



1.0 Executive summary: guideline for the procurement of biomass as of September 2024

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3. Sustainable biomass sourcing

- Environmental
- Social and ethical
- Localised
- Traceability and transparency
- Inspiration cases

4. Certification

- Certification chain
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- Reporting checklist
- Future outlook
- Case study & best practices

2 This guideline is designed to support you in your journey toward sourcing biomass for your factories sustainably. While sustainable biomass certification is not a mandatory requirement, we encourage you to strive for it as you take steps in your journey.

3 Biomass sourcing

Biomass should be sourced in accordance with four main sustainability principles

1. Environmental
2. Social & ethical
3. Localised
4. Traceability and transparency

4 Certification

Sustainable biomass with certification is recommended

Sustainable biomass with certification is recommended, when available in your situation.

The leading biomass certification bodies are the ISCC, the RSB and the FSC. All have a global reach and are applicable to relevant feedstocks.

5 Reporting

Document checklist of information to submit Higg FEM

- ✓ Energy subtype: feedstock type
- ✓ Energy use: in MJ
- ✓ Other certification e.g. country specific is described and a reference link provided.
- ✓ Sustainable biomass certification (not mandatory)

2.0 Procurement of biomass guideline overview

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What is it?

A guideline on how to source biomass in a sustainable way and guide you in your journey towards obtaining certification.

It provides tangible steps which you can take to ensure the biomass you procure for Levi Strauss & Co. factories is sustainable biomass.



Why was it made?

Levi Strauss & Co. is transitioning from coal-based electricity to sustainable biomass in all factories.

We've created this guide to facilitate our mutual journey towards a more sustainable future transitioning from coal to sustainable biomass.



How to use it?

These guidelines can be used to help you procure biomass in a sustainable way and obtain certification in the future.

When selecting a supplier, look at the four main principles of sustainable biomass and be aware for potential risks.

As a final step, use the checklist to discover which information to share with Levi Strauss & Co. via Higg FEM.



We thank you for your continued commitment to Levi Strauss & Co.'s 16 sustainable goals ([click here to read them](#)), prioritizing people and the planet. Together, we can address climate, consumption, and community challenges for sustainability. Your transition from coal to biomass is a significant step forward in this journey.

2.1 According to the Higg FEM there are two definitions: biomass and sustainable biomass

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General biomass definition: Biomass is organic matter that is sourced from renewable resources, such as forests, agricultural crops, and organic waste. It is produced in a manner that balances environmental, social, and economic considerations.¹ Biomass is used for heating and electricity generation and as a transportation fuel.



Biomass

Biomass without sustainably sourced biomass certification is any biomass that is **not certified** through a sustainably sourced biomass program.¹



Sustainable Biomass

Sustainably sourced with certification is any biomass that has **supporting certification documentation from a sustainably sourced biomass program** (e.g., Forest Stewardship Council (FSC), ISCC Biomass Certification, Sustainable Biomass Program (SBP) Certification, etc.).²

¹Source: <https://rsb.org/wp-content/uploads/2020/06/RSB-Principles-Criteria-STD-01-001-v4.pdf>.

²Source: [Higg FEM How to Higg Guide 2023 - Aug 4, 2023.pdf \(worldly.io\)](#)

3.0 Biomass sourcing principles to ensure sustainability

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Levi Strauss & co. understands certification for sustainable biomass is not always readily available in certain geographies. However, we urge you to follow these four sustainability principles to the best of your ability to ensure the biomass you use is sourced in a sustainable way.



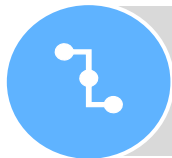
Environmental: operations avoid negative impacts on biodiversity, ecosystems and conservation values, and contribute to protecting and/or increasing carbon stock accumulation.³ Avoid e.g., forest clearing, loss of biodiversity, pollution of soil, air or water and over-exploitation of natural resources such as over-extraction of water.



Social and Ethical: operations do not violate human rights or labor rights and promote decent work and the well-being of workers. In regions of poverty, operations contribute to the social and economic development of local, rural and indigenous people and communities.³



Localized: source sustainable biomass as locally as possible to significantly reduce lifecycle GHG emissions of alternative fuel compared to fossil-based alternatives.



Traceability and Transparency: Biomass must come from sources with operational integrity and oversight through strong governance standards and supply chain transparency.⁴ This can be achieved through, for example, certification, supply chain audits, compliance with national laws and continuous monitoring programs.

³Source: <https://rsb.org/wp-content/uploads/2020/06/RSB-Principles-Criteria-STD-01-001-v4.pdf>

⁴Source: <https://www.carbon-direct.com/insights/carbon-direct-announces-new-buyer-s-guide-for-sustainable-biomass-sourcing>

3.1 Environmental impact considerations

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Operations avoid negative impacts on biodiversity, ecosystems and conservation values, and contribute to protecting and/or increasing carbon stock accumulation. Applicable to feedstock producers and their supply chains.



Actions to take

- 1. Choose an environmentally sustainable feedstock**
 - Dedicated energy crops, which are non-food crops grown on marginal land unsuitable for agriculture, include willow, poplar, switchgrass, miscanthus, and wheatgrass.
 - Agricultural residues e.g., corn husks, wheat straw, rice straw
 - Forestry and wood processing residues
 - Stored municipal waste (MSW) which is commercial and residential garbage.⁵
- 2. Ensure preservation of resources**
 - Should not come from regions that are protected nature reservations and or large carbon stocks like the Amazon.



Attention points

Food versus fuel debate

Crops grown for biomass must not displace crops grown for food. Limiting arable land for food production could lead to reduced supply and increased food prices.⁶

Biodiversity

Biomass production should not rely on monocultures; instead, it should promote diverse cropping systems e.g., rotation or mixed-cropping.

Forest mismanagement

Land should not be deforested or cleared to create space for biomass crops/production.

⁵Source: <https://www.energy.gov/eere/bioenergy/biomass-resources#:~:text=Biomass%20feedstocks%20include%20dedicated%20energy,%5D%2C%20urban%20wood%20waste%2C%20and>.

⁶Source: <https://www.sciencedirect.com/science/article/pii/S2211912418301366>

3.2 Social and ethical standards

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Operations do not violate human rights or labor rights and promote decent work and the well-being of workers. In regions of poverty, operations contribute to the social and economic development of local, rural and indigenous people and communities.



Actions to take

1. Choose biomass with social benefits

- Ensure production benefits local communities.
- Ensure fair labor practices: safe working conditions, fair wages, non-discrimination and the promotion of human rights.
- Partner with suppliers who obtain Free, Prior, and Informed Consent (FPIC) from indigenous communities before initiating biomass projects.⁷
- Verify that selected biomass suppliers respect and preserve cultural heritage and traditional knowledge.

Example indicators: partnerships with local communities and active-participation in decision making through stakeholder consultation, advocacy and benefit sharing agreements.



Attention points

Poor labor conditions

Biomass operations must not be conducted with poor labour conditions such as low wages, child labour or compromised health and safety.

Exploitation of indigenous peoples' rights

Attention must be paid to this at-risk group in biomass operations.

Displacement of local communities

Biomass operations must avoid displacing local communities, as this can disrupt their livelihoods and social structures.

⁷Source: <https://www.carbon-direct.com/insights/carbon-direct-announces-new-buyer-s-guide-for-sustainable-biomass-sourcing>

3.3 Localised sourcing (1/2)

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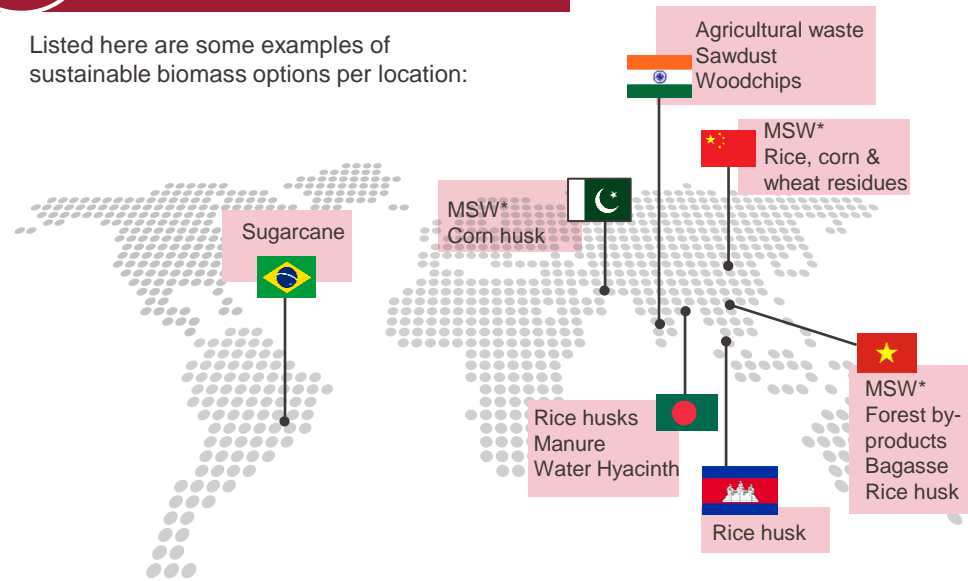


Source sustainable biomass as locally as possible to significantly reduce lifecycle GHG emissions of alternative fuel compared to fossil-based alternatives. In 'actions to take' the sources listed are biomass options that can be sustainably sourced in each location.



Actions to take

Listed here are some examples of sustainable biomass options per location:



* MSM: Municipal Solid Waste

Identify local biomass sources

Focus on finding biomass sources close to the production facilities to minimize transportation emissions and support local economies.

Research risks and mitigation actions

Evaluate potential environmental and social risks associated with local biomass and develop strategies to address these risks effectively.

Decide on local suppliers

Select suppliers who are sustainable and ethical and contribute positively to the local community.

3.3 Localised sourcing (2/2)

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Source sustainable biomass as locally as possible to significantly reduce lifecycle GHG emissions of alternative fuel compared to fossil-based alternatives.



Attention points

When sourcing biomass locally there are country-specific attention points:

Sri Lanka:

- **Rubberwood biomass** is widely used in Sri Lanka, but there is no national certification to guarantee its sustainability.
- The biomass **supply is not evenly distributed** throughout the country so localized sourcing may be more challenging in certain areas.

India: Supply is spread across regions and among small-scale farmers.

The most used agricultural residue biomass can be:

- x Subject to seasonal availability
- x Difficult to trace the chain of custody
- x Face transportation challenges
- x Subject to price fluctuations

The most advanced Indian states for biomass industry development are Karnataka, Andhra Pradesh, and Maharashtra.⁸

Pakistan

- Biomass supply varies depending on the season. It is advised to **diversify your biomass sources** and use different feedstocks according to the season.
- Buy feedstock that is **in season**, as prices can increase by up to 25% during the off-season.⁹

⁸Sourced August 2024: <https://www.bioenergyconsult.com/biomass-india/>.

⁹Sourced August 2024: <https://auri.org/research-reports/corn-cobs-as-sustainable-biomass-for-renewable-energy-a-field-to-facility-demonstration-and-feasibility-study/>

3.4 Traceability and transparency

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Biomass must come from sources with operational integrity and oversight through strong governance standards and supply chain transparency.



Actions to take

1. Implement traceability mechanisms

- Conduct Audits: regularly audit and inspect biomass supply chains to ensure they meet sustainability standards
- Promote Transparency: work with suppliers to enhance transparency and accountability in the supply chain.¹⁰

2. Require suppliers to maintain detailed records of biomass origins, including species, location, and harvesting methods

- Request for this documentation to be shared with you.



Attention points

Misrepresentation of Feedstock Origin

The practice of importing biomass through intermediary countries to evade import taxes or regulatory restrictions imposed on the true country of origin.

False Claims of Compliance

Companies falsify information to make it appear as if they're following the rules for certification.

Incorrect Feedstock Declarations

This can occur when restricted materials like palm oil are labeled as something else, such as used cooking oil.¹¹

¹⁰Source: <https://www.carbon-direct.com/insights/carbon-direct-announces-new-buyer-s-guide-for-sustainable-biomass-sourcing>.

¹¹Source: <https://www.euractiv.com/section/agriculture-food/news/biofuel-certification-schemes-slammed-for-failing-to-halt-fraud/>

4.0 Biomass certification chain

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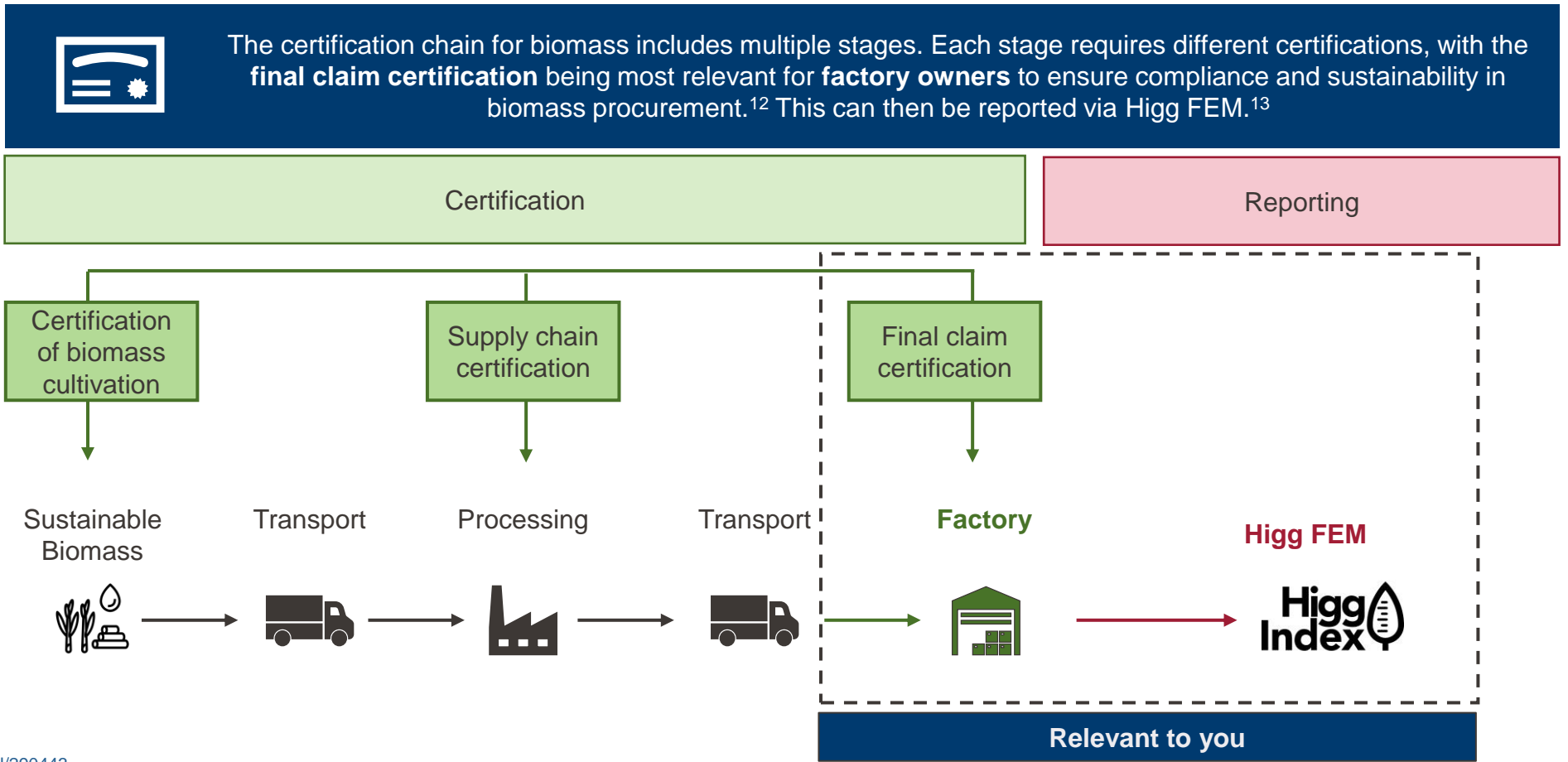
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¹²Source (image): <https://edepot.wur.nl/290443>.

¹³Source: [Higg FEM – User Resources: How To Higg](#) and [An Introduction to FEM – User Resources: How To Higg](#)

4.1 Basic certification requirements and the recommended approach when sourcing sustainable biomass

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Criteria	Basic	Intermediate	Recommended
Feedstock type¹⁴	Yes	Yes	Yes
Feedstock origin	No	Yes	Yes
Certification¹⁵	Country-specific legislation only	(Environmental) Consent – issued by government (Environmental) Declaration – issued by suppliers FSC compliance declaration – issued by suppliers	Certified under RSB, ISCC or other FSC approved body and country-specific legislation
Compliant with four principles	Yes	Yes	Yes

Sustainably sourced biomass without certification (Higg reference: “biomass gen”)

Sustainably sourced biomass with certification (Higg reference: “biomass cert”)

¹⁴Source: https://insights.carbon-direct.com/hubfs/Gated%20assets/Report_Sustainable-Biomass-Sourcing.pdf

¹⁵Source: https://howtohigg.org/wp-content/uploads/2021/01/Higg-FEM-How-to-Higg-Guide-2020_Nov42020v.pdf

4.2 We recommend certification by the ISCC, RSB or FSC, three of the most widely recognised biomass certification bodies ¹⁹

See annex 1 for a more extended list

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International Sustainability & Carbon Certification (ISCC)

- Private organization from EU governmental origin
- Covers all types of feedstocks
- Global coverage
- Covers all stages of the supply chain from cradle-to-gate.¹⁶



Roundtable on Sustainable Biomaterials (RSB)

- Industry membership organization
- Covers all types of feedstocks
- Global coverage
- Covers all stages of the supply chain from cradle-to-gate.¹⁷



Forest Stewardship Council (FSC)

- Industry membership organization
- Covers woody biomass
- Global coverage
- Covers all stages of the supply chain from cradle-to-gate.¹⁸

¹⁶Source: <https://edepot.wur.nl/290443>

¹⁷Source: <https://rsb.org/>


¹⁸Source: [FSC Principles and Criteria | Forest Stewardship Council™](#)

¹⁹Source: <https://www.carbon-direct.com/insights/carbon-direct-announces-new-buyer-s-guide-for-sustainable-biomass-sourcing>

5.0 Reporting on your factory's biomass use via Higg FEM

See example document in annex 2

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Input data checklist²⁰

Basic & Intermediate: “Biomass gen”

- ✓ Energy subtype: feedstock type
- ✓ Energy use: in MJ
- ✓ Other certification e.g. country specific is described and a reference link provided

Recommended: “Biomass cert”


- ✓ Energy subtype: feedstock type
- ✓ Energy use: in MJ
- ✓ Certificate from recognised body i.e. RSB, ISCC or FSC.



Document submission

Submit all documents via the Higg FEM portal

- ✓ Complete via online assessment or excel file¹⁸
- ✓ Complete in English
- ✓ 100% completion before submitting to Higg FEM
- ✓ Refer to unique RefID for support per assessment question if needed
- ✓ Share the module with Levi Strauss & Co.



Data management

- ✓ Submit data at least once per year to Higg FEM²¹
- ✓ Retain data for 5 years, Levi Strauss & Co. reserves the right to request this information.



We thank you for your continued commitment to Levi Strauss & Co.'s 16 sustainable goals, prioritizing people and the planet. Together, we can address climate, consumption, and community challenges for sustainability. Your transition from coal to biomass is a significant step forward in this journey.

²⁰Source: https://howtohigg.org/wp-content/uploads/2021/01/Higg-FEM-How-to-Higg-Guide-2020_Nov42020v.pdf
²¹Source: <https://howtohigg.org/fem-user-selection/fem-facility-users-landing/complete-the-fem/#section4>

5.1 Future outlook: potential Higg FEM adjustments that can improve ease of sustainable biomass sourcing in the future

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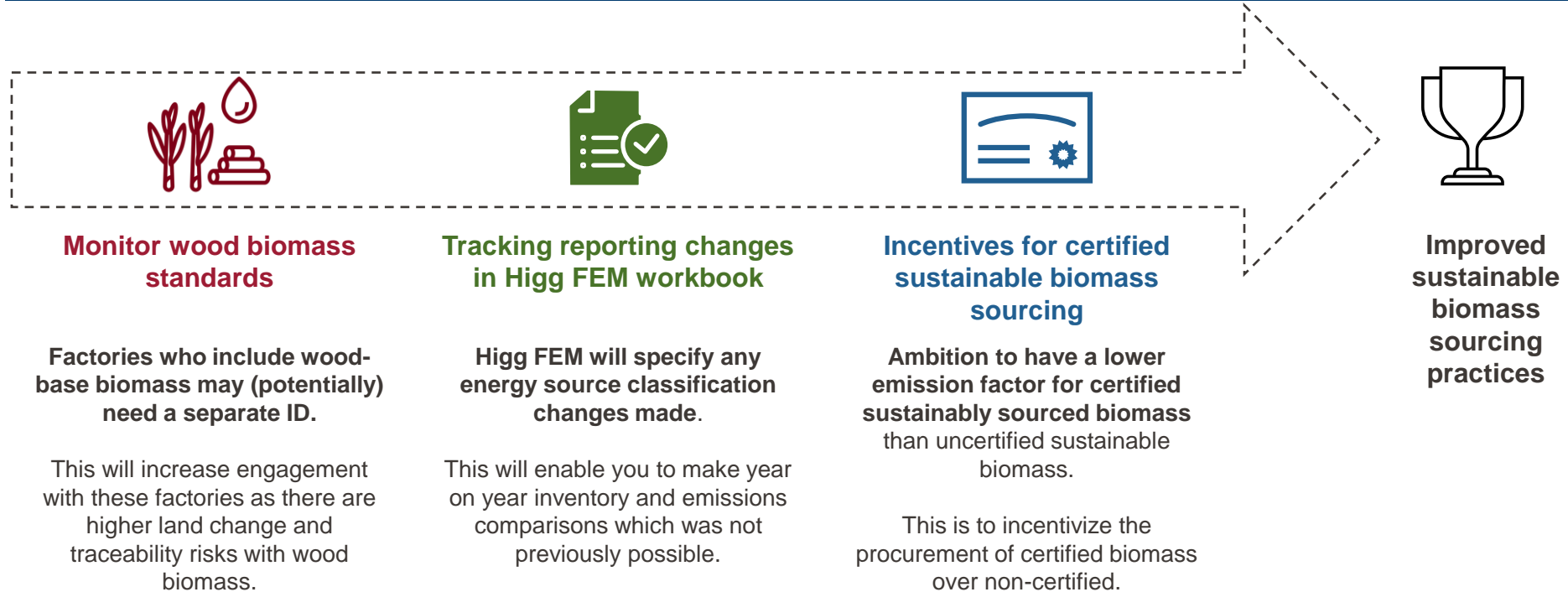
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We want to help you to continually improve the sustainability of the sustainable biomass which is procured. This slide outlines potential changes which may be undertaken by Higg FEM to support this initiative. It is important to note these changes are speculative and are not guaranteed to occur.



5.2 Case study Orit Apparels, Sri Lanka: best practice example of overcoming barriers to sustainable biomass sourcing

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Key Learnings : Orit Apparels is currently working towards overcoming biomass sourcing challenges by collaborating with the local government to use municipal solid waste (MSW)* as an alternative feedstock to woody biomass. This ensures a consistent, certified supply while reducing pressure on traditional biomass sources and supports local sustainability.



Challenge

The primary feedstock available in Sri Lanka is **woody biomass, specifically rubber**. Sourcing this biomass presents several challenges:

- x **Unstable availability**: the availability of rubber biomass is subject to seasonal variability, leading to inconsistent supply.
- x **Lack of certification and incentives**: suppliers of woody biomass often lack proper certification, and suppliers have little incentive to obtain it, as the demand for biomass is already high.



Actions taken

Orit Apparels has taken proactive steps:

- ✓ **Partnership with local government**: Orit Apparels is collaborating with the local government to secure municipal solid waste (MSW) as an alternative feedstock source.
- ✓ **Sector development and certification**: By developing the MSW sector from the ground up, Orit Apparels aims to establish certification standards for MSW* feedstock, ensuring a reliable and sustainable supply.



Outcome

While the project is still in its early stages, the potential outcomes if successful include:

- ✓ **Year-round feedstock availability**
- ✓ **Certified sustainable biomass**
- ✓ **Reduced pressure on woody biomass**
- ✓ **Local sourcing**



Woody Biomass



MSW

*MSW = Municipal Solid Waste

5.2 Case study Arvind, India: best practice example of an advanced biomass program

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Key Learnings: Establishing a robust biomass operation can take multiple years. Even successful biomass operations can be subject to national/local constraints such as a lack of certification. Flexibility and innovative approaches, such as pilot projects and phased implementation, are crucial for overcoming these challenges and achieving sustainable biomass operations.



Challenge

Arvind has had an established biomass program at their factories for the past 15 years, most recently including their mill. They primarily use agricultural residues feedstock. However, this comes with several challenges:

- x **Initial costs:** of boiler conversion from coal-compatible to biomass-compatible systems.
- x **Lack of Certification:** none of the suppliers are currently certified. Achieving certification could disrupt supply and cause market price fluctuations.



Actions taken

Arvind has taken innovative steps and taken a flexible approach:

- ✓ **Pilot projects:** which experimented using agricultural residues from cotton farmers.
- ✓ **A phased approach:** converting one boiler at a time to become biomass compatible.
- ✓ **Alternative assurance documentation:** securing declarations of sustainability from suppliers based of FSC principles and environmental consent forms from the government.



Outcome

- ✓ Established biomass operations
- ✓ Willingness to invest in certified sustainable biomass if it becomes available locally
- ✓ Local sourcing of agricultural residues

5.2 Case study, Pakistan: best practice example of supply chain restructuring to work towards sustainable biomass certification

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Key Learnings: In Pakistan, systems for sustainable biomass sourcing are limited. This supplier has taken the initiative to develop certification for sustainable biomass by partnering with the Pakistan Environment Trust. Additionally, working directly with farmers will help to secure the certification and improve biomass availability.



Current state: challenges



Factory



Broker



Farmer(s)

The supplier currently sources biomass (rice husk & corn husk) **through brokers** who collect it from various farmers. However, this can lead to several challenges:

- × Price volatility
- × Risk of brokers engaging in dishonest practices towards buyers
- × Biomass damaged by rain and moisture
- × No certification in supply chain



Envisioned state: success



Factory



Farmer(s)

In future, the supplier would like to have **direct partnerships with farmers** to:

- ✓ Together with farmers and the Pakistan Environment Trust²² establish a certification scheme in Pakistan
- ✓ Regulate their own supply of biomass
- ✓ Reduce the risk of unfair pricing and inferior biomass quality

²²Source: [Our Work - Pakistan Environment Trust - A Non-Profit Organisation \(pakenvironment.org\)](https://www.pakenvironment.org/)

Annex

Annex 1: additional certification bodies that are specific to certain feedstock types

Name	Feedstock	Geographical coverage
Roundtable on Sustainable Palm Oil (RSPO)	Palm oil	Southeast Asia, Africa, and South America.
Bonsucro	Sugar cane	South America, North America, and Asia
Roundtable on Sustainable Soy (RTS)	Soybeans	South America, North America, and Asia
Better Biomass	Agricultural residues, energy crops, and forestry residues.	Global
Forest Stewardship Council (FSC)	Timber, wood products, and woody biomass.	Global
Programme for the Endorsement of Forest Certification (PEFC)	Timber, wood products, and woody biomass	Global
Sustainable biomass program (SBP)	Woody biomass	Global



These certification bodies are all widely recognised. However, they are specific to certain feedstocks. They can therefore address sustainability challenges which are unique to different biomass types.

Adopting certified biomass helps in promoting responsible sourcing practices, reducing environmental impact, and ensuring compliance with regulatory standards. Furthermore, it provides transparency and traceability throughout the supply chain

Annex 2: a proof of sustainability (POS) can also be used in biomass reporting, this is available via Higg FEM



Proof of Sustainability (PoS) for Biofuels, Bioliquids and Biomass fuels V1.1

For Biofuels, Bioliquids and Biomass fuels according to the Renewable Energy Directive (EU) 2018/2001 (RED II)

Unique Number of Proof of Sustainability: EU-REDcert-PoS - YYYYYMDD - XXXXXX

Place and Date of Physical Supply: city, DD.MM.YYYY

Date of Issuance: DD.MM.YYYY

Supplier | **Recipient**

Name | Name
Company | Company
Address | Address
Street | Street
City | City
Country | Country

Certification Scheme: **REDcert-EU**

Certificate Number: EU-REDcert-XXX-XXXXXXXXXX | Contract Number

General Information

Type of Product

Type of Raw Material

Additional Information (optional)

Country of Origin (of the raw material) PLEASE SELECT

Mass Balance Option PLEASE SELECT

Quantity m³ mt (metric tons)

Energy content MJ

Sustainability criteria of the biomass according to Article 29 RED II

The material complies with the sustainability criteria according to Art. 29 (3), (4) and (5) RED II

The sustainability criteria according to Art. 29 (3), (4) and (5) RED II were not taken into account

Greenhouse Gas (GHG) information

Total default value according to RED applied yes no

GHG emission saving ¹⁾

for biofuels/biomass fuels (94 gCO₂eq/MJ)

In case of electricity and/or heat production

Electrical efficiency (η_{el}) % Heat efficiency (η_h) %

Fraction of exergy in the electricity (C_{el}) 100 % Carnot efficiency (C_h) %

GHG emission saving ²⁾

for bioliquids (for energy installations delivering electricity (183 gCO₂eq/MJ))

for bioliquids (for energy installations delivering only heat (80 gCO₂eq/MJ))

for bioliquids (for the electricity or mechanical energy coming from energy installations delivering useful heat together with electricity and/or mechanical energy (183 gCO₂eq/MJ))

for bioliquids (for the useful heat coming from energy installations delivering useful heat together with electricity and/or mechanical energy (80 gCO₂eq/MJ))

The installation where the final biofuels/bioliquids/biomass fuels was produced started physical production of biofuels/bioliquids/biomass from 8 October 2015 until 31 December 2020 yes no

The installation where the final biofuels/bioliquids/biomass fuels was produced started physical production of biofuels/bioliquids/biomass from 1 January 2021 yes no

Note: GHG emission savings shall be at least 20% for biofuels/bioliquids/biomass fuels produced in installations starting operation before 6 October 2015, at least 65% for biofuels/bioliquids/biomass fuels produced in installations starting operation from 6 October 2015 and at least 80% for biofuels/bioliquids/biomass fuels starting operation from 1 January 2021.

Biomass type

Feedstock type

Country of origin (of feedstock)

Quantity of biomass used

Proof of Sustainability (POS) documents can enhance biomass reporting.

These documents verify that biomass has been sourced sustainably and include the quantity of biomass used. Integrating POS documents with biomass certification programs can ensure consistent and reliable documentation, improving the overall efficiency and credibility of the reporting process.

Annex 3: general questions to consider when selecting a sustainable biomass feedstock

Topic	Questions to explore
Resource availability over time	<i>Will this feedstock still be available in abundance in 5-10 years' time? Will I still be able to source this feedstock locally?</i>
Seasonal availability	<i>Do I foresee any seasonal/ annual bottlenecks in the supply of this feedstock?</i>
Logistics	<i>Do I need to collaborate with multiple individuals/ parties to source this biomass feedstock?</i>
Compatibility	<i>How compatible is the feedstock with your existing boiler?</i>
Assurance level	<i>In your country of operation, is certification of this biomass source available? If not, are there other ways of ensuring the biomass is sustainable e.g. local regulations, government issued consent forms, supplier issued declarations?</i>
Price	<i>How does the price of this biomass feedstock compare to coal and/or other feedstocks?</i>



These questions can be used to guide your thinking when starting your biomass journey or when investigating new feedstock opportunities.

They are intended to help you consider common challenges that can occur when procuring sustainable biomass.