



ghgBonsucro Draft Production Standard Version 5.7

As a multi-stakeholder organisation, Bonsucro seeks to engage stakeholders when changes are proposed and made to our standards. Here you will find detailed information about this process and current work on standards development, as well as information on how these key documents were created.

The Bonsucro Production Standard is at the heart of everything Bonsucro does. It sets out a definition of what sustainable cane production should look like, providing a comprehensive metric tool for sustainable farming and milling. Bonsucro wants to maximise the impact the Standard has on the future of the sugarcane sector and enhance the value added for the producers who implement, use and comply with it.

The “Bonsucro Production Standard” contains principles and criteria for achieving sustainable production of sugarcane and all sugarcane derived products in respect of economic, social and environmental dimensions. Its primary purpose is to define a set of principles, criteria and indicators, along with explanatory notes, for the assessment of the performance of operators against the three pillars of sustainability. The Standard is used by Bonsucro members who wish to achieve certification. It is also used by Licensed Certification Bodies and auditors when carrying out certification audits.

The Bonsucro Standard development and revision procedure is based on the [ISEAL Standard Setting Code](#). It requires a multi-stakeholder consultation and decision-making process to ensure clear and auditable conditions in the standard itself. The process is driven by stakeholder led Standard Revision Working Group (SRWG) and supported by the Technical Advisory Board and the Members Council.

[Standard Development and Revision Procedure](#).

On 15 June, Bonsucro launched the second public consultation on the proposed changes to the Production Standard. The consultation will run until 15 July. Bonsucro members, non-members and all interested stakeholders are invited to participate and submit their feedback. The more input gained, the more robust the Standard will be.

Below you will find the Bonsucro Draft Production Standard Version 5.7. Please feel free to provide comments on the draft Standard by completing Bonsucro Production Standard Consultation survey before the 15 July. Please refer to the Draft Bonsucro Production Standard V5.7 and the summary of changes since the first public consultation before answering the survey. The survey can be accessed through our website:

<http://www.bonsucro.com/production-standard-revision-public-consultation/>



Bonsucro will be hosting a series of webinars in English, Spanish and Portuguese on the changes to the Production Standard. To attend, please register via this link: <http://www.bonsucro.com/production-standard-revision-public-consultation/>

Please note:

- The scope column shows which indicators are core indicators, which apply to the mill or the agricultural area and which will need to be applied to the whole supply base as per Timebound Progressive Implementation Plan (TBPIP – see next page)
- All guidance in the Draft Standard is only indicative and can be found in Annex 2 of the standard. A revised calculator will be released to accompany the revised Production Standard.
- EU – RED principle is removed from the scope of this revision. It will continue to be included in the Standard as it currently stands as Principle 6. The Standard will automatically adopt all changes that are needed to comply with EU-RED II once released.

For any questions please contact Nahuel Tuñon on nahuel@bonsucro.com

Progressive Implementation

In order to meet the stipulation for unit of certification to comprise the entire cane supplying area (Certification Protocol 4.1.1), and to do so in a time-limited frame (Code of Conduct, XX), the Bonsucro Production Standard vX requires operators to develop a timebound progressive implementation plan (TBPIP) for meeting the requirements in the production standard where the scope specifies applicability to entire cane supplying area.

The TBPIP is challenging, i.e. with a time scale that is as short as possible, taking into account the specific circumstances of the cane supply area (e.g. number of independent smallholders).

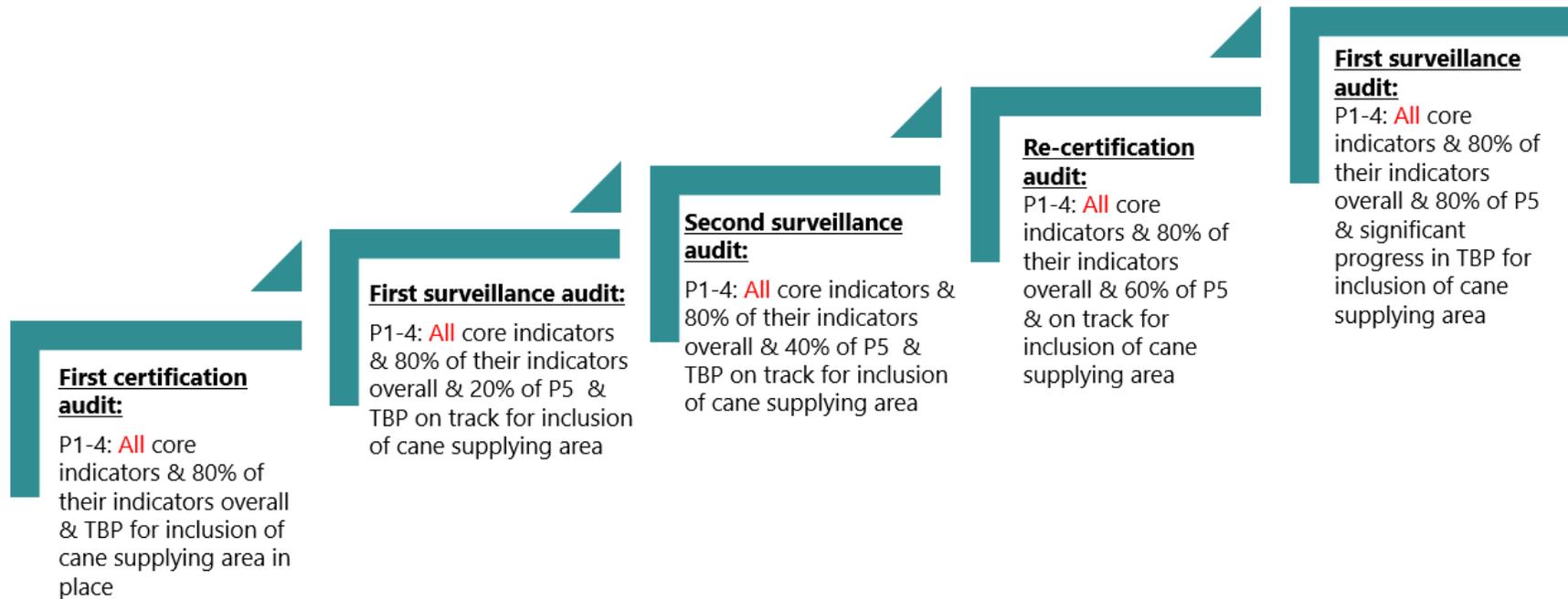
As part of the TBPIP development, the operator implements measures and controls progressively, prioritising the highest risk issues and areas to be addressed first.

For third party suppliers, i.e. for parts of the cane supplying area where the operator has no direct jurisdiction, progress with the TBPIP will be evaluated during the audits, i.e. whether measures were implemented as scheduled. The audit will not evaluate compliance with the corresponding requirements by third party suppliers, but only whether the operator carried out the measures of the TBPIP concerning these requirements.

Non-Conformities with TBPIP implementation are raised as follows:

- Isolated lapses in implementation of time bound plan: CBs to issue a minor non-compliance
- Evidence of fundamental failure to proceed with implementation of the plan: CBs to issue a major non-compliance

See graphic illustration below detailing compliance with this standard and TBPIP:



Guidance for Timebound Progressive Implementation Plan (TBPIP):

What should a TBPIP include?

The actions required to deliver the TBPIP will vary for each company. However, there are common types of actions and elements that should be included in all plans.

Scope

The TBPIP should cover the company's whole cane supply area, i.e. own operations, including joint ventures, all direct and indirect suppliers, and all sourcing areas. This should be the same scope as the sustainability policies (see indicator 1.1.1). A company may have more than one plan as long as these are all aligned and linked to each other. For example, a company that owns mills and plantations but also buys from third party suppliers may want to have separate plans for their own operations and their third-party supply base.

The plan should also cover all the commitments made in the sustainability policies (e.g. environmental protection, respect for human and labour rights, ensuring Free, Prior, Informed Consent, etc.).

Actions

The TBPIP should clearly list and explain the actions the company will take. The type and scale of actions will depend on:

- **Company size and resources:** Large companies will have more responsibility and resources.
- **Amount of sugar cane:** If the supplier is responsible for a large proportion sugar cane produced there is greater responsibility towards it as potential negative impacts could affect a larger area/number of people.
- **Footprint:** If a company is linked to large areas of land with potential environmental and social risks it has a greater responsibility in terms of the actions it must take.
- **Position in the supply chain:** The company will need to work directly with producers and primary aggregators to understand current practices and address gaps where commitments are not being met.

Targets, timelines and KPIs

As written in the name, the TBPIP should be progressive, but also timebound with clear target dates for completing different actions as well as a final date for delivering on commitments. The company should also develop some Key Performance Indicators (KPIs) for regularly measuring progress.

Resources and responsibilities

The TBPIP should include who in the company will take on responsibility for delivering on different actions and how resources will be allocated. Assigning responsibilities will ensure there is accountability for implementing and the plan. In some cases, it can be worth incorporating the targets set in the plan as part of the personal performance targets for relevant staff members to ensure they take ownership. Sufficient human and financial resources for implementing the plan must be allocated.

For actions regarding third-party suppliers, it is usually crucial for procurement teams/mill liaison staff to be involved and even take the lead, as they are in charge of managing supplier relations and selecting new suppliers, and as such often have a longstanding good business relationship with the suppliers. The procurement team also has more leverage/influence over suppliers, which may help to motivate them to engage in these new activities.

Regular review

The company should regularly review (on an annual basis) the implementation of plans in practice and assess if the actions and timelines set are working and are delivering the expected/desired outcomes. If it is found that some actions are not effective the TBPIP should be revised and updated.

PRINCIPLE 1 - ASSESS AND MANAGE ENVIRONMENTAL, SOCIAL & HUMAN RIGHTS RISKS

CRITERION	1.1 – Leadership demonstrated through elaboration and implementation of sustainability policies		
INDICATOR	Scope	Standard	Full indicator wording
1.1.1 Sustainability policies are in place.	Mill Agriculture CORE INDICATOR Whole cane supplying area	Yes	<p>In line with the scope of application and content of the Bonsucro Production Standard, the operator has policies or work orders in place to respect:</p> <ul style="list-style-type: none"> • human rights (including anti-harassment and non-discrimination), • indigenous peoples' rights, community engagement and land rights • labour rights, • occupational health and safety, • environmental protection, • Anti-Corruption/Anti-Bribery/money laundering, • Ethical conduct • Social dialogue <p>The operator implements these policies and practices in the unit of certification and progressively implements these in the whole cane supplying area. The operator’s commitment is made available to personnel, suppliers, clients and other stakeholders, with a legitimate interest duly demonstrated. The policies clearly state that respect for these values is an active duty involving ongoing due diligence of actual and potential impacts.</p> <p><i>For further information, see Guidance.</i></p>

CRITERION	1.2 Risks and impacts are systematically assessed		
INDICATOR	Scope	Standard	Full indicator wording
1.2.1 Mapping of Internal, External, and Vulnerable Stakeholders is conducted. (former 1.1.2)	Mill Agriculture CORE INDICATOR	Yes	The operator has an identification, prioritization and engagement plan with interested and affected parties (i.e. internal, external, directly, indirectly impacted), including: <ul style="list-style-type: none"> • women and children • migrant workers • Contracted workers • indigenous, tribal and traditional communities • economically, socially, culturally or politically vulnerable stakeholders The plan is revised at least annually. <i>For further information, see Guidance.</i>
1.2.2 Risk and Impact Assessment are conducted. (former 1.1.4)	Mill Agriculture CORE INDICATOR Whole cane supplying area	Yes	The operator has in place a Risk and Impact Assessment that includes <ol style="list-style-type: none"> (1) A social and environmental risk analysis & (2) An identification of impacts (potential and actual) (3) A business context analysis A summary is made available to personnel, suppliers, clients and other parties who have a duly demonstrated legitimate interest. <i>For further information, see Guidance.</i>
CRITERION	1.3 – The implementation of the Sustainability system is systematical and risk based		
INDICATOR	Scope	Standard	Full indicator wording
1.3.1 Management Plans are developed and Implemented. (partially former 1.2.3)	Mill Agriculture CORE INDICATOR Whole cane supplying area	Yes	The operators shall develop and implement mitigative measures to counteract the highest risks identified in the risk and impact assessment (1.1.4) and to implement the rests of the Bonsucro Production Standard. The operator demonstrates that adequate resources and competent personnel are allocated to manage identified risks.

			<p>Priorities will be given to control the highest risks identified related to indicators of the Bonsucro Production Standard in the unit of certification and work progressively enact actions that will seeks to mitigate in the whole cane supplying area.</p> <p><i>For further information, see Guidance.</i></p>
1.3.2 Standard Operating Procedures are developed.	Mill Agriculture	Yes	<p>The operator develops and implements Standard Operating Procedures (SOP) for all activities of the operation within the unit of certification.</p> <p><i>For further information, see Guidance.</i></p>
1.3.3 - Systems in place to demonstrate compliance with applicable laws, international conventions, commitments, rights & other requirements. (former 1.2.1)	Mill Agriculture CORE INDICATOR	Yes	<p>The operator has a documented system in place to identify, update track & promote compliance with applicable laws, commitments, rights and requirements. The operator also lists and provides evidence for legal due diligence of all contracted third parties, recruitment agencies, service providers and labour contractors.</p> <p><i>For further information, see Guidance.</i></p>
1.3.4 Use of land and resources does not diminish rights of other users without their FPIC.	Mill and Agriculture	No	<p>Documents showing identification and assessment of demonstrable legal, customary and user rights are available. Free prior and informed consent (FPIC) is obtained following a comprehensive process as detailed in the guidance.</p> <p><i>For further information, see Guidance.</i></p>
1.3.5 Payment for cane deliveries are made according to agreed contract. (former 1.2.2)	Mill Agriculture CORE INDICATOR	Yes	<p>Payment shall be made according to contractual agreement (including value and timing of payment).</p> <p><i>For further information, see Guidance tbd.</i></p>

1.3.6 Cane supply contracts contain sustainability requirements. (former 1.2.2)	Mill	Yes	The operator ensures that cane supply agreements contain requirements geared towards worker and environmental protections (e.g. provision of water to cane cutters, provision of PPE, provision of sanitary services). The operator establishes a control system to measure and monitor supplier compliance with the requirements in the cane supply agreements. <i>For further information, see Guidance</i>
CRITERION	1.4 – Systems for Monitoring and Evaluation (M&E) and Grievances are implemented.		
INDICATOR	Scope	Standard	Full indicator wording
1.4.1 Monitoring mechanisms are in place to ensure that corrective actions are implemented, and management review conducted. (former 1.2.4)	Mill Agriculture Whole cane supplying area	Yes	The organisation conducts an annual internal audit to determine whether the organisation. <ul style="list-style-type: none"> - Conforms to the requirements in the Bonsucro Production Standard - Effectively implements and maintains the standard requirements within its organisation, i.e., implements all actions as stipulated in the various procedures (see 1.3.1 SOP) and management plans (see 4.1.X BMP,) <p>The organisation maintains the internal audit records and reports.</p> <p>The internal audit is conducted in the unit of certification and the operator works progressively to include the entire cane supplying.</p> <p><i>For further information, see Guidance.</i></p>
1.4.2 Land & water claims that are legitimately contested by other users. (former 1.1.3)	Mill Agriculture CORE INDICATOR	0 ha & 0 / m3	The operator which is involved in legal action, either as claimant or defendant, takes appropriate actions to resolve the conflict. The operator resolves and conforms to any justice court case, court rulings, or appeals. The operator acts toward the definitive settling of the dispute using recognized judicial and/or non-judicial mechanisms. Claims against land and water are applicable to the entirety of the cane supplying area (mill) or production area (farms), irrespective of inclusion in the unit of certification. The operator works progressively to include (and/or check) the entire cane supplying area.

	Whole cane supplying area		<i>For further information, see Guidance.</i>
1.4.3 Grievance mechanism for communities is in place. (former 1.1.3)	Mill Agriculture	Yes	<p>To ensure that affected stakeholders have access to processes that address their grievances, the operator has in place a mutually agreed on and documented grievance mechanism that meets the expectations laid out in the UN Guiding Principles for Business and Human Rights: Legitimate, Accessible, Predictable, Equitable, Transparent, Rights-compatible, a source of continuous learning and based on stakeholder engagement. In practice it meets the following:</p> <ul style="list-style-type: none"> - It ensures anonymity of complainants were requested by complainants, protecting them from risk of reprisal or intimidation. It also safeguards against non-disclosure rules set by the company. - Procedures are in place to ensure that the system is effectively communicated to and understood by the affected parties, including by illiterate parties or workers whose native language is not the operation's language. - The operator keeps parties to a grievance informed of its progress, timeframe and outcomes. - The system allows for complainants to choose individuals or groups to support them and/or act as observers. <p><i>For further information, see Guidance.</i></p>

PRINCIPLE 2 - RESPECT LABOUR RIGHTS & OCCUPATIONAL SAFETY AND HEALTH STANDARDS

CRITERION	2.1 To provide a safe and healthy working environment in workplace operations		
INDICATOR	Scope	Standard	Full indicator wording
2.1.1. Main health and safety hazards and risks are identified, documented, assessed, communicated to workers, and mitigated.	Mill Agriculture CORE INDICATOR	Yes	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification. Health & Safety Assessments adhere to relevant standards (legislation, policy, and best practice) with regards to ensuring that employment does not jeopardize the health or safety of employees. Health and safety hazards and risks will be assessed with regards to occupational risks (e.g. ergonomics, work-related injury and work-related accidents, fatigue, workload), environmental risks (e.g. heat stress, altitude sickness) and pre-existing medical (e.g. declining kidney function, HIV/AIDS seropositivity), and mental and cognitive health issues (e.g. PTSD from victimisation/harassment; cognitive capabilities affecting attention/comprehension). Assessment is ongoing/repeated to incorporate changing conditions (e.g. infectious agents, emerging vector-borne illnesses and injuries) and implements responsive and evolving mitigation measures.</p> <p><i>For further information, see Guidance.</i></p>
2.1.2 Health and safety risks are managed through implemented and enforced plans.	Mill Agriculture CORE INDICATOR	Yes	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification. Occupational, environmental and medical (including mental) health hazards/risks identified during screening through regular updating are managed in line with global best practice.</p> <p><i>For further information, see Guidance.</i></p>
2.1.3 Right to water and sanitation safeguards are designed implemented and enforced.	Mill Agriculture CORE INDICATOR	100%	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification. The operator provides, safe drinking water to all workers, in close proximity to where they work. Recommended water consumption will depend on heat exposure and workloads. The operator provides access to water for sanitation, hand washing, skin cooling as well as access to toilet facilities. Separate toilet facilities are provided to men and to women workers, unless unisex facilities are the cultural norm in the country.</p> <p><i>For further information, see Guidance.</i></p>

2.1.4. Appropriate personal protective equipment supplied to and used by all workers free of charge.	Mill Agriculture CORE INDICATOR	Yes	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification. Required, approved and adequate PPE shall be issued for free to the workers and be in good condition. The operator shall train workers in the use of PPE. The operator shall implement a system to monitor the effective use of PPE.</p> <p><i>For further information, see Guidance.</i></p>
2.1.5 Percentage of staff trained for health and safety at start and a refresher course at least every year.	Mill Agriculture	90%	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification. The operator ensures that all new workers receive and induction, which includes basic training on occupational health and safety instructions prior to beginning activities. The training includes the information about risks associated with activities performed by the workers.</p> <p>For workers starting a new job or taking on new activities, training associated to the specific health and safety risks associated to the new position or activity is provided.</p> <p>All workers receive an update with a refresher training at least every year or more frequently as determined by the H&S management plan.</p> <p>Instructions on new issue-specific H&S concerns are carried out as they emerge, e.g. on current issues like Covid.</p> <p>An OHS training plan is implemented progressively, including covering accident and work-related illness protocols.</p> <p><i>For further information, see Guidance.</i></p>
2.1.6 All workers have access to first aid and provision for emergency response. (former 2.1.7)	Mill Agriculture CORE INDICATOR	100%	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification. First aid supplies are available and checked, and dedicated personnel is trained to use them. Emergency response prevents the escalation of injury or illness and there shall be provision for injured or ill persons to receive professional medical treatment.</p> <p><i>For further information, see Guidance.</i></p>

2.1.7 Lost time accident frequency (former 2.1.6)	Mill Agriculture	Mill <15; Agric <30 number per million hours worked	Applies to all workers on the premises of the mill and farms included in the unit of certification. A lost time accident is defined as an unexpected and unplanned event which results in a personal injury which causes the worker to be unable to carry on with his/her normal duties on the next day or next shift. Where a fatal injury occurs, this to be noted separately. <i>For further information, see Guidance.</i>
CRITERION	2.2 To provide employees (including migrant, seasonal and other contract labour) with benefits and salary sufficient to achieve an adequate standard of living (former 2.3)		
INDICATOR	Scope	Standard	Full indicator wording
2.2.1 Existence of a contract or equivalent document (former 2.2.7)	Mill Agriculture CORE INDICATOR	100 %	Applies to all workers on the premises of the mill and farms included in the unit of certification. All workers are provided with a contract or equivalent document (e.g. national working card), and are explained their rights and obligations. If not specified by the law the contract includes at least the following elements: hours of work, overtime hours and payment, notice, rest periods, holidays, parental/maternity/paternity leave, wages, mode of payment, and if legal, any deductions that will be made. A copy of the contract is provided to the worker and in their own language. The terms of these contracts are aligned with the parameters of this standard (e.g. maximum working hours and overtime). <i>For further information, see Guidance.</i>
2.2.2 Maximum number of hours worked (former 2.3.3)	Mill Agriculture CORE INDICATOR	60 Hrs / week with one weekly free day or 2 free days in 14 working days	Applies to all workers on the premises of the mill and farms included in the unit of certification. The operator shall ensure that working time does not exceed 60 hours (48h + 12h overtime) or safe legal working conditions (whichever is lower), averaged monthly. The maximum number of hours worked during a day does not exceed 12h. If local legislation allows for more hours worked, the operator demonstrates that circumstances are exceptional (c.f. guidance). There is a 3-to-5-year phase in for this indicator from initial certification. Each worker must have at least 1 day off every 7 days or 2 days off every 14 days worked. <i>For further information, see Guidance.</i>

<p>2.2.3 Overtime is paid at a premium rate.</p> <p>(former 2.3.4)</p>	<p>Mill Agriculture</p> <p>CORE INDICATOR</p>	<p>>25%</p>	<p>Applies to all workers on the premises of the mill and the farms included in the unit of certification. Overtime work shall be voluntary and exceptional. Voluntary overtime hours are reflected in the employment/worker's contract and payroll documents are provided to present accurate information for all work performed, including overtime.</p> <p><i>For further information, see Guidance.</i></p>
<p>2.2.4 Ratio of lowest entry level wage including benefits to minimum wage and benefits required by law.</p> <p>(former 2.3.1)</p>	<p>Mill Agriculture</p> <p>CORE INDICATOR</p>	<p>≥1 \$/\$</p>	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification.</p> <p>Minimum wage is paid as defined by legal requirement.</p> <p>If wages are negotiated voluntarily between employers and workers' organizations, those negotiated wage amount(s) apply to all workers covered under the negotiated agreement. In cases where the law permits in-kind forms of payments, these do not exceed 30% of the minimum wage.</p> <p><i>For further information, see Guidance.</i></p>
<p>2.2.5 Minimum wage is guaranteed to piece rate paid workers.</p> <p>(former 2.3.2)</p>	<p>Mill Agriculture</p>	<p>≥1 \$/\$</p>	<p>CORE INDICATOR</p> <p>Applies to all workers on the premises of the mill and farms included in the unit of certification. Minimum wage is paid to all workers, including those on piece rate/quotas, for whom the calculation is based on the proportion of the daily rate for minimum wage according to the hours worked (as covered in 2.2.4 and 2.2.2). If under these conditions, the piecework rate does not meet the minimum wage, then the wage level is upgraded to at least the minimum wage. No more than 30% of the required minimum wage is paid in-kind. Curtailed days (by management or due to workplace incidents/injuries) are compensated as a full day.</p> <p><i>For further information, see Guidance.</i></p>

2.2.6 Movement to close living wage gap (former 2.3.5)	Mill Agriculture	<ul style="list-style-type: none"> • 5% first certification period • 10% each successive certification period. 	<p>Applies to all workers on the premises of the mill and the farms included in the unit of certification.</p> <p>The operator shall benchmark the prevailing wages against the applicable living wage reference value. If there is a gap, the operator shall set an action plan towards progressively closing the gap by a minimum of 5% in the first certification period (year 1 – 3) and 10% in each successive certification periods (excluding yearly wage indexations on inflation).</p> <p>Applicable living wage reference values will be drawn from the Anker & Anker based living wage benchmark data that will be used to assess the living wage gap. In those regions where a benchmark is not yet available, the national minimum wage for the agricultural sector will be used as a reference as a first step towards a living wage.</p> <p><i>For further information, see Guidance.</i></p>
CRITERION	2.3 To respect workers right to favourable working conditions (former 2.2)		
INDICATOR	Scope	Standard	Full indicator wording
2.3.1 Absence of discrimination (former 2.2.3)	Mill Agriculture CORE INDICATOR	Yes	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification.</p> <p>The operator has a publicly available, implemented and communicated non-discrimination and equal opportunity policy applicable in recruitment, remuneration, access to training and promotion, and access to facilities.</p> <p>Discrimination includes any distinction, exclusion or preference which has the effect of nullifying or impairing equality of opportunity or treatment.</p> <p>Discrimination can be based on race, colour, gender identity, age, language, religion, property/wealth, nationality, ethnic/social origin, caste, disability, pregnancy, indigeneity, union affiliation, political affiliation, marital/family status, personal relationships, health status, sexual orientation or other non-valid reasons that are irrelevant to the skills, capabilities, qualities and medical fitness for the job.</p> <p><i>For further information, see Guidance.</i></p>
2.3.2 Absence of abuse/ harassment	Mill Agriculture	Yes	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification.</p> <p>The operator has a publicly available, implemented and communicated policy to prevent sexual and all other forms of harassment and violence. Whistle-blowers are protected and their anonymity guaranteed</p>

(former 2.2.4)	CORE INDICATOR		<p>The policy ensures that no worker is subject to unacceptable behaviours and practices, or threats thereof, which results in verbal and non-verbal forms of physical, psychological, sexual or economic harm, and includes gender-based violence, extortion and harassment.</p> <p><i>For further information, see Guidance.</i></p>
<p>2.3.3 Debt bondage, trafficking, and forced / compulsory labour are absent.</p> <p>(former 2.2.2)</p>	<p>Mill Agriculture</p> <p>CORE INDICATOR</p>	Yes	<p>Applies to all workers on the premises of the mill and farms included in the unit of certification. Forced or compulsory labour Verification addresses all workers.</p> <p><i>For further information, see Guidance.</i></p>
<p>2.3.4 Absence of child labour</p> <p>(former 2.2.1)</p>	<p>Mill Agriculture</p> <p>CORE INDICATOR</p>	18 Years	<p>Applies to all underaged persons on the premises of the mill and farms included in the unit of certification, regardless of whether they are employed by the operator, and assures that no workers under 18 are present in fields or managing heavy equipment.</p> <p>For young workers above the legal minimum working age but below 18, and for legal apprenticeships, there are restrictions on hours of work and overtime; working at dangerous heights; with dangerous machinery, equipment and tools; Transport of heavy loads; exposure to hazardous substances or processes; and difficult conditions such as night work at night are prohibited. Note that special conditions might apply.</p> <p>The operator implements a system to check worker's ages.</p> <p><i>For further information, see Guidance.</i></p>
<p>2.3.5 Adequate accommodation is provided.</p> <p>(former 2.1.8)</p>	<p>Mill Agriculture</p> <p>CORE INDICATOR</p>	100%	<p>Applies to all housing provided by the unit of certification directly or indirectly via subcontractors. Housing provided must meet local sanitary regulatory standards, or the requirements stated in the guidance, whichever is more stringent.</p> <p><i>For further information, see Guidance.</i></p>

2.3.6 Working hours lost as percentage of total hours worked (former 2.2.6)	Mill	< 5 %	This represents working hours lost due to absenteeism also referred to as “no-show” as well as strikes, non-justified sickness etc. It does not include holiday, legal time off such as maternity leave, or training. <i>For further information, see Guidance.</i>
CRITERION	2.4 To safeguard respect for labour rights through functioning social dialogue mechanisms		
INDICATOR	Scope	Standard	Full indicator wording
2.4.1 Respect the right of all workers to form and join trade unions and to bargain collectively free from interference from the operator. (former 2.2.5)	Mill Agriculture CORE INDICATOR	Yes	Applies to all workers on the premises of the mill and farms included in the unit of certification. The operator respects such rights and does not interfere with workers' own efforts to set up independent representational mechanisms (unions or comparable organizing platforms) in accordance with the Universal Declaration of Human Rights and ILO core Standards. The operator applies guarantees to unionized workers throughout the workforce, extending to non-unionized workers. Collective Bargaining Agreements (CBAs) are regularly negotiated and renegotiated between employers' and workers' organizations and are duly respected to establish and the agreements made are transparent, documented and duly respected in their implementation. <i>For further information, see Guidance.</i>
2.4.2 Social Dialogue promotes consultation and information exchange between and among employers' and workers' organizations.	Mill Agriculture CORE INDICATOR	Yes	Applies to all workers on the premises of the mill and the farms included in the unit of certification. The operator engages in regular dialogues with direct and indirect workers to promote continuous improvement of working conditions and bargain collectively. The operator also promotes other mechanisms of social dialogue (e.g. mix committees, gender committees, committees to address harassment, and worker consultation practices). <i>For further information, see Guidance.</i>

<p>2.4.3 Grievance mechanism for workers are in place. (former 2.41)</p>	<p>Mill Agriculture</p> <p>CORE INDICATOR</p> <p>Whole cane supplying area</p>	<p>Yes</p>	<p>Applies to all workers on the premises of the mill and the farms included in the unit of certification. To ensure that workers have access to processes that address their impacts, the operator has in place a mutually agreed on and documented grievance mechanism that meets the expectations laid out in the UN Guiding Principles for Business and Human Rights: Legitimate, Accessible, Predictable, Equitable, Transparent, Rights-compatible, a source of continuous learning and based on stakeholder engagement.</p> <p>The indicator covers the whole cane supplying area, centralized at the operation without requiring separate grievance processes for individual farms (grievances against farms can be brought to the operator).</p> <p><i>For further information, see Guidance.</i></p>
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PRINCIPLE 3 - MANAGE INPUT, PRODUCTION AND PROCESSING EFFICIENCIES TO ENHANCE SUSTAINABILITY

CRITERION	3.1 To monitor production and process efficiency; to measure the impacts of production and processing so that improvements are made over time		
INDICATOR	Scope	Standard	Full indicator wording
3.1.1 Yield of production	Agriculture	Tc/ha Depending on climatic zone	To maximise yield taking into account the climatic conditions where cane is grown. Climatic zones are determined according to the GPS coordinates of the gathering mill. <i>For further information, see Guidance.</i>
3.1.2 Theoretical recoverable sugar content of cane	Mill Agriculture	>10%	Based on the theoretical recovery normalised for juice purity and cane fibre content. <i>For further information, see Guidance.</i>
3.1.3 Fermentable total sugars content of cane, expressed as invert (TSAI)	Mill Agriculture	>120Kg/t cane	Used if ethanol is produced, on its own or in conjunction with sugar production. Based on a 90.5 % utilisation of Total Sugars As Invert (TSAI). <i>For further information, see Guidance.</i>
3.1.4 Efficiency of harvesting operations	Mill Agriculture	<16H for machine harvesting <24H manual green harvesting <48H burnt cane harvesting	This measures the average time from harvesting (or burning) the cane until it is crushed by the mill (also known as the kill to mill time). For burnt cane it is the time from when the field is burnt prior to harvest until the cane is crushed. <i>For further information, see Guidance.</i>

3.1.5 Mill overall time efficiency	Mill	>75 % Processing time as a percentage of total crushing time	Processing time as a percentage of total crushing time. Any stoppage, including maintenance activities or power supply failure must be counted with the exception of stops due to rainfall exclusively. <i>For further information, see Guidance.</i>
3.1.6 Factory Performance Index	Mill	>90%	Used if sugar and ethanol, only if produced from final molasses only and in the same mill. % of actual sugar recovery % theoretical recovery of sugar from cane. <i>For further information, see Guidance.</i>
3.1.7 Industrial Efficiency	Mill	>75%	Used if ethanol only or sugar and ethanol is produced from anything other than final molasses are produced in the same mill. It is the ratio expressed as a % of the sum of TSAI equivalent products (sugar, ethanol, yeast, and molasses) to the TSAI of the cane. <i>For further information, see Guidance.</i>
CRITERION	3.2 To monitor global warming emissions with a view to minimising climate change impacts		
INDICATOR	Scope	Standard	Full indicator wording
3.2.1 Climate change adaptation and resilience plan	Mill Agriculture	Yes	The operator shall identify climate change impacts and evaluate where these will negatively affect operations, setting up actions to mitigate the effect of climate change and reduce GHG emissions over time. <i>For further information, see Guidance.</i>
3.2.2 Net GHG emissions per tonne of cane	Agriculture	<40 Kg CO ₂ eq/t cane	Estimates the emissions from agriculture activities. The result is also used in the calculation of the total emissions field-to-gate. <i>For further information, see Guidance.</i>

3.2.3 Net GHG emissions per tonne of sugar	Mill Agriculture	Total <0.4 t CO ₂ eq/t sugar	Only used if sugar is being produced. Field-to-gate emissions. Environmental Burden is t carbon dioxide equivalent. <i>For further information, see Guidance.</i>
3.2.4 Net GHG emissions per MJ of ethanol	Mill Agriculture	Total <24 g CO ₂ eq/MJ fuel	Used if ethanol is produced. Environmental Burden is g carbon dioxide equivalent. <i>For further information, see Guidance.</i>
3.2.5 Total Net Primary Energy Usage per kg product	Mill	Total <3000 KJ/kg	Direct and indirect energy inputs. <i>For further information, see Guidance.</i>
3.2.6 Energy used in cane transport per tonne cane transported	Mill	<50 MJ/t cane	Direct and indirect energy inputs. <i>For further information, see Guidance.</i>
3.2.7 Primary energy use per tonne of sugarcane	Agriculture	<300 MJ/t cane	Direct and indirect energy inputs. <i>For further information, see Guidance.</i>
3.2.8 Energy Return on Investment	Mill	<9 Energy Output / Energy input	Calculates the total energy needed to promote one MJ of energy, Applies only to ethanol production. <i>For further information, see Guidance.</i>

PRINCIPLE 4 - ACTIVELY MANAGE BIODIVERSITY AND ECOSYSTEM SERVICES

CRITERION	4.1 To protect and rehabilitate biodiversity and ecosystem services, as well as maintaining and enhancing HCVs		
INDICATOR	Scope	Standard	Full indicator wording
4.1.1 – Map biodiversity, ecosystem services and risks across the mill’s supply base.	Agriculture CORE INDICATOR	yes	<p>The mill operator maps the biodiversity resources and ecosystem services on and around planted areas which cane production rests upon and which it impacts, integrated with the risk and impacts assessment detailed in indicator 1.1.4 and, and the HCV risk assessment in consultation with affected stakeholders as identified under indicator 1.1.2.</p> <p>The mapping covers the whole supply base co-ordinated and centralized at the operation under certification. The Biodiversity and Ecosystem Services Management Plan (BESMP) considers threats and impacts the cane production and the mill have on biodiversity and ecosystem services, identifying mitigation and restoration measures that must be taken.</p> <p>The BESMP furthermore incorporates any biodiversity and ecosystem service High Conservation Values (HCVs) as identified by the HCV risk assessment (see 4.1.4 below) to guarantee a wholistic approach to conservation.</p> <p><i>For further information, see Guidance.</i></p>
4.1.2 Maintain and enhance biodiversity, ecosystem services and HCVs on and around farm areas	Agriculture	yes	<p>The grower operator develops and implements a Biodiversity and Ecosystem Services Management Plan (BESMP). The BESMP considers threats and impacts the cane production have on biodiversity, ecosystem services and HCVs, identifying mitigation and restoration measures that must be taken.</p> <p><i>For further information, see Guidance.</i></p>

<p>4.1.3 Percentage of areas of natural ecosystems defined internationally or nationally as legally protected converted to sugarcane on or after 1 January 2008</p>	<p>Agriculture CORE INDICATOR</p>	<p>0%</p>	<p>The operator conducts a historic land use change analysis of the unit of certification in order to determine if land converted to sugarcane on or after 1st January 2008 has damaged natural ecosystems defined internationally or nationally as legally protected.</p> <p>For further information, see Guidance.</p>
<p>4.1.4 – Across the whole cane supplying area future expansion is conducted in non-HCV areas.</p>	<p>Mill Agriculture CORE INDICATOR whole cane supplying area</p>	<p>Yes</p>	<p>No expansion into natural ecosystems or on areas containing HCVs. For greenfield expansion or new sugarcane projects the grower operator conducts the “Bonsucro HCV Risk Assessment for expansion” for the planned areas and implement the HCV Risk Assessment procedures.</p> <p><i>For further information, see Guidance.</i></p>
<p>4.1.5 Percentage of greenfield expansion or new sugarcane project covered by ESIA</p>	<p>Mill Agriculture CORE INDICATOR</p>	<p>100%</p>	<p>Applicable when there are major changes to the workforce (for example mechanisation) or field expansion (>5% of total supply area of 5 % rolling average, 1000has, whichever is smaller) or establishment of new sugar operations - changes are covered by ESIA.</p> <p><i>For further information, see Guidance.</i></p>

CRITERION	4.2 Soil Management Plan in place to avoid erosion and maintain and improve soil health		
INDICATOR	Scope	Standard	Full indicator wording
4.2.1 Mapping of soils and/or soil management units of the farm	Agriculture CORE INDICATOR	Yes	<p>The operator develops and implements a Soil Management Plan (SMP) that articulates the better management practices required for the operator to ensure the prevention of soil degradation and erosion of the farm's soils and to permit the optimal use of resources.</p> <p>The foundation for the SMP is laid by the operator mapping field boundaries and their soil management unit/s, which may include soil types. Practices aimed at preventing, mitigating, remedying and reducing soil degradation for each management unit are to be outlined.</p> <p><i>For more information see guidance</i></p>
4.2.2 Soil samples are taken and used to develop objectives for soil health and crop nutrition programmes.	Agriculture	Yes	<p>The Soil Management Plan sets objectives for soil health by regular monitoring of dynamic soil properties that affect nutrition (soil fertility measures), monitoring of organic carbon (readily oxidisable or total) and/or properties linked to declines in crop performance (e.g. acidity, salinity/sodicity).</p> <p><i>For more information, see guidance</i></p>
4.2.3 Health of the soil improved and maintained through setting objectives and implementing appropriate BMPs	Agriculture	Yes for each	<p>Soil Management Plan shall identify better management practices (BMP's) that aim to enhance soil health and are based on soil sampling and analysis, and set objectives for improving and maintaining soil health in the following categories:</p> <ul style="list-style-type: none"> Soil cover Organic matter Soil acidity Salinity/Sodicity <p><i>For more information, see Guidance</i></p>

<p>4.2.4 Fields with samples indicating low organic matter, acidity or Salinity/sodicity are corrected.</p>	<p>Agriculture</p>	<p>Yes</p>	<p>The objectives set in the Soil Management Plan for the following are achieved, or a corrective action plan is being implemented:</p> <ol style="list-style-type: none"> 1. Soil cover 2. Organic matter 3. Soil acidity 4. Salinity/sodicity <p><i>For more information, see Guidance</i></p>
<p>4.2.5 Ratio of fertiliser N P K applied to fertilizer N P K recommended by soil analysis (Previously 4.2.6)</p>	<p>Agriculture CORE INDICATOR</p>	<p><1.10 for each nutrient (Ratio applied to recommended)</p>	<p>The Soil Management Plan sets objectives for fertiliser to be applied according to soil analysis. Applied fertiliser should not exceed 10% of the recommended fertiliser for the farm.</p> <p><i>For more information, see Guidance</i></p>
<p>4.2.6 Practices to minimise and control soil erosion and compaction. (Previously 4.2.4)</p>	<p>Agriculture</p>	<p>Yes</p>	<p>The Soil Management Plan identifies practices that mitigate and minimise soil erosion, compaction and loss of organic matter taking place in sugarcane fields, and sets objectives for implementing remedial and mitigation actions.</p> <p><i>For more information, see Guidance</i></p>
<p>4.2.7 Burning of sugarcane tops and leaves after harvest is prevented (Previously 2.4.5)</p>	<p>Agriculture</p>	<p>Yes</p>	<p>This only applies to fields which have been burnt prior to harvest (ie no green cane harvesting). No burning of mulch/trash blanket after harvest except where this would be required for field cultivation for replanting. If sugarcane is burnt prior to harvest, it is done so only with cool burns (or also referred to as "cool-burning"). Tops must be retained and evenly scattered.</p> <p><i>For more information, see Guidance</i></p>

CRITERION	4.3. Water Stewardship Plan in place		
INDICATOR	Scope	Standard	Full indicator wording
4.3.1 Identify main water resources, catchment areas where the water resource is provided and develop and implement an action plan to contribute to its sustainability and setting objectives for water stewardship.	Mill Agriculture CORE INDICATOR Whole cane supplying area	Yes	<p>The operator develops and implements a Water Stewardship Plan (WSP) with achievable actions, agreed responsibilities, timeframes and allocated resources. The WSP reflects continuous improvement and organisational learning principles. As a minimum, it will include the following:</p> <ul style="list-style-type: none"> ● identify mainwater resources (including catchment areas, basin, sub-basin or microbasin), define their level of availability (water stress), and set objectives for water stewardship ● Map other users of water utilising mapped catchment areas (depending on level of complexity, this can be aggregated by user category such as local authorities supplying water, other crops, mining, etc.) ● Map local water initiatives and list organisations involved in water management <p>Covers the whole cane supplying area, centralized at the operation under certification without requiring separate mapping processes for individual farms.</p> <p><i>For more information, see guidance</i></p>
4.3.2 Mapping of land/water titles & claims is conducted.	Mill Agriculture Whole Cane supplying area	Yes	<p>The operator demonstrates statutory and customary land and water rights wherever applicable. The operator also maps the documents needed to demonstrate statutory and customary land and water rights in the cane supplying area outside the unit of certification. The operator has a system in place to track supplier compliance with the stated documents and encourage compliance. The operator conducts a physical mapping of claims on land & water and articulates how claims are to be handled in line with processes laid out in the Guidance. Claim mapping covers the whole cane supplying area of the certified entity. When land rights have been relinquished to the benefit of the operator, the operator demonstrates the decision was taken by Free Prior Informed Consent and negotiated.</p> <p>Also see indicator 1.4.2 in Principle 1.</p> <p><i>For further information, see Guidance.</i></p>

4.3.3 Engaging in collaborative action to promote sustainable water use	Mill Agriculture	Yes	<p>When water resources are stressed, the operator documents their engagement in collaborative and collective action to promote sustainable water use and participation with other water users, government and civil society in catchment or aquifer water planning and management including in how to allocate water equitably and without conflict</p> <p><i>For further information, see Guidance.</i></p>
4.3.4 Net water consumed per unit mass of product	Mill	<p><20 for sugar only or <30 for ethanol</p> <p>Kg of water/kg of mass product</p>	<p>Water consumed at mill = water used less water returned to the environment. If effluents are exported by the mill to the fields for irrigation, the mill accounts for it as water returned to the environment.</p> <p><i>For further information, see Guidance.</i></p>
4.3.5 Irrigation Water Productivity	Agriculture	$WP_a \geq WP_o$	<p>To ensure irrigated water is used efficiently.</p> <p>Water productivity (WP) is a measure of how effectively irrigation water is used to produce sugarcane. WP equals the cane yield harvested (t/ha), divided by the net irrigation applied over the growing season (mm).</p> <p>Irrigation water productivity is strongly influenced by the amount of rain received. This relationship is expressed as the <u>benchmark water productivity</u> - WP_o</p> <p>Actual cane yield and net irrigation applied over the growing season (mm) will determine <u>actual water productivity</u> value - WP_a.</p> <p><i>For further information, see Guidance.</i></p>
4.3.6 Dissolved oxygen in effluent point	Mill	≥ 2.5 PPM Or 1 Kg COD / T product or 0.25 kg/T BOD	<p>Dissolved oxygen is an indicator of the quantity of oxygen available in the receiving stream to support life. Sampling should be carried at the discharging point.</p> <p><i>For further information, see Guidance.</i></p>

CRITERION	4.4 - Pest, Disease and Weed Management Plans in place and implemented		
INDICATOR	Scope	Standard	Full indicator wording
4.4.1 Identification and monitoring of current, historical and potential pests and diseases	Agriculture CORE INDICATOR Whole cane supplying area	80% of area	<p>The operator identifies current, historical and potential pests, including weeds affecting the fields, and where appropriate, defining for each the threshold for when control of pests becomes necessary. This is carried out through field monitoring.</p> <p>The operator conducts field monitoring of plant health, pests and beneficial organisms.</p> <p>The plan covers the whole cane supplying area, centralized at the operation under certification without requiring separate identification processes for individual farms.</p> <p><i>For further information, see Guidance.</i></p>
4.4.2 Pest and disease management practices implemented	Agriculture	80% of area	<p>The operator uses a pest and disease management plan that integrates agronomic, biological and chemical strategies appropriate to the target species and farming system to minimise the economic impact of pests and diseases and minimise off-site impacts.</p> <p><i>For further information, see Guidance.</i></p>
4.4.3 Integrated Weed Management plan	Agriculture	80% of area covered by	<p>The operator uses a weed management plan that integrates agronomic and biological strategies appropriate to the target species and farming system (integrating chemical strategies as a last resource) to minimise the economic impact of weeds and minimise off-site impacts.</p> <p><i>For further information, see Guidance.</i></p>

4.4.4 Agro-chemicals applied per hectare per year	Agriculture CORE INDICATOR	<5 kg active ingredient / ha/year	To minimise air, soil and water contamination, particularly off-site impacts. Quantities of active ingredients of agro-chemicals (including pesticides, herbicides, insecticides, fungicides, nematocides, ripeners) applied. Also note the requirement to use only products registered for use and at registered rates. Use in accordance with label directions. <i>For further information, see Guidance.</i>
4.4.5 Banned agro-chemicals applied per hectare per year	Agriculture CORE INDICATOR	0 kg active ingredient/h a/y	Quantities of active ingredients of agro-chemicals included in: A. Pesticide formulations that meet the criteria of classes Ia (extremely hazardous) or Ib (highly hazardous) of the WHO Recommended Classification of Pesticides by Hazard; B. Pesticide active ingredients and their formulations that meet the criteria of carcinogenicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS); C. Pesticide active ingredients and their formulations that meet the criteria of mutagenicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS); D. Pesticide active ingredients and their formulations that meet the criteria of reproductive toxicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals; E. Pesticide active ingredients listed by the Stockholm Convention in its Annexes A and B, and those meeting all the criteria in paragraph 1 of Annex D of the Convention; F. Pesticide active ingredients and formulations listed by the Rotterdam Convention in its Annex III; G. Pesticides listed under the Montreal Protocol; <i>For further information, see Guidance.</i>
CRITERION	4.5 - To ensure hazardous chemicals and materials do not negatively impact biodiversity and ecosystem services		
INDICATOR	Scope	Standard	Full indicator wording
4.5.1 Management of storage facilities and safe handling and disposal of chemicals, fuel, lubricants and hazardous materials,	Mill Agriculture CORE INDICATOR	<u>100%</u>	Agrochemicals and other chemicals are safely stored, access is restricted to the sole users, storage area is ventilated and allows for spillage management (such as a retention pond, etc) The operator must ensure that Agrochemicals and Fertilisers are stored securely on its supplying farms and in a manner that prevents unauthorised access and protects the environment in the event of spillage. <i>For further information, see Guidance.</i>

with the objective of preventing negative impacts to biodiversity and ecosystems			
4.5.2 Specific training for handling and correct use of farm chemicals, fuel, hazardous materials, and record keeping of training and use.	Mill Agriculture		<p>All workers - that handle or come into contact with farm chemicals, fuel, hazardous materials are trained, and at least one worker in each field group is trained in first aid.</p> <p>Training is conducted by a competent professional on safe management of these substances.</p> <ol style="list-style-type: none"> a) Training is specific and relevant to the task(s) performed. b) An explanation of the names, formulations, toxicity, health risks, and other relevant MSDS information related to farm chemicals, fuel, hazardous materials all substances to be used. c) Techniques for correct handling of these substances. d) Correct use of PPE. e) Preventative measures for reducing possible damage to health and the environment caused by the substances. f) Emergency procedures, first aid and medical attention for cases involving poisoning or undue contact with these substances. g) Records of training are maintained, where appropriate on an individual basis. <p>Record keeping of all use of farm chemicals, fuel, hazardous materials and reports. records are accurate, complete, up-to-date and accessible.</p> <ol style="list-style-type: none"> h) All records shall be kept a minimum of two years <p><i>For more information, see Guidance</i></p>

PRINCIPLE 5 - CONTINUOUSLY IMPROVE OTHER KEY AREAS OF THE BUSINESS

Operators are expected to implement Principle 5 for continuous improvement according to the following timeline:

Year of certification	% P5 indicators
First certification audit	-
Surveillance audit 1	20%
Surveillance audit 2	40%
Recertification audit	60%
Surveillance audit 1 onwards	80%

CRITERION	5.1 To promote economic and social sustainability		
INDICATOR	Scope	Standard	Full indicator wording
5.1.1 Research and innovation plan in place	Mill Agriculture	Yes	<p>The operators shall establish a documented plan where they outline their approach and objectives to research and development.</p> <p><i>For further information, see Guidance.</i></p>
5.1.2 Value added per tonne cane	Mill Agriculture	<p>Mill >14; \$/t cane Agric >10 \$/t cane</p> <p>Rationale to change from v4: Certification data showed that the added value was actually closer to these new figures which is why they have been brought up</p>	<p>Value added by the operation is the value of sales less the price of goods, raw materials (including energy) and services purchased.</p> <p><i>For further information, see Guidance.</i></p>

5.1.3 Environmental and social impact Management Plans updated biannually	Mill Agriculture	Yes	Environmental and Social Management Plans are periodically updated, clearly documenting how previously identified risks are managed. <i>For further information, see Guidance.</i>
5.1.4 Findings of business context analysis continuously addressed in a time-bound manner	Mill Agriculture	90%	Internal and external review processes demonstrate that systems improvements are ongoing; Stakeholder, worker & client grievance logs demonstrate ongoing management of relationships with workers, communities and clients; Environmental, social, quality and productivity monitoring data demonstrate continuous improvement. <i>For further information, see Guidance.</i>
CRITERION	5.2 To reduce emissions and effluents. To promote recycling of waste streams where practical		
INDICATOR	Scope	Standard	Full indicator wording
5.2.1 Operators have a documented monitoring and evaluation system for ambient air quality in nearest populations / communities.	Mill	Documented monitoring of PM10, NOx and SOx emissions	Operators monitor ambient air (not stacks emissions) in nearest populations/communities as a 24hr mean for PM and SO ₂ , and as an annual mean for NO ₂ <i>For further information, see Guidance.</i>
5.2.2 Fugitive and point-source air emissions align with Best Available Technology and established safety/ environmental parameters	Mill	Evidenced by adherence to licenses AND documented emissions management	Operators can directly measure and report emissions or alternatively demonstrate Emission Estimation Techniques (EETs) as appropriate to the operation if they can demonstrate the use of Best Available Technologies (BAT) for their local operation/context. EETs include: <ul style="list-style-type: none"> · sampling or direct measurement; (commonly used for point-source emissions) · mass balance;

			<ul style="list-style-type: none"> · fuel analysis and/or other engineering calculations; and · emission factors (most commonly used for fugitive emissions from operations) <p><i>For more information, see Guidance</i></p>
5.2.3 Non-production waste plan for safely recycled or disposal	Mill Agriculture	Minimum 50%	<p>The operator has a plan and implements recycling / re-using / safe & responsible disposal or storage (if other options are not available) programme for all of the following categories: fibre, metal, plastic, oil and lubricants, batteries and chemical products, rubber, wood, hazardous waste, glass, medical waste and electronics.</p> <p><i>For further information, see Guidance.</i></p>
CRITERION	5.3 To train workers and other workers in all areas of their work and develop their general skills		
INDICATOR	Scope	Standard	Full indicator wording
5.3.1 Time spent by workers in vocational training sessions	Mill Agriculture	Average 16 hours per year (or full time equivalent of 16 hours per year)	<p>The operator provides an average of 16 hours of training for vocational and/or occupational skills training to all workers. Training days are split between basic workers, intermediate management and upper management.</p> <p>A training plan is prepared ahead of each harvest or cutting cycle (in cases where the harvest or cutting cycle is continuous, the training plan is annual).</p> <p><i>For further information, see Guidance.</i></p>

CRITERION	5.4 Continuous improvement of worker welfare		
INDICATOR	Scope	Standard	Full indicator wording
5.4.1 - Occupational health and safety is promoted in the whole cane supply area.	Whole supply area	Yes	The operator promotes a safe working environment at its sugar cane supply base. <i>For further information, see Guidance.</i>
5.4.2. Safe worker accommodation in cane supplier area	Whole supply area	Yes	The operator promotes minimum legal standards accommodation on its sugar cane supply base. <i>For further information, see Guidance.</i>
5.4.3. Gender inclusion in management and technical positions	Mill Agriculture	15%	Applies to all workers on the premises of the mill and farms included in the unit of certification. The operator conducts community-based women's empowerment training. Recruitment operations increases women's presence in the workforce to meet operation established targets not less than 15% of total workforce. <i>For further information, see Guidance.</i>

ANNEX 1 – DEFINITIONS

Term	Definition	Source
Absenteeism	Any failure to report for or remain at work as scheduled, regardless of the reason. This is usually unplanned, for example, when someone falls ill, but can also be planned, for example during a strike or wilful absence.	Cascio & Boudreau, 2015
All workers	<p>All workers working within the unit of certification including:</p> <ul style="list-style-type: none"> • Waged Workers: <ul style="list-style-type: none"> ○ Permanent Workers ○ Temporary and Seasonal Workers ○ Migrant Workers ○ Subcontracted Workers ○ Land-less workers • Non-waged workers 	Bonsucro Production Standard v.4.2

	<ul style="list-style-type: none"> ○ Large and Middle Scale Farmers ○ Small Scale Farmers ○ Subsistence farmers ○ Unpaid Family workers ○ Collective farmers ○ Tenants and Sharecroppers 	
Area of Influence	The unit of certification and the wider landscape surrounding or adjacent to it.	HCVRN HCV Assessment Manual
Business Context Analysis	<i>Definition to be developed by SRWG</i>	
Catchment	<p>The geographical zone in which water is captured, flows through and eventually discharges at one or more points. The concept includes both surface water catchment and groundwater catchment.</p> <p>A surface water catchment is defined by the area of land from which all precipitation received flows through a sequence of streams and rivers towards a single river mouth, as a tributary to a larger river, or to the sea.</p>	Alliance for Water Stewardship

	<p>A groundwater catchment is defined by geological structure of an aquifer and groundwater flow paths. It is replenished by water that infiltrates from the surface. It has vertical thickness (from a few metres to 100s of metres) as well as area. Depending on local conditions, surface and groundwater catchments may be physically separate or interconnected.</p> <p>Catchment of origin refers to a catchment, distinct from the site’s catchment(s), where a product or service is manufactured or sourced. It may be anywhere from an adjacent catchment to the other side of the world. Alternative terms are watershed, basin and river basin.</p>	
Child	<p>Any person less than 15 years of age, unless local minimum age law stipulates a higher age for work or mandatory schooling, in which case the higher age would apply.</p> <p>The ILO Minimum Age Convention, No. 138 (1973) states that the minimum age of employment should not be less than the age of completion of compulsory schooling and, in any case, shall not be less than 15 years..</p>	ILO 138
Child labour		Bonsucro Production Standard v.4.2

	Any work by a child younger than the age(s) specified in the above definition of a child, except as provided by ILO Recommendation No. 146.	
Collective bargaining	All negotiations which take place between an employer, a group of employers, or one or more employers' organisations, on the one hand, and one or more workers' organisations, on the other, for: (i) determining working conditions and terms of employment; and/or (ii) regulating relations between employers and workers; and/or (iii) regulating relations between employers or their organisations and a workers' organisation or workers' organisations	Accountability Framework Initiative
Company	The entirety of any organization or business entity responsible for implementing the standard.	Bonsucro Production Standard v.4.2 (Adapted from SA 800)
Consensus	General agreement characterized by the absence of sustained opposition to substantial issues by any important stakeholder group.	Bonsucro guidance v.4.2 (Adapted from ISO/IEC Guide 2:2004)

	NOTE – Consensus should be the result of a process seeking to take into account the views of interested stakeholders, particularly those directly affected, and to reconcile any conflicting arguments. It need not imply unanimity.	
Consultation	Seeking views before making a decision. Consultation includes engaging health and safety committees and workers’ representatives, where they exist.	SRWG
Contracted worker/employee	<p>Laborers who are not considered regular employees of a business company.</p> <p>They may be hired on a part-time or short-term basis, usually to complete a specific task (such as constructing company property).</p> <p>They may not be included in the company’s regular payroll and may operate very independently of the company’s normal business functions.</p>	SRWG
Contractor	<p><i>Definition to be developed by SRWG</i></p> <p>External organization providing services to the organization in accordance with agreed specifications, terms and conditions.</p>	

Contract Substitution	The practice of substituting or changing the terms of employment to which the worker originally agreed, either in writing or verbally, which results in worse conditions or less benefits. Changes to the employment agreement or contract are prohibited unless these changes are made to meet local law and provide equal or better terms.	ILO Report to the Committee examining alleged non-compliance by Qatar of Forced Labour
Deforestation	Loss of natural forest as a result of: i) conversion to agriculture or other non-forest land use; ii) conversion to a tree plantation; or iii) severe and sustained degradation.	Accountability Framework Initiative
Degradation	Changes within a natural ecosystem that significantly and negatively affect its species composition, structure, and/or function and reduce the ecosystem's capacity to supply products, support biodiversity, and/or deliver ecosystem services.	Accountability Framework Initiative
Discrimination	<p>1 The term discrimination includes — (Art 1 C111) ILO Convention C111:</p> <p>(a) any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or</p>	<p>Bonsucro guidance v.4.2</p> <p>(Adapted from ILO Convention C111)</p>

	<p>occupation; (b) such other distinction, exclusion or preference which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation as may be determined by the Member concerned after consultation with representative employers' and workers' organisations, where such exist, and with other appropriate bodies.</p> <p>2. Any distinction, exclusion or preference in respect of a particular job based on the inherent requirements thereof shall not be deemed to be discrimination.</p> <p>3. For the purpose of this Convention the terms employment and occupation include access to vocational training, access to employment and to particular occupations, and terms and conditions of employment.</p>	
Displacement	<p>A forced removal of persons from their home or country, often due to armed conflict or natural disasters. Internally displaced person, or IDP, is someone who is forced to flee his or her home, but who remains within his or her country's borders.</p>	SRWG
Due diligence	<p>A risk management process implemented by a company to identify, prevent, mitigate, and account for how it addresses environmental and social risks and impacts in its operations,</p>	<p>Accountability Framework Initiative</p>

	supply chains, and investments.	
Farm	Operator producing the sugarcane which is delivered to the mill.	Bonsucro guidance v.4.2
Forced labour	All work or service that is exacted from any person under the menace of any penalty and for which the said person has not offered themselves voluntarily, including all forms of debt bondage and human trafficking for the purpose of forced labour.	Accountability Framework Initiative
Free, Prior, Informed Consent (FPIC)	<p>Collective human right of Indigenous Peoples and Local Communities (IP/LC) to give or withhold their consent prior to the commencement of any activity that may affect their rights, land, resources, territories, livelihoods, and food security.</p> <ul style="list-style-type: none"> • Free: Consent is given by the affected IP/LC voluntarily without coercion, duress, or intimidation. • Prior: The consent is given before the specified activity is authorised or commenced. 	Accountability Framework Initiative

	<ul style="list-style-type: none"> • Informed: The consent is given after the IP/LC have received the relevant, timely, and culturally appropriate information necessary to make a fully informed decision. • Consent: The IP/LC take a collective decision to grant or withhold approval of each activity that may impact IP/LCs 	
Freedom of association	Explicit right for all workers to create and/or join their own organs of representation or trade unions in whatever form they decide is most effective.	Ethical trade
Fundamental failure	<p>A procedure-altering violation that entirely prevents the business from operating in compliance with the standard. These mistakes can result in loss of productivity and a major breaches of core requirements.</p> <p>When isolated lapses (see definition) happen continuously, this can also be considered a fundamental failure.</p>	Adapted from ISO definitions on non-conformance
Grievance mechanism	Any routinised process through which grievances concerning business-related negative impacts to human rights or the environment can be raised and remedy can be sought.	Accountability Framework Initiative

Hazard	A physical situation with a potential for human injury, damage to property, damage to the environment or some combination of these.	ILO Fundamental Principles of Occupational Health And Safety
High Conservation Value	<p>High Conservation Values (HCVs) are biological, ecological, social or cultural values which are considered outstandingly significant or critically important, at the national, regional or global level. All natural habitats possess some inherent conservation values, including the presence of rare or endemic species, provision of ecosystem services, sacred sites, or resources harvested by local residents. However, some values are more significant or critical than others, and it is the HCV approach which offers an objective way of identifying those values to be maintained or enhanced. (see www.hcvnetwork.org).</p> <p>The six High Conservation Values (HCVs):</p> <p>HCV 1 Species diversity: Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.</p>	<p>Bonsucro guidance v.4.2</p> <p>HCV Common Guidance for Identification</p>

	<p>HCV 2 Landscape-level ecosystems and mosaics: Large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.</p> <p>HCV 3 Ecosystems and habitats: Rare, threatened, or endangered ecosystems, habitats or refugia.</p> <p>HCV 4 Ecosystem services: Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.</p> <p>HCV 5 Community needs: Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc.), identified through engagement with these communities or indigenous peoples.</p> <p>HCV 6 Cultural values: Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities</p>	
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	or indigenous peoples, identified through engagement with these local communities or indigenous peoples.	
Human rights policy	A commitment to respect human rights as defined by the International Bill of Human Rights and the International Labor Organization’s (ILO) Declaration of Fundamental Principles and Rights at Work. The International Bill of Human Rights collectively includes the two Covenants: the International Covenant on Civil and Political Rights, and the International Covenant on Economic, Social, and Cultural Rights. In alignment with the UN Guiding Principles on Business and Human Rights, the Policy should commit the enterprise to ‘respect’ human rights, conduct ‘due diligence’ to assess actual and potential impacts on rights-holders, and provide remedy for adverse impacts that occur.	SRWG
Implementation plan	Documentation of the activities, investments, processes, procedures, and methodologies that a company intends to implement at the supply-base level to achieve and demonstrate compliance with environmental and social commitments and obligations. Implementation plans may follow from risk assessments, gap assessments, and other processes that identify actual or potential non-compliances, adverse social or environmental impacts, or other improvement needs.	Accountability Framework Initiative

Incident	An unsafe occurrence arising out of or in the course of work where no personal injury is caused, or where personal injury requires only first-aid treatment.	ILO Fundamental Principles of Occupational Health And Safety
Isolated lapse	<p>Happenings or actions that are not listed in the standard requirements, but do not detrimentally affect the operation or quality control of the entire business.</p> <p>This may include a single event or a low-risk situation, like a momentary lapse in managerial judgment (e.g. missing training records, single unauthorised document alteration)</p>	Adapted from ISO definition on non-conformances
Land tenure	Understood as the relationship, whether legally or customarily defined, among individuals, groups of individuals or peoples with respect to land. In broad terms, land tenure systems determine who can use what resources for how long and under what conditions.	UN Human Rights Office of the High Commission report
Living wage	<p>The remuneration received for a standard workweek by a worker in a particular place sufficient to afford a decent standard of living for the worker and her or his family.</p> <p>Elements of a decent standard of living include food, water, housing, education, health</p>	Global Living Wage Coalition

	care, transportation, clothing, and other essential needs including provision for unexpected events.	
Lost Time Accident	An injury involving a worker which causes him/ her to miss his/her next shift due to injury.	Bonsucro guidance v.4.2
Medical screening	A method for detecting disease or body dysfunction before an individual would normally seek medical care. Screening tests are usually administered to individuals without current symptoms, but who may be at high risk for certain adverse health outcome.	United States Department of Labour
Mill	Operator that applies for certification. The mill has the ultimate responsibility for compliance with the Bonsucro Standard.	Bonsucro guidance v.4.2
Natural Ecosystems	An ecosystem that substantially resembles—in terms of species composition, structure, and ecological function—one that is or would be found in a given area in the absence of	Accountability Framework Initiative

	major human impacts. This includes human-managed ecosystems where much of the natural species composition, structure, and ecological function are present.	
Natural forest	<p>A forest that is a natural ecosystem. y Natural forests possess many or most of the characteristics of a forest native to the given site, including species composition, structure, and ecological function. Natural forests include:</p> <p>a) Primary forests that have not been subject to major human impacts in recent history</p> <p>b) Regenerated (second-growth) forests that were subject to major impacts in the past (for instance by agriculture, livestock raising, tree plantations, or intensive logging) but where the main causes of impact have ceased or greatly diminished and the ecosystem has attained much of the species composition, structure, and ecological function of prior or other contemporary natural ecosystems</p> <p>c) Forests that have been partially degraded by anthropogenic or natural causes (e.g., harvesting, fire, climate change, invasive species, or others) but where the land has not been converted to another use and where degradation does not result in the sustained reduction of tree cover below the thresholds that define a forest or sustained loss of other main elements of ecosystem composition, structure, and ecological function.</p>	Accountability Framework Initiative
Occupational accident	An Occupational accident is an unexpected and unplanned occurrence, including acts of violence, arising out of or in connection with work which results in one or more workers	Bonsucro Production Standard v.4.2 (Adapted from ILO Resolution/

	<p>incurring a personal injury, disease or death. Included in occupational accidents are travel, transport or road traffic accidents in which workers are injured and which arise out of or in the course of work, i.e. while engaged in an economic activity, or at work, or carrying on the business of the employer. Occupational injury: any personal injury, disease or death resulting from an occupational accident; an occupational injury is therefore distinct from an occupational disease, which is a disease contracted as a result of an exposure over a period of time to risk factors arising from work activity.</p>	<p>Convention 155 on statistics of occupational injuries)</p>
Occupational disease	<p>A disease contracted as a result of an exposure to risk factors arising from work activity</p>	<p>Bonsucro Production Standard v.4.2 (Adapted from ILO)</p>
Operational Grievance Mechanisms (OGM)	<p>Complaint process that workers can use to raise concerns about negative impacts they may have suffered as a result of certain business practices.</p>	<p>United Nations Guiding Principles on Business and Human Rights (UNGPs)</p>
Operator	<p>Farm or mill. Entities that are responsible for the undertaking and contracting activities related to the sugarcane growing and processing, including transportation.</p>	<p>Bonsucro guidance v.4.2</p>

Overtime	All hours worked in excess of the normal hours unless they are taken into account in fixing remuneration in accordance with custom.	ILO
Participation	Involvement in decision-making. Participation includes engaging health and safety committees and workers' representatives, where they exist.	SRWG
Personal Protective equipment (PPE)	Equipment that protects the user against the risk of accidents or of adverse effects on health. It can include items such as safety helmets, gloves, eye protection, high-visibility clothing, safety footwear, safety harnesses and respiratory protective equipment (RPE).	SRWG
Pollution Control Equipment	Pollution Control Equipment: such as electrostatic precipitators, fabric filters or baghouses, and wet scrubbers, are commonly installed to reduce the concentration of substances in process off-gases before stack emission.	Australia's National Pollutant Inventory

Policy	Public statement by a company that specifies the actions that it intends to take or the goals, criteria, or targets that it intends to meet with regards to its management of or performance on environmental, social, and/or governance topics.	Accountability Framework Initiative
Primary aggregator	Aggregators are agricultural businesses or cooperatives of growers that consolidate and distribute agricultural products. They typically support regional growers of diverse sizes and experience, and sell products to local or regional markets.	SRWG
Reporting period	This will be one year unless otherwise agreed. The period shall include a single complete milling season.	Bonsucro Production Standard v.4.2
Risk	The likelihood of an undesired event with specified consequences occurring within a specified period or in specified circumstances. It may be expressed either as a frequency (the number of specified events in unit time) or as a probability (the probability of a specified event following a prior event), depending on the	ILO Fundamental Principles of Occupational Health And Safety

	circumstances.	
Risk assessment	A systematic process of evaluating potential risk in a company's current or future operations, supply chains, and investments.	Accountability Framework Initiative
Root-cause analysis	Analysis of the underlying (root) causes of identified sustainability risks in a specific supply chain.	SRWG
Significantly affected	A significant impact would be apparent if the operations of sugarcane farms or mills resulted in changes to the environment that resulted in (1) the quality and / or quantity of habitat supporting an endangered or threatened species being affected to the extent that the numbers and viability of the species (the classification from the IUCN red list) was adversely affected; (2) conversion, diminution or degradation of the integrity of an endangered habitat such that there was a measurable adverse impact on its ecological status in the opinion of a competent ecologist (3) ecosystem service (such as water supply) being sufficiently changed as to cause material adverse impacts to local communities or ecosystems (for example, flows contain additional nutrients that change downstream ecology or affect the availability of drinking water for downstream communities).	Bonsucro Production Standard v.4.2

<p>Social Dialogue</p>	<p>The different types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers, and workers, on issues of common interest relating to economic and social policy.</p> <p>Social Dialogue is also possible between employers and workers, this is called bi-partite social dialogue; this is the common form at company level. SD including government is tripartite, this is common at regional, national (f.i commission on minimum wage) and international level (ILO). There is also multistakeholder dialogue, often practised on (international) sustainability challenges in supply chains, Bonsucro is a good example on this. This difference has to be clear in order to avoid confusion on the role of government in Social Dialogue, for there is no role for government on the company level and in this indicator.</p>	<p>ILO C154 and SRWG</p>
<p>Stakeholder</p>	<p>An individual or group that has an interest in any decision or activity of an organization.</p> <p>Stakeholders may include:</p> <ul style="list-style-type: none"> • Suppliers • Internal staff, such as employees and workers • Seasonal or migratory workers • Members • Customers, including shareholders, investors, and consumers • Regulators • Local and regional communities 	<p>ISO 26000-Guidance on social responsibility</p>

Standard	Document that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which compliance is voluntary.	Bonsucro guidance v.4.2 (Adapted from Annex 1 of the WTO TBT Agreement)
Subcontractor/ sub-supplier	A business entity in the supply chain which, directly or indirectly, provides the suppliers with goods and/or services integral to, and utilized in/for, the production of the suppliers' and/or company's goods and/or services.	Bonsucro Production Standard v.4.2 (Adapted from SA 800)
Supplier/ contractor	A business entity which provides the company with goods and/or services integral to, and utilized in/for, the production of the company's goods and/or services.	Bonsucro Production Standard v.4.2 (Adapted from SA 800)
Systemic approach	Accounting for the understanding of interactions and interdependencies present in a complex situation, based on knowledge and practices to dive into the relationships, structure, laws, characterizing the problem.	IGI Global

Vulnerable stakeholder	Women, children, migrants, disabled persons and any other people belonging, or perceived to belong, to groups that are in a disadvantaged position or marginalised.	Accountability Framework Initiative
Wet Bulb Globe Temperature (WBGT)	Index which was developed in 1957 as a basis for environmental heat stress monitoring to control heat casualties at military training camps. The WBGT combines the effect of humidity and air movement (in tnwb), air temperature and radiation (in tg), and air temperature (ta) as a factor in outdoor situations in the presence of sunshine. If there is no radiant heat load (no sunshine), then the tg reflects the effects of air velocity and air temperature. Commercially available WBGT measuring instruments give ta, tnwb, and tg separately or as an integrated WBGT in a form for digital readouts.	SRWG

ANNEX 2 – IMPLEMENTATION GUIDANCE

Principle 1 – Assess and Manage Environmental, Social & Human Rights risks

Criterion 1.1 – Leadership demonstrated through elaboration and implementation of sustainability policies

1.1.1 Sustainability policies are in place

Implementation Guidance:

A policy is a public statement by a company that specifies the actions that it intends to take or the goals, criteria, or targets that it intends to meet with regards to its management of or performance on environmental, social, and/or governance topics¹.

The implementation of policies is a process that involves buy-in and engagement across the enterprise to be effective.

Policy statements should be written by area experts within the unit of certification and approved by senior management.

The policies and practices should include the local, national and international regulations respectively, in order to ensure the application at all levels, for example:

- In terms of international **human rights** regulations, the operator should take into consideration: the UN Guiding Principles², which is the global authoritative standard on the business responsibility to respect human rights, unanimously endorsed by the UN Human Rights Council in 2011.
- Regarding to **indigenous peoples' rights and land rights**, it is important that the operator review the ILO Convention report (No.169) on Indigenous and Tribal rights³ and the United Nations Declaration on the Rights of Indigenous People⁴.

¹ AFI's definition <https://s30882.pcdn.co/wp-content/uploads/2020/09/Definitions-2020-5.pdf>

² https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf

³ https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169

⁴ https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

- In relation to **ethical conduct, anti-corruption, anti-bribery and money laundering**, the OECD Convention on Combating Bribery⁵ and United Nations Convention against Corruption⁶ provide guidelines on how to prevent these actions. The policy should include elements such as bribery, facilitation payments, disclosures of political contributions; guidelines for charitable donations and sponsorships; respect for fair conduct of business; proper disclosure of information in accordance with applicable regulations and accepted industry practices; compliance with existing anti-corruption legislation.
- With regards to **labour rights**, the operator should refer to the various ILO Core conventions, as well as any other conventions listed throughout this standard and Guidance. As a minimum, the labour rights topics addressed in this standard should be mentioned (see Principle 2).
- In terms of **environmental protection**, the operator should review the documents available from the High Conservation Values network and the High Carbon Stock Network⁷, national and locals' laws can also be considered in case these are applicable, though in this case the strictest prevails. As a minimum, the environmental topics addressed in this standard should be mentioned (see Principles 3 and 4).
- In relation to **health & safety**, the policy should be aligned to the operational activities, the needs and risk assessed according to indicator 2.1.1.
- Finally, in terms of **social dialogue**, the operator should review the ILO Collective Bargaining Convention, 1981 (No. 154)⁸.

Definition of social dialogue: ILO defines social dialogue the different types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers, and workers, on issues of common interest relating to economic and social policy⁹. Here, social dialogue is considered as bipartite relations between workers and management (or trade unions and employers' organizations). Social dialogue processes can be informal and/or institutionalised, and can be inter-professional, sectoral or a combination of both.

⁵ http://www.oecd.org/daf/anti-bribery/ConvCombatBribery_ENG.pdf

⁶ https://www.unodc.org/documents/treaties/UNCAC/Publications/Convention/08-50026_E.pdf

⁷ <https://hcvnetwork.org/>

⁸ https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---dialogue/documents/publication/wcms_172186.pdf

⁹ International Labour Organization (ILO), *Collective Bargaining Convention, C154*, 1981, available at: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---dialogue/documents/publication/wcms_172186.pdf

At a minimum, the policies could outline the following elements:

- The objectives
- The scope
- Terms and definitions
- The commitments to be accomplished, describing if these are subject to national and international regulations
- The periodicity this will be revised and updated

The operator should provide information about their policies and practices to all their personnel and stakeholders, and progressively to all the companies involved in the whole cane supplying area. The operator should also design a plan to progressively implement the policies across the whole cane supplying area, laying down key steps and goals to be achieved over the designated timeframe. See separate guidance on timebound progressive implementation plan.

The operator should keep records of the adjustments made to the policies and practices and make them publicly available to personnel, suppliers, clients and other stakeholders.

The operator should develop communication mechanisms to communicate these policies to stakeholders (workers, suppliers, providers, contractors and community members).

The implementation of the policies should be undertaken by the leader (top management) in charge of each area within the operation. This should be documented and addressed in the appropriate language and methods for the workers, suppliers, clients and main stakeholders should be clear.

Top management should therefore:

- demonstrate leadership and commitment, which is necessary for the Bonsucro standard to be successful.
- engage in, promote, communicate and monitor the performance and effectiveness of the Bonsucro standard.
- be accountable and responsible for the overall performance.

Top management responsibilities include: the sustainability policy, organizational roles, responsibilities and authorities, as well as regarding the management review.

Top management's commitment also includes:

- provision of resources, lead others to support the Sustainability policy, and communicate in relation with the importance of effective sustainability management.
- ensure that processes for effective consultation and participation are established, implemented and maintained.
- ensure that workers as well as other interested parties are protected from reprisals when they report issues.
- Set the mission, vision and values, the operator should consider the organization's context, needs and expectations of its interested parties, business objectives (including the sustainability policy and objectives) and the integration of Bonsucro requirements in general business processes.

The operator should keep an active role in having a due diligence mechanism to assess and update the policies according to the standard and to national and international regulations and circumstances.

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Criterion 1.2 – Risks and impacts are systematically assessed

1.2.1 Mapping of Internal, External, and Vulnerable Stakeholders is conducted

Implementation Guidance:

Definition of vulnerable stakeholders: Women, children and people belonging, or perceived to belong, to groups that are in a disadvantaged position or marginalised¹⁰

The operator should have a general understanding of the expressed needs and expectations of workers and other relevant interested parties to determine those that it has or choose to comply with.

Examples of interested parties are regulatory or statutory agencies, communities, owners, neighbours, other companies related to the operator, like contractors or suppliers or clients, customers, people that can occasionally be in the facilities of the operator: visitors, consultants, transport workers, etc.

Particular various population groups are considered vulnerable, including girls, women, young people, migrants, people with disabilities, the elderly and the indigenous population, and operator should identify those of them than can be impacted by the operations and develop an engagement plan.

The process of engaging with indigenous and tribal communities should take into consideration ILO Convention 169, guaranteeing indigenous peoples the right to free, prior and informed consent consultation and guaranteeing good faith (see indicator 1.3.4).

The operator should have - and keep records of - an identification, prioritisation and engagement plan in place. As a minimum, the plan should include the following elements:

- Planning:
 - The scope, goals and description of the stakeholder engagement approach.
 - The periodicity of activities
- Identification:

¹⁰ For more information: the Accountability Framework FPIC guide: <https://accountability-framework.org/operational-guidance/free-prior-and-informed-consent/>

- Identification of internal, external, directly, and indirectly impacted stakeholders, specifying their role, type of impact and vulnerability level.
- An analysis which specifies the interests and perspectives of stakeholders
- Mapping the main issues and relationships among stakeholders, this should be undertaken using a participatory mechanism.
- If applicable, a mechanism to approach identified stakeholders.
- **Prioritisation:**
 - Prioritization of stakeholders, ranking them based on the findings from the identification phase.
 - A map demonstrating the area of influence, displaying where the stakeholders are located and what are the main natural resources commonly used by the mill and/or the stakeholders. Area of influence (AOI). is the unit of certification and the wider landscape surrounding or adjacent to it. The wider landscape may be determined by identifying a single or combination of social or environmental features that are connected to and extend beyond the boundaries such as a watershed or a geographical land unit containing a cluster of interacting ecosystems, and community lands. Rationale for the determination of the wider boundary must be provided, along with a map showing the boundaries of the unit of certification and the wider landscape.

Following the mapping of stakeholders, the operator should develop an engagement plan which lays out the planning process and design for a tailored engagement on specific issues, level of participation to be achieved, timeframe and the range of stakeholders affected.

It should also include a documentation system which keeps records of interventions, results, and progress of the plan.

- **Engagement:**
 - The main communication mechanism(s) to be used with stakeholders.
 - The main strategies to achieve a better understanding of stakeholders, challenges and risks and improved relations.

Once the mapping of stakeholders and the engagement plan have been developed, the operator should carry out the implementation and document the relevant interventions or activities accordingly.

Additionally, the operator should have in place a clear grievance and dispute resolution mechanism for stakeholders (See indicator 1.4.3).

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1.2.2 - Risk and Impact Assessment are conducted

Implementation Guidance:

The actual or potential impact assessment should seek to determine and understand the various internal and external issues typically experienced in your type of organization that can have positive or negative impacts. These could be for example:

- External: cultural, social, political, regulatory, financial, economic, natural and competitive issues, whether international, national, regional or local
- Internal: organization's activities, products, services, strategic direction and capabilities (people, knowledge, processes, systems)

The operator should conduct a ESIA to identify the social and environmental impacts of its activities and to propose and manage a set of actions aimed at mitigating the negative impacts on the environment and affected stakeholders.

The operator should:

- Identify and involve the potentially affected stakeholders (local communities, other growers) in the form of a consultation;
- Identify the natural resources on which its operation relies and the impacts of its activities on them;
- Describe the consultation process followed [Free, Prior and Informed Consent (FPIC) should be used for the process and consensus should be sought when decisions are being made or conclusions agreed; see also criterion 1.X for further information on FPIC];
- Identify the positive and negative impacts on the identified stakeholders.
- Keep the records from the consultation process and actions decided.
- Propose actions (preventive and corrective) to mitigate the identified impacts and to manage or enhance the natural resources;

- Set measurable objectives; and document all this in the ESIA report, which, together with the Risk Assessment serves as basis for the Environmental and Social Management Plan (ESMP).

According to the IFC (2018)¹¹ a ESMP (note IFC reverses the order to SEMP) defines resources, roles and responsibilities required to manage biodiversity impacts and implement mitigation measures. The operator needs to generate a plan to mitigate the social and environmental impacts over the natural resources and affected stakeholders.

The ESIA and ESMP include the following:

- Identification and involvement of the potentially affected stakeholders (local communities, other growers) in the form of a consultation;
- Identification of the natural resources on which its operation relies and the impacts of its activities on them;
- Description of the consultation process followed [Free, Prior and Informed Consent (FPIC) should be used for the process and consensus should be sought when decisions are being made or conclusions agreed; see also criterion 1.X for further information on FPIC];
- Identification of the positive and negative impacts on the identified stakeholders.
- Records from the consultation process and actions decided.
- Proposed actions (preventive and corrective) to mitigate the identified impacts and to manage or enhance the natural resources;
- Measurable objectives set;
- Implementation of actions;
- Monitoring progress against the objectives;

¹¹ IFC. (2018). *A Guide to Biodiversity for the Private Sector*. Retrieved from https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/biodiversityguide

The context analysis of the Risk and Impact Assessment should consider a range of relevant contextual factors including national/regional financial health, conflict risks, and transportation/logistics challenges, opportunities associated with trade innovations, political stability, social dialog issues, contracting and subcontracting risks, and other facilitators/barriers to doing business.

If it determines the context is politically fragile or conflict-affected, the analysis should articulate how the workforce will be protected from violence and what actions the operator will take to avoid conflicts.

Where indigenous and traditional communities are identified, free, prior and informed consent (FPIC) will be required before any operations are established or expanded.

As such, the operator should:

- determine the context reviewing what can influence the sustainability management in order to achieve its intended outcomes.
- consider issues that can be relevant and have a potential impact on the sustainability policy, and due to external and internal issues change should be monitored and reviewed regularly. In the context analysis the needs and expectations of workers and other interested parties are important.
- consider as part of their external issues, the context in which the organization is developing its activity (economic activity, economic and financial situation, sector, supply chain requirements, international commerce activities), the social and environmental requirements (legislation, conventions, voluntary agreements subscribed to by the organization), their location, among others.
- consider as part of their Internal issues, all the key issues raised by workers and other interested parties that may impact the operator's internal activities, their structure and operational ways (sites, work shifts, demography, competences available), their organizational culture expressed in their mission, vision, objectives, values, diversity, and other factors, their management (management systems, consultation and participation policies and practices, general planning, distribution of resources, etc.)
- use different methodologies to analyse their external and internal issues, for example analysing strengths, weakness, opportunities and threats.

Because hazards have the potential to cause social and environmental negative impacts, hazards should be identified before the risks associated with them can be assessed. For that reason, the expectation is to implement effective controls according to the hierarchy of controls.

The operator when performing a hazard identification should proactively identify all sources, situations or tasks and their combinations arising from their activities that have the potential to cause negative impacts. Also, should consider any hazard that could arise from reorganization or changes in processes, changes in knowledge, and potential emergency situations.

The operator should establish specific hazard identification tools and techniques.

The analysis should be reviewed or revised at regular intervals, as example every 2 years.

The results of the analysis should be made available to clients, personnel, suppliers, and other stakeholders.

The summary should contain the main key outcomes and a matrix of the monitoring and management plan and be made available to clients, personnel, suppliers, and other stakeholders. The summary should include the contact details of a dedicated member of staff in cases where stakeholders with a duly demonstrated interest would like access to additional information, as well as:

1. Who was engaged (# and demographics of interviewees)
2. Who did the assessing (expertise and competence)
3. What was the objective/scope of the assessment
4. What significant risks are present to environment (air/water/soil/biota) and to people (workers, contractors, communities, vulnerable subgroups)
5. What contextual issues pose challenges to operations (conflict, resource shortage e.g. drought, labour unrest, political instability, infrastructure issues e.g. bad roads)
6. How determinations were made regarding the presence or absence of indigenous and other protected groups

The operator should develop a plan with measurable objectives and actions (preventive and corrective) to mitigate the identified impacts and to manage or enhance the natural resources.

The operator should also consider including a mechanism to continuously identify impacts of human rights on workers, the environment, and communities in their Risk and Impact Assessment.

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Criterion 1.3 – The implementation of the Sustainability system is systematical and risk based

1.3.1 Standard Operating Procedures are developed

Implementation Guidance:

The expectation is that the operator should be organised in a systematic way, so that management processes and other business processes interact to achieve the intended outcomes in terms of sustainability and provide effective direction for an organization's response to changing external and internal issues regarding sustainability. A system is considered established and maintained when its elements have been demonstrated as implemented and once established, the system continues to operate.

Processes of checking, corrective action and management review are designed to ensure active maintenance of the system focused on achieving the intended outcomes of the system.

The level of complexity of the system will be dependent on the context of each operator in relation to size, structure, complexity, and its activities.

Examples of processes that are part of the system include:

- assessment of social and environmental risks (including assessment of specific groups of vulnerable people, such as young workers, temporary workers, migrants, external workers from other companies, etc.);
- planning of action necessary to eliminate or reduce risk;
- support and training of workers;
- consultation and participation of workers and other interested parties;
- preparation for emergencies;

- documentation management;
- performance evaluation,
- investigation of incidents,
- implementation of corrective actions and;
- continuous improvement measures.

The operator should develop documented standard operating procedures (SOP) for all their activities, including mill and agricultural activities within the unit of certification.

The SOP should at least:

- Where applicable, define short, medium and long-term objectives.
- Clearly define the scope of the SOPs.
- Define the activities and responsibilities.
- Be aligned to comply with quality standards.
- Define the measures in place to mitigate any adverse impacts on the environment.
- Ensure health and safety conditions.
- Be available and used during trainings activities.

The operator should at least:

- Implement operational controls and should evaluate them on an ongoing basis to verify effectiveness.
- Review operational controls on a periodic basis to evaluate ongoing suitability and effectiveness and necessary changes should be implemented.
- Evaluate new changes in the operations before their implementation, in relation with hazards and risks associated, and considered all preventive measures needs like training needs.
- Established and implemented operational controls as necessary to eliminate, to reduce and control risks for all operational areas and activities into the workplace by workers, contractors, other external people and include physical devices such as access controls, instructions, alarms, signage, etc.

The operator should periodically update the SOP and have the latest copy available on-site.

The SOPs should be reviewed and approved by the management area.

The SOPs should be communicated to the relevant personnel and/or workers for implementation. The operator should keep record of these communications.

The implementation of the SOPs should consider:

- A communication mechanism to include all personnel and workers, and thus ensuring that the information is well understood by them.

- The Manager or leader of each department should communicate the information to their team.
- In each area of operations, records of the trainings undertaken are kept.

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1.3.2 Management Plans are developed and implemented

Implementation Guidance:

The operator has a management plan in place, based on the Risk and Impact Assessment (c.f. indicator 1.2.2), considering all the activities included in the SOPs and the mapping of stakeholders.

In the case of environmental and social risks, the plan should be aligned with the results of the Environmental and Social Impact Assessment (indicator 1.2.2).

The following management plans should be also considered (non-exhaustive list):

- An integrated pest and disease plan
- An Agrochemicals management plan
- An Agronomic management plans
- A Health and safety plan
- A management plan of high conservation values
- Waste management plan
- Stakeholder management plan
- All management plans shall consider a continuous improvement mechanism which is updated according to the risk's progress in mitigating or eliminating them.

The operator should be able to demonstrate that the management plans were developed in a social dialogue setting with workers and their representative. The main goal of social dialogue is consensus building and democratic involvement by involving the workers in search for correct solutions. It resolves economic and social issues, encourages good governance, advances social and industrial peace and stability and boosts economic progress.

Evidence of this may include, but is not limited to:

- Copies of meeting invitations
- Records of meeting minutes
- Signed copies of the management plan by workers' representatives.

Attendance lists

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1.3.3 Systems in place to demonstrate compliance with applicable laws, international conventions, commitments, rights & other requirements

Implementation Guidance:

The operator should have personnel in charge of managing and documenting a system or matrix which identifies, updates, tracks and verifies compliance with applicable laws, rules and processes for its operations, including mill and agricultural activities. The personnel in charge should be aware of the importance of ensuring, promoting and facilitating compliance. This can be through:

- Implementing compliance policies.
- Educating employees on those policies.
- Identifying issues that may turn into potential violations, ensure there are procedures in place to address the issues.

The operator should have in place a compliance program, which demonstrates the following:

- It should integrate the topics about Health & Safety, environmental and social responsibilities, employment law, financial accounting, tax law and other relevant topics.
- Screening and evaluation of employees, vendors and other agents.
- Communication, education and training on compliance issues.
- Monitoring, auditing and internal reporting systems.
- Process to carry out investigations and remedial measures.

Applicable laws include, but are not limited to the following areas:

- Waste, pollution & environmental protection,
- Nature conservation & natural ecosystems,

- Water quality, extraction and disposal,
- Energy & GHG emission,
- Labour conditions, including occupations H&S and living conditions of employees, who live within the unit of operation.
- Operational licenses,
- Social benefits/obligations
- Human rights and traditional community rights
- Land and water title and -use rights,
- Soil protection
- Agrochemical management
- Agricultural practices
- Transportation

The operator should also monitor compliance with ILO Core Conventions and any other ILO conventions ratified by the country of operation.

Note that in some cases, the Standard can go beyond the national laws and in such cases, the Standard shall prevail. If the Bonsucro Standard and national law conflict, the operators should seek ways to honour the principles of the Bonsucro Production Standards wherever possible; Where the domestic context renders it impossible to meet this responsibility fully, operators are expected to respect the principles of the Bonsucro Production Standard to the greatest extent possible in the circumstances, and to be able to demonstrate their efforts in this regard.

The operator should carry out a periodic due diligence for contracted third parties, recruitment agencies, service providers and contractors to ensure their compliance with the standard, processes, policies, law and rights.

All legal document systems should include a continuous improvement mechanism, which details when changes occur in the regulation or law, staying abreast of any changes.

In terms of land rights, the operator should demonstrate its rights to use the land within the unit of certification. Regarding land titles and natural resources usage, the operator should be able to show the relevant permits allowing the extraction of surface or groundwater. In this case, the operator should keep records of the volumes of water extracted.

In case of land leasing, the operator should ensure they have the relevant documentation allowing the leasing of the land such as legal documents (e.g. lease papers) granted or signed off by the relevant government authorities of the country.

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1.3.4 Use of land and resources does not diminish rights of other users without their FPIC

Implementation Guidance:

Free, Prior and Informed Consent (FPIC) is a “*collective human right of Indigenous Peoples and Local Communities (IP/LC) to give or withhold their consent prior to the commencement of any activity that may affect their rights, land, resources, territories, livelihoods, and food security.*” (Accountability Framework, 2019¹²)

- **Free:** Consent is given by the affected IP/LC voluntarily without coercion, duress, or intimidation.
- **Prior:** The consent is given before the specified activity is authorised or commenced.
- **Informed:** The consent is given after the IP/LC have received the relevant, timely, and culturally appropriate information necessary to make a fully informed decision.
- **Consent:** The IP/LC take a collective decision to grant or withhold approval of the specified activity

Overall, FPIC is a:

- Process: series of information exchanges, consultation, internal deliberation, and negotiation steps
- Outcome: a record that specifies what was or was not agreed to

FPIC is required prior to any activity that may affect or impinge on IP/LC rights, lands, resources, territories, livelihoods, or food security, specifically the operator should follow the FPIC process in the following cases:

- **Prior to any developments or operations on hitherto undeveloped or uncultivated land:** FPIC is required prior to initiation or expansion of activities that may impinge on IP/LC rights, lands, resources, territories, livelihoods, or food security, including:
 - Acquisition of interests in land or natural resources
 - New production, processing, or harvesting operations.
 - Significant expansion of any of the above
 - Issuance or adoption of any project approvals or legislative or administrative measures enabling any of the above, such as allocating or designating land or natural resources for such purposes or granting permits, licenses, or approvals.

¹² https://accountability-framework.org/wp-content/uploads/2020/03/OG_FPIC-Mar2020.pdf

- **Ongoing land conflict:** Where there is land conflict between the operator and an IP/LC (as identified in the stakeholder mapping conducted as part of indicator 1.2.1), the operator should halt any efforts to acquire or gain control of land, resources, or territories related to the conflicts until they are addressed through an FPIC process.

The operator should be able to demonstrate they have legitimate rights to use the land where the unit of certification is located.

The operator should be able to provide evidence that Free, Prior, Informed Consent is being granted by all Indigenous Peoples and/or Local Communities affected by the establishment of plantations within the unit of certification and their continuous operations.

FPIC and the associated grievance mechanism in place should be implemented according to the norms of conduct, communication mechanisms available and should be available in the language(s) spoken by the communities.

When conducting an FPIC process, the Operator should consider the following steps (number of steps and order is not fixed and must be tailored to each case):

- A participatory analysis of the risks and effects of operations on communities' rights in the area of influence of the mill and/or unit of certification.
- Identification of right holders, decision makers and representatives, including vulnerable, minorities' and gender groups.
- Conducting participatory mapping of land and resource rights in and surrounding the unit of certification, including all legal and customary rights as well as any existing and historical conflicts or disputes over these rights.
- Consultations and negotiations with affected communities where they are informed of activities and risks and are able to make fully informed decisions. This must include the participation of all parties such as vulnerable, minorities' and gender groups. These meetings must also be held at times and locations agreed on by the communities.
- Formalising decisions, terms and agreements resulted from the consultations and negotiations.
- Developing and implementing an action plan of agreed activities on which consent has been given (e.g., providing jobs for community members)
- Participatory monitoring and verification of the implementation of agreements
- Setting up and implementing a grievance mechanism to identify and address any concerns and issues raised.

The operator should keep records showing that:

- The FPIC process was conducted prior to any acquisition and/or development of the land where the unit of certification is located.
- All affected communities were engaged in an FPIC process through representatives chosen by the communities. This includes all vulnerable, minorities' and gender groups.
- Communities were informed and aware of their right to withhold consent at any point and the FPIC process respected their norms, customs and values including their decision-making processes.

- Communities were fully informed, in forms and languages that are understandable to them, on all relevant information pertaining to development of the unit of certification
- The communities' fundamental human rights were respected and safeguarded, and at no point communities felt coerced or manipulated.

The final agreement documents between the company and affected communities should be signed by all parties and specify what was agreed and/or was not agreed to as well as elaborate on the terms and conditions under which consent has been given. This includes the nature of agreed activities, conditions placed on its implementation, monitoring and evaluation plans, mechanisms for receiving and addressing any grievance or issues, sanctions for violations of agreements and provisions for independent verification, among others.

For further information: *Accountability Framework - Operational Guidance on Free, Prior and Informed Consent (2019)* https://accountability-framework.org/wp-content/uploads/2020/03/OG_FPIC-Mar2020.pdf

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1.3.5 - Payment for cane deliveries are made according to agreed contract

1.3.6 - Cane supply contracts contain sustainability requirements.

Implementation Guidance:

The operator should ensure the presence of contractual agreements with the parties involved in the supplying of sugar cane. There should be contractual agreements with and between producers, shippers, field workers, inputs suppliers, labour contractors and agencies etc.

Contractual agreements should consider the rights of parties, laws and regulations, agreements, payment, terms, benefits, social and environmental responsibilities and any additional national regulation. This should also include the compliance policies mentioned in the indicator 1.3.3.

The contractual agreements with **workers** must include benefits and obligations of the contracting and contracted party and should clarify the need of provision of water, PPE, sanitary services and others to all the workers (For more reference see 2.2.1).

The contractual agreements with suppliers or subcontractors should include human rights, the social and environmental regulations the operator is committed to, in order to ensure compliance with these factors.

The operator should appoint a department in charge of reviewing the contractual agreements and follow up on any legal conflict or claim which might arise after the contracts have been signed.

The operator should implement a due diligence process periodically to validate and confirm the contractual agreements between the parties are carried out without any conflict of interests, violation to the ethical conduct, harassment, abuse to the law, bribery and/or corruption.

For more reference about the conflict of interest, bribery and/or corruption, the operator should have in place a policy outlining the guidelines and processes about it (See indicator 1.1.1 for more reference)

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Criterion 1.4 – Systems for Monitoring and Evaluation (M&E) and Grievances are implemented

1.4.1 Monitoring mechanisms are in place to ensure that corrective actions are implemented, and management review conducted

Implementation Guidance:

Measuring and monitoring sustainability performance and sustainability management requires that the operator have a systematic approach.

The operator should perform evaluations on meeting their plans, objectives and targets, check compliance with applicable legal requirements and other requirements.

- the effectiveness of operational controls,

- the performance of the sustainability management and other processes such as provision of resources, competencies, stakeholder engagement particularly workers consultation and participation, among others.

The operator should also evaluate the need to introduce new controls.

The operator should plan what, where and when should be measured, the measurement methods to be used, and the competences needs to perform the measurements.

The operator should analyse the results of measurement in order to identify areas requiring improvement.

The procedure for the annual internal audit process should be documented.

Any non-conformities found as part of the internal audit result in direct corrective actions to be taken should be documented, including dates and descriptions of actions taken to resolve them.

The outcomes of the internal audits and all actions taken to correct non-conformities should be subject to management review at least annually. Where management plans and systems have shown inadequacy revisions/adjustments should be made if needed.

The internal audit should be carried out by the operator in all of the unit of certification and progressively in the whole cane supplying area, considering the following factors:

- The audit is undertaken by qualified personnel: the company may opt for using a third-party auditor for this purpose, at least until their own staff has achieved the necessary qualifications (see Bonsucro Certification Protocol section X.X for auditor qualification requirements as a recommendation for internal staff used for the internal audit process).
- Ensure that all the documented evidence for each criterion is in place (if applicable).
- The operator has trained all their personnel on the standard and they have specifically trained personnel for areas which require technical expertise.
- The outcomes of the audit are reported relevant stakeholders, the non-conformities are subject to management review and records of progress to correct them are documented.
- Derived from the non-conformities, there is a plan to address them, mentioning the timeframe to resolve them, the person or area in charge and the main actions to be taken.
- Verification will take place according to timeframe to ensure all non-conformities have been closed out.
- There is also a continuous improvement plan for all the gaps identified and this entails future actions to take to prevent them from occurring again. The plan should include timing and responsibilities for implementation.

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1.4.2 Land & water claims that are legitimately contested by other users

Implementation Guidance:

There are various means by which legal, extra-legal, community based, and other socially appropriate protocols may demonstrate that the settlement of the dispute has been reached. A recognised judicial or non-judicial grievance mechanism can be a national or international court of law, an international grievance mechanism such as the OECD National Contact Point, or a mechanism through investors or MSIs including the grievance mechanisms of international lenders (E.G. IFC CAO).

Where judicial rulings benefit the operator to the detriment of traditional communities, the operator should establish engagement processes with displaced populations, implement a livelihood impact management plan, track livelihood outcomes and mitigate and/or reverse all adverse impacts of displacement.

The operator should ensure that any legal process taken does not violate any human right and/or living conditions of the claimants. Operators should also make use of a printed communication mechanism which presents the rights of the claimant and the defendant and guarantees both parties understand their rights and the process.

Before achieving a judicial process, the operator should ensure there is a verbal communication ensuring the other party's position, the situation and main steps to be taken in the process, the operator should also use non-judicial measures to reach an agreement.

The operator should identify any conflicts related to land, water usage and production which impact the communities, area of influence or other relevant stakeholders. This should be followed by a monitoring plan and record keeping of the grievance and claims mechanism.

The operator should have in place the documents which prove the legality of water use. In case where there is a dispute related to water usage, the operator should have achieved a solution or agreement for the situation before a judicial mechanism is opened.

The operator should operate legally having the correct business licenses and permissions.

The operator should have systems to ensure that complies with all relevant land rights

In case displacement is needed, the operator should make sure a livelihood assessment is undertaken prior to any final conflict resolution and relocation. This assessment should be implemented by a specialist and it should contain the socio-economic situation, the education, living conditions, main economic activities and other relevant information which may provide the operator with the relevant information to address the compensation and remediation mechanism to the affected community.

The operator should review the agreement 169 of ILO, which deals with issues of indigenous people and tribal groups¹³.

Also see indicator 1.3.4 on FPIC and P4 for land and water assessments, to help prevent future conflicts in the first place.

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1.4.3 - Grievance mechanism for communities is in place

Implementation Guidance:

The operator should have a grievance mechanism in place which describes how it operates, clearly explaining the process of claim, concerns and problem resolution, the rights of claimants, a policy of compliance to human rights, social and environmental aspects, and other relevant details which make the tool operable.

The operator should implement continuous improvements measures to adapt and make more efficient the grievance mechanism, based on past learnings and experiences.

The operator should have personnel in charge of ensuring any claim or conflict is addressed appropriately. The personnel should also receive training on the compliance policies, the FPIC process and all relevant topics related to their scope of work.

A grievance log should be published annually, summarizing all complaints fielded by the operation (anonymizing complainants and defendants as appropriate), identifying strategies to expand access/buy-in to the complaint mechanism, and describing interventions planned to address potential root-causes of existing complaints in a systematic manner.

The operator should have a policy mechanism in place linked to the compliance policy to respect human rights, to ensure there will be no reprisals or intimidations over any situation, claim, and/or problem raised.

¹³ International Labour Organization (ILO), *Indigenous and Tribal Peoples Convention, C169*, 1989, available at:

https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169

The personnel in charge should have a plan to follow up claims. This should be updated regularly with:

- The status of progress.
- Documents.
- Timeframe (E.g., it should clearly define the waiting time for a response, a standard time is between 15 to 30 days)
- Outcomes of the resolution.

Alongside the factors mentioned above, a communication mechanism and engagement plan should be integrated to liaise between the operator and the communities or external third parties. This should be available in the appropriate language(s), respecting the customs of local groups and should be inclusive of the needs of indigenous or vulnerable groups.

In conjunction with the mapping of stakeholders mentioned in the indicator 1.2.1, stakeholders needed to communicate and engage with as part of the grievance mechanism should be identified.

The documents verifying evidence of progress can be initial agreements or commitments between the operator and the stakeholder, those provided by the stakeholder or any other which gives more details to help understand the root cause of the problem.

The operator should keep records of all relevant documents which provide evidence or backup of the claim or conflict. Documents should be filed for a determined period to record the historical background of the situation.

The grievance mechanism should not replace any judicial or non-judicial forms of remedy, it should rather be considered as a tool for immediate problem solving both for the companies and communities.

In case the operator and claimant decide to escalate the situation by using a judicial mechanism to solve the problem, the operator should ensure the claimant knows and understand the implications of a judicial approach via a written communication method. Additionally, prior to starting any judicial process, both parties should be aware of any relevant and applicable local and national laws, the timeframe of response and the level of involvement expected in the process.

In case the operator, as a result of the risk and impact assessment, has identified risks related to land acquisition, land usage and/or use of common natural resources which might affect customary rights, land rights and/or other relevant impacts which signify a risk in the relationship between the company and the local communities, the operator should include and escalate the risks during the implementation of the FPIC assessment, providing evidence of having consulted key stakeholders, indigenous and/or vulnerable groups in order to achieve consensus or an agreement between parties (See indicator 1.3.4). The claims, concerns and problems resulting from the FPIC consultations should be attended following the grievance mechanism guidelines.

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Principle 2 – Respect Labour Rights & Occupational Safety and Health Standards

Criterion 2.1 – To provide a safe and healthy working environment in workplace operations

2.1.1. Main health and safety hazards and risks are identified, documented, assessed, communicated to workers, and mitigated

Implementation Guidance:

Occupational Screening should cover risks associated with job start-up (e.g. risks associated with inadequate acclimatization), job duration (e.g. fatigue, chemical exposure, ergonomics, injury risks to workers in transportation to/from job sites, risks associated with hand planting seeds and harvesting of sugarcane, risks from driving heavy equipment and laying irrigation material), and job insecurity (e.g. hiring for one task and being reassigned to others without proper screening, training or modified rest regimes).¹⁴ The operator should also evaluate risks due to long working hours.

Environmental Health Screening should cover all relevant climatic conditions affecting worker welfare including heat and humidity, air and water quality as well as risks such as altitude sickness, malaria prevalence, emerging infections (e.g. SARS-COV-2), insect and snake bites. Where laws and regulations are sufficiently protective, operators shall adhere to law and make available assessment and monitoring reports and relevant data (see, e.g. Brazil's programme for prevention of environmental hazards, Portuguese acronym PPRA). Where regulations do not result in auditable environmental analyses, operators should conduct assessments in line with global best practice.

In evaluating heat stress risk, operators should either employ National Institute for Occupational Safety and Health (NIOSH) methodology¹⁵ for rest times associated with Wet bulb globe temperature (WBGT) heat indices or adhere to the rest schedule provided in guidance. Some elements to be considered:

- A worker performing heavy work at 40 °C temperatures should work for no more than 20 minutes with 40 minutes of rest.
- A worker performing moderate work at 42 °C should use extreme caution. The risk for heat injury is high in this situation and the worker should work no more than 15 minutes with 45 minutes of rest.

¹⁴ The term "occupational health screening" is commonly used in the UK. In the US, NIOSH/CDC refer to "Health Risk Appraisals at the Worksite" to include occupational risk screening.

¹⁵ <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf>

NIOSH rest schedule¹⁶:



Note that while seed cutters are listed as having an 8-hour day, they should stop the most physically demanding part of their labour (the cutting) after 6 hours. The other 2 hours can be utilised for lighter work (bundle seed packages, place them in bags, etc) Medical screening, including pre-employment medical screening, should not be used to discriminate against and / or exclude individuals experiencing ill health from employment, but rather to assure that the individual meets the inherent requirements of the position, and identify chronic illnesses that threaten their long-term health status under the relevant working conditions. Workers with identified chronic illnesses should be counselled and referred for medical intervention; work-related illnesses and injuries should be detected and monitored, and hazard control measures should be updated and monitored for effectiveness. Worker health status should be preserved in order to allow them to remain economically active (provide for themselves and their families) to the extent possible and reassigned to alternative positions as needed.

Where regulations do not result in detailed assessment reports, operators should assess occupational risks in line with the recommendations ILO Convention 184¹⁷.

Medical Screening should include filling out a questionnaire about the occupational and medical history of the worker and should be conducted once the worker has been hired. A physician should review the questionnaires and conduct a physical examination. Each participant should also be offered a hearing test (audiogram), breathing test (pulmonary function test), a tuberculosis screening, and blood and urine tests, accordingly to the workers job duties. All medical records should be reviewed by a physician with expertise in occupational medicine and kept for at least 5 years.

¹⁶ <https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/2017-127.pdf>

¹⁷ https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C184

Employers should notify the worker about the results following the medical screening examination. The results may not be used by the employer in anyway which might be discriminatory to the worker. If there are any urgent findings on any of the tests, it will be communicated to the worker immediately and recommendations for follow-up will be provided.

Pre-employment medical examination (also referred to as a pre-placement examination) strives to place and maintain employees in an occupational environment adapted to their physiological and psychological capacities. The goal of the pre-employment examination is to determine whether an individual is fit to perform his or her job without risk to himself or others. It is expected that the examiner is required to have detailed knowledge of both working and health conditions.

Identification: The operator should have checklists describing the types of potential hazards to consider. To record the initial hazard identification, the operator should specify the work area, process or equipment being evaluated. Additionally, the checklist should include at least Task/Activity/Process Hazard(s).

Assessment: To assess the risk arising from a hazard, the operator should consider the adequacy of any existing controls. This process should be the result of worker engagement. Example of inputs to processes for assessing risk are:

- the proximity and scope for hazardous interaction between activities in the workplace,
- human capabilities,
- behaviour,
- competence,
- training and experience of those who carry out hazardous tasks,
- toxicological data,
- epidemiological data and other health related information
- proximity of other people like visitors or contractors who can affect or be affected by work activities,
- the effectiveness of existing controls,
- the potential for failure of plant and machinery components and safety devices,
- details of access to, and adequacy/condition of, emergency procedures/escape plans/ equipment/escape routes/communication,
- external emergency support, monitoring data related to incidents associated with work activities,
- details of previous unsafe acts,
- any requirements which prescribe how assessment of risk has to be performed or what constitutes an acceptable risk,
- sampling methods to determine exposure, or permissible exposure levels.

The operator should take specific measures for young apprentices, pregnant and nursing women and aged workers, where appropriate. The operator should ensure equal treatment for workers facing similar risks.

The factors influencing the risk are:

- the level of exposition to the hazard
- how the workers are exposed (breathing vapour, skin contact)
- how severe the effects under the conditions of exposure are?

The operator should:

- Design and implement measures to ensure that risks are eliminated, prevented, or adequately mitigated.
- The plan should be documented, implemented, maintained, and reviewed when necessary but at least every year (see also 2.1.2 below).

In order to have an impact upon the identified risks, the operator should consider the following measures in the priority order:

- Elimination of the risk;
- Control of the risk at the source to prevent the occurrence of risk;
- Minimization of the risk by designing safe working environment and implementing training; and
- If the risk cannot be eliminated, implementation of preventive measures (provision and use of personal protective equipment, access to first aid, etc).

The operator should appoint specific personnel responsible for Health and Safety screenings and the plan to minimise identified risks.

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2.1.2 Health and safety risks are managed through implemented and enforced plans

Implementation Guidance:

The operator should implement a Health and Safety Management System which covers:

- the health and safety in the work organisation and plan in the mill and farms within the unit of certification
- the planning process for accident and ill health prevention
- the line management responsibilities and
- the practices, procedures and resources for developing and implementing, reviewing and maintaining the occupational safety and health plan.

The operator should plan how to take action to address hazards, legal and other requirements, potential emergency situations and other risks derived from their operation using its OH&S management system processes, and, additionally, determine the effectiveness of the actions taken.

In doing this, the operator may take into account:

- the design and maintenance of the OH&S management system,
- the assessment of risks related to the OH&S management system,
- the hazard identification,
- the risk assessment, including both the overall process and specific assessments related with risks derived of certain tasks like the use of hazardous substances, or risks related to other kind of factors such as ergonomic, or psychosocial risks or risks to specific groups of workers like temporary employees, pregnant women.

Plans are likely to include explicit protocols for preventing occupational illness and injuries, inclusive of PPE replacement schedules and reviews of PPE functionality (e.g., do these gloves accidentally increase the risk that a cane cutter's hand will slip during harvesting resulting in injury to the leg while preventing injury to the hand), nutrition plans and transportation safety plans. Plans for preventing environmentally linked illnesses are likely to include explicit protocols for, e.g., malaria control, worker rest schedules

An effective management structure and arrangements should be put in place for delivering the plan. Safety and health objectives and targets should be set for all managers and employees for eliminating hazards and reducing risks.

The critical safety and health issues that should be covered by the Plan will depend on the assessment of health and safety risks made by the mill and farms. The plan could include the following elements:

- design, provision and maintenance of a safe place of work for all employees.
- design, provision and maintenance of safe means of access to and egress from each part of the workplace.
- design, provision and maintenance of any article, plant, equipment or machinery for use at work in a safe manner, provision of systems of work that are planned, organised, performed, maintained or revised, so as to be safe, particularly for safety critical process operations or services, including transportation safety control strategies.

- performance of ongoing hazard identification and Risk Assessments, and compliance with the general principles of prevention as set out in the national legislation or line with global best practices.
- provision and maintenance of welfare facilities and PPE.
- preparation of emergency plans and the provision of first-aid training.
- reporting of accidents and dangerous occurrences to the Authority and their investigation.
- provision and dissemination of safety and health information, instruction, training, and supervision as required.
- operation of safety and health consultation, employee participation and safety representation programmes.
- review and keeping up-to-date the safety and health plan (or policy if there is a policy in place) in order to prevent adverse effects on the safety and health of employees from changing processes, procedures and conditions in the workplace.
- appointment of people responsible for keeping safety and health control systems in place and making them aware of their responsibilities.
- establishment of monitoring arrangements, including safety and health inspections and audits, which should be used by the employer to ensure ongoing compliance with legal duties, responsibilities, and controls.
- development of in-house safety and health competence.
- employment of external safety and health experts as required.
- use of standards, Codes of Practice, guidelines, or industry practices.
- co-operation required from employees and disciplinary procedures for non-compliance.
- For effective implementation, mills and farms should develop the capabilities and support mechanisms necessary to implement the safety and health plan, objectives, and targets. All staff should be motivated and empowered to work safely and to protect their long-term health, not simply to avoid accidents.
- Give preference to agrochemicals application methods with the lowest health and safety risk.
- Operators should read, understand, and follow product label directions for safe mixing, application, and disposal; use trained personnel for critical operations (e.g., mixing, transfers, filling tanks, and application).
- Insist that correct PPE (e.g., gloves, overalls, eye protection) for each exposure route listed in the Safety Data Sheet (SDS) be worn at all times when handling and applying pesticides.
- Mandate that any mixing and filling of pesticide tanks occur in a designated filling area. This should be set away from watercourses and drains.
- If on concrete, water should be collected in a separate sump and disposed of as a hazardous waste.
- Ensure that spills are cleaned up immediately using appropriate spill kits; spills should not be washed away into watercourses or drains.

Wherever possible, risks should be eliminated through the selection and design of facilities, equipment, and processes. If risks cannot be eliminated, they should be minimised by the use of physical controls and safe systems of work and the provision of PPE.

The mill and farms should measure, monitor, and evaluate safety and health plans performance. Performance can be measured to reveal when and where improvement is needed.

Active self-monitoring reveals how effectively the safety and health plan is functioning. Self-monitoring looks at both hardware (premises, plant and substances) and software (people, procedures and systems, including individual behavior and performance). If controls fail, monitoring should find out why they failed, by investigating the accidents, ill health, or incidents, which could have caused harm or loss.

Employees should know the Plan and those in charge of the implementation should be trained.

There should be a responsible person in charge of implementing and enforcing the plan

- Transportation safety control strategies (safe vehicles, worker seating, and safe storage of farm equipment) should be done in alignment with ILO Safety and Health in Agriculture publication Section 15.3¹⁸.
- In evaluating heat stress risk, operators should either adhere to the rest schedule provided in guidance (validated specifically for the sugarcane production context), employ NOISH methodology for rest times associated with WGBT and/or heat index, or comply with sufficiently prescriptive national legislation.
- Fatigue risks should be managed in recognition of the multifaceted health risks incumbent with fatigue (see: <https://www.cdc.gov/niosh/topics/workschedules/2019abstracts/AgForestryFish2.html>). Basic screens for fatigue risk are available (see: <https://nasdonline.org/872/d000705/sleep-deprivation-causes-and-consequences.html>)
- Medical and occupational risks should be managed in alignment with ILO 184 https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C184

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¹⁸ https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/normative_instrument/wcms_161135.pdf

2.1.3 Right to water and sanitation safeguards are designed implemented and enforced

Implementation Guidance:

Sanitation in the worksite refers to access to water for hand washing and skin cooling, as well as access to toilet facilities.

The operator should provide cool (cooler than ambient air), safe drinking water and sanitation to all workers in close proximity to their workstations, taking into consideration the mode of transport available to them.

Recommended water consumption depends on heat exposure and workload. This can be supplemented with a drink electrolyte solution.

Water quality (in both fields and mills, with accommodation addressed separately) should be tested regularly and meets WHO standards for chemical, and microbial/pathogenic standards. Routine surveillance includes ongoing monitoring of reportable diseases, outbreak detection, long-term trend analysis, geographic [mineralization of water] and demographic [human pollution] analysis and feedback to water authorities¹⁹.

Sufficient, safe, acceptable and physically accessible drinking water should be provided to all employees at the workplace.

Water should be located at a convenient distance for employees and available at all times to provide for all drinking, sanitation and hygiene needs.

Water should be free of charge for employee use at the workplace.

- Location, cleaning, recharging and disinfection of drinking water stations: All drinking water fountains, water coolers, or other storage vessels/sources should be positioned in appropriate clean areas and cleaned, recharged and disinfected on a regular basis to ensure that all risks of contamination and infection are avoided. Drinking water should be taken from the storage vessel/source in such a way that hands, cups, or other objects cannot contaminate the water. Drinking water stations should be regularly disinfected and at an increased frequency if heavily used.
- Drinking water testing: Drinking water and drinking water facilities should be examined on a regular basis by appropriately trained and qualified staff to ensure that only water that is safe to drink is consumed by the users. Drinking water samples should be taken regularly, as required, or immediately upon changes in environmental conditions, outbreak of waterborne disease, or an increase in incidence of waterborne diseases.

The operator should ensure that the sources of drinking water are protected from chemicals/micro-biological spillage.

¹⁹ [WHO Guidelines for Drinking-water Quality \(fourth Edition\) \(2011\)](#)

Those responsible for staff training should be well versed in local water quality standards as well as the WHO's Guidelines for Drinking-Water Quality – Fourth Edition²⁰ with experience and skills in observation, sampling, and water quality analysis.

- Toilet/urinal provisions: An appropriate number of properly constructed. toilets and urinals should be provided at a rate of two toilet seats and two urinal facilities per forty-five male workers and three toilet seats per fifty females. These should include adequate enclosures to provide gender separation, lockable doors to ensure personal safety and privacy, adequate. lighting providing a nominal illumination level of 200 lumens per square meter. (lux), protection from weather, and exclusion of insects and vermin in mills and living quarters.

The drinking water provided should comply with the microbiological, physical and chemical parameters and other characteristics established in applicable country legislation or in their absence, the following critical parameters defined by the World Health Organization are a guideline:

Parameter	Value
Faecal coliforms	Zero
Chlorine residue or residue from other treatment disinfectants	0.2 to 0.5 mg/L
Nitrates	10 mg/L as nitrates
pH	6.5 to 8.5
Sodium	20 mg/L
Sulphates	250 mg/L

²⁰ <https://www.who.int/publications/i/item/9789241549950>

Turbidity	Less than or equal to 5 NTU (nephelometric turbidity unit)
Total Dissolved Solids (TDS)	300mg/L, unless national law sets a different legal limit

A person should be appointed as responsible for the Water, Sanitation and Hygiene (WASH) safeguards.

Operator should determine the current state of access to WASH (provisions within the mill and farms operation).

Operator should determine the current level of WASH provisions at specific premises, such as the sugar cane plantation where there may be gaps of compliance providing insight into the areas that should be addressed immediately. In order to prioritize the gaps, it could be useful to use the following dimensions:

- Severity of risks associated with inaction; and
- Ease of addressing improvement needs.

After the gaps have been prioritized, the mills and farms should develop an action plan that addresses the gaps and compliance with local and national laws and regulations related to WASH practices.

Mills and farms are encouraged to go beyond simple compliance by developing internal practices that could be considered leading solutions.

Annual internal auditing or at a frequency determined by previously conducted risk assessment, is recommended to ensure achievement and effectiveness of actions taken within the plan.

Toilets and urinals should be designed and constructed to ensure the safe removal of urine and excrement, with collection and disposal in ways that do not create a danger to health or the environment.

Toilets should be designed taking into account requirements of local customs, religious and social traditions and specific gender needs. This requires inter alia appropriate provisions for washing and wiping, pedestal and squat toilets and, if necessary, a mix of provisions. Facilities should be equipped with potable or non-potable water at a standard acceptable for cleansing hands.

All washrooms should contain handwashing basins with soap and potable or non-potable water at a standard acceptable for cleansing hands. If non-potable water is used for washing it must be clearly communicated at the point of use.

Showers and bathing facilities: Where the nature of the work necessitates showering before leaving the workplace (e.g. work involving contamination hazards or dusty, dirty, hot or strenuous workplaces), all showers and bathing facilities should be equipped appropriately. One shower should be provided for every ten employees of each gender, or a numerical fraction thereof, who are required to shower during the same shift. Body soap or other appropriate cleansing agents should be provided convenient to the showers.

Regular training and awareness-building processes should be implemented for all employees. Special emphasis should be given to employees or other staff involved in food preparation and those exposed to specific health risks such as cleansers and mobile workers.

Appropriate PPE should be provided to all those involved in the cleaning and maintenance of toilet washrooms and associated facilities. These individuals should wear PPE, such as gloves and non-slip rubber soled shoes, at all times when cleaning urinals, toilet bowls, showers, hand basins, mirrors, and other associated facilities.

The operator should put in place a water management system to reduce the risk of water diseases, taking actions like reviewing procedures for sickness absence and what to do in the event of an outbreak of a communicable disease in the workplace, including a followed up with the water supplier to check how water quality in the water system is monitored.

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2.1.4. Appropriate personal protective equipment supplied to and used by all workers free of charge

Implementation Guidance:

PPE usage and training based on activity type are identified in the risk assessment (Indicator 2.1.1)

The operator should ensure that:

- Clear responsibility has been defined for issuing PPE with the ultimate obligation that required, approved and appropriate PPE is issued for free to workers:
 - If workers bring their own PPE, the operator should allow them only if they have been found to be adequate.
 - workers should only use the PPE on premises to reflect reasonable wear and tear.

- Companies should provide replacement of damaged or worn-down PPE when needed, also free of charge to workers. Workers can be expected to signal this with sufficient time and companies should regularly check the state of workers' PPE.
- PPE is appropriate by providing effective protection against the hazard it intends to protect, and by being adequate given the working environment (e.g. if work is performed in hot conditions), and in terms of comfort of the workers, size of the equipment (e.g. ear plugs, goggles, security shoes, gloves, masks, leg protection, etc.).
- PPE is available (for example by verifying the storage of PPE) and that PPE are in good conditions.
- PPE is properly looked after and stored when not in use, e.g. in a dry, clean cupboard. If it is reusable it must be cleaned and kept in good condition.
- PPE is effectively used by workers (for example operator should carry out visual inspection).
- Assign a responsible person in charge of maintenance and supply of PPE.
- Operators shall keep replacement PPE available and use the right replacement parts which match the original, e.g. respirator filters;
- Label instructions in respect of protective equipment for agrochemicals is followed.
- Records of purchase of PPE by producer are kept.
- Records of training on PPE of workers and on specific hazard handling (e.g. chemical spraying) are kept
- Records of monitoring of use of PPE are kept.

Operator considers the following before selecting and assigning PPE:

- Who is exposed and to what?
- How long are they exposed for?
- How much are they exposed to?

Operator should choose products which are suitable to the residual risk and are the required standard.

Operator should choose equipment that suits the user – consider the size, fit and weight of the PPE. If the users help choose it, they will be more likely to use it.

If more than one item of PPE is worn at the same time, make sure they can be used together, e.g. wearing safety glasses may disturb the seal of a respirator, causing air leaks.

Operator instructs and trains employees how to use it, e.g. train people to remove gloves without contaminating their skin. Tell them why it is needed, when to use it and what its limitations are. Include managers and supervisors in the training, they may not need to use the equipment personally, but they do need to ensure their staff are using it correctly.

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2.1.5 Percentage of staff trained for health and safety at start and a refresher course at least every year

Implementation Guidance:

The operator should keep records (including training material, name of trainers, duration of training, presence list) related to the training of:

- new employees at start of employment.
- every employee at least every 5 years.

Operator should maintain records that list:

- the dates courses were presented,
- the names of the individual course attenders,
- the names of those students successfully completing each course, and
- the number of training certificates issued to each successful student.

The operator should ensure that all new employees receive basic health and safety instruction prior to formal training before commencing their tasks as part of their induction.

The operator should ensure that:

- Trainers are competent.
- Instructors should be deemed competent on the basis of:
 - previous documented experience in their area of instruction,
 - successful completion of a “train-the-trainer” program specific to the topics they will teach
 - evaluation of instructional competence by the Training Director.
- Instructors should be required to maintain professional competency by participating in continuing education or professional development programs or by completing successfully an annual refresher course and having an annual review.
- Training is tailored to the level of the audience (including language), the tasks performed and the potential hazards of the workplace and activities performed.
 - For example, workers dealing with agrochemicals shall be trained on the proper use of agrochemical (follow label instructions and internal instructions), safe application, use of protective personnel equipment, procedures for storage and disposal, and record keeping).

- Training includes training on emergency response.

The training programs for employees subject to the requirements of paragraph should address:

- the employer's safety and health program elements impacting employees.
- the hazard communication program;
- the medical surveillance program;
- the hazards and the controls for such hazards that employees need to know for their job duties and functions.

All workers should take an annual refresher training.

Hands-on training should be stressed whenever possible.

Effectiveness of the provided training should be evaluated periodically using internal audits to check that PPE is used as per training. Should the training be deemed ineffective, the training programme should be revised, considering additional training sessions or a different training approach.

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2.1.6 All workers have access to first aid and provision for emergency response

Implementation Guidance:

The operator should follow national legislation in terms of first aid for emergency response (if existing).

The operator should design a First-Aid provision and emergency response specific for the worksite. The procedures should be in writing.

Procedures should be developed through the engagement with trade union/worker organisations, direct workers and indirect workers, and should be communicated in writing to all employees, including those workers who may not read or speak the local language.

The operator should ensure that workers are trained to the emergency response procedures and comply with them, including what workers should do if a co-worker is injured or ill.

Routine operations and non-routine conditions should be considered when identifying potential emergency situations, as well as operation start up or shut-down, construction or other activities. Emergencies reflecting gaps in risk assessment should be accompanied by action plans.

The operator should ensure that first aid supplies and number of trained personnel are:

- Adequate to local health and safety requirements;
- Adequate for the size of the facility and the location of operations; and
- Accessible to all workers.

The operator should make provision for emergency response which includes:

- Means to get ill or injured persons to health professional quickly and safely;
- Transport to the first aid and medical facilities;
- The availability of a first aid trained person on every shift at adequate location; and
- First aid kit is accessible and kept up to date. The content of first aid supplies shall refer to national legislation. In the absence of such legislation, the kit should at least include blood stoppers, antiseptic wound cleanser, bandages, CPR mouthpiece, tweezers, scissors, adhesive tape, eye wash, latex gloves, hand sanitizer, snake bite serum.

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2.1.7 Lost time accident frequency

Implementation Guidance:

Lost time accident frequency is the number of cases of occupational injury during the one-year period x 1,000,000 divided by the total number of hours worked by workers during the reference period. Ideally, the denominator should be the number of hours worked by workers. If this is not possible, it may be calculated by multiplying the number of workers by the numbers of normal hours of work, taking into account entitlements to periods of paid absence from work, such as paid vacations, paid sick leave and public holidays.

The operator should note the number of fatal injuries and any actions taken following each of them.

Occupational injuries should be recorded using Lost Time Accident (LTA) metrics.

To reduce Lost time accident frequency, operator should focus on implementing controls that address identified hazards and minimize employee risk, such as:

- Providing workers with appropriate PPE (and engaging them about the adequacy of existing PPE)
- Conducting safety meetings to engage in two-way dialog with workers about risks and concerns
- Require employees to complete comprehensive safety training and monitoring them to ensure the knowledge is being applied.
- Gamifying safety by offering rewards and recognition to the workers who engage in safe work practices.
- Conducting annual audits and inspections to identify any new or persisting hazards.
- Securing buy-in from top-level management to help foster a culture of safety and transparency within the company.

Incidents, non-fatal injuries and, fatalities occupational injuries should be registered and analysed to identify their root cause and implementation of corrective actions, documented minimum annually. Incidents and non-fatal injuries will be reported in rates that differentiate job types and employee/contractor relationships with the operator. Fatalities will be reported in raw numbers. All will be accompanied by actions taken to reduce future risk of similar outcomes

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Criterion 2.2 - To provide employees (including migrant, seasonal and other contract labour) with benefits and salary sufficient to achieve an adequate standard of living

2.2.1 Existence of a contract or equivalent document

Implementation Guidance:

The contract should include at least the following elements: hours of work, overtime payment, notice, holidays, wages, and mode of payment. Payment of wages are in conformity with ILO Convention no. 95 and ILO C110 as indicated in 2.3.1.

According to ILO EMPLOYMENT CONTRACTS ACT Passed on 17 December 2008 (RT I 2009, 5, 35), entered into force 1 July 2009, a written employment contract should contain at least the following data:

- 1) the name, personal identification code or registry code, place of residence or seat of the employer and the employee;
- 2) the date of entry into the employment contract and commencement of work by the employee;
- 3) a description of duties;
- 4) the official title if this brings about legal consequences;
- 5) the agreed pay payable for the work (wages), including wages payable based on the economic performance and transactions, the manner of calculation, the procedure for payment and the time of falling due of wages (pay day), as well as taxes and payments payable and withheld by the employer;
- 6) other benefits if agreed upon;
- 7) the time when the employee performs the agreed duties (working time);
- 8) the place of performance of work;
- 9) the duration of holidays;
- 10) a reference to or the terms of advance notification of cancellation of the employment contract;
- 11) the rules of work organisation approved by the employer;
- 12) a reference to a collective agreement if a collective agreement is applicable to the employee
- 13) clear terms for repatriation of migrant workers

The operator should provide to employees contracts or equivalent documents prior to work commencing.

- If necessary, the operator should explain the clauses in the contract to workers in an appropriate manner (especially if workers are illiterate or if they speak another language) to ensure they understand the clauses, rights and obligations included in their contract.

The number of contracts provided should be cross-referenced with the number of employees on the registry.

The operator should ensure that the following is included in each contract (in addition any other legal requirements) In compliance with national legal requirements) and payroll documents give accurate information on compensation for all work performed.:

Documented evidence of legal compliance for regular working hours, deductions, overtime, sickness, holiday entitlement, maternity leave, reasons for dismissal, period of notice and other legal labour requirements should be available.

There is no contract substitution.

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2.2.2 Maximum number of hours worked

Implementation Guidance:

The 60 hours limit follows ILO guidance of **48h + 12h allowed overtime**.

Overtime can be defined as *“All hours worked in excess of the normal hours unless they are taken into account in fixing remuneration in accordance with custom”* (Recommendation No. 116, Paragraph 16).²¹

According to ILO, the 8 hour day and 48 hour week may be exceeded, provided that the average number of hours over a 3 week period does not exceed 8 hours per day and 48 hours per week. Averaging of work hours over a reference period of three weeks is permissible in case of shift work²² and the 8-hour-day and 48-hour-week limits may be exceeded in case of continuous processes working by a succession of shifts where a 56-hour weekly maximum limit may be applied, with consent from the worker.

²¹ https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/publication/wcms_161734.pdf

²² https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C001

The ILO Code of practice on safety and health in agriculture contains a section on hours of work which provides the following guidance:

19.2. Working hours

19.2.1. The pace of agricultural work has increased with the use of task rates and piecework. Long hours of work, particularly intense manual labour, contribute to workers' fatigue and lead to accidents on the job.

19.2.2. Daily and weekly working hours should be arranged so as to provide adequate periods of rest which, as prescribed by national laws and regulations, or approved by labour inspectorates or collective agreements, where applicable, should include:

(a) short breaks during working hours, especially when the work is strenuous, dangerous or monotonous, to enable workers to recover their vigilance and physical fitness;

(b) sufficient breaks for meals;

(c) daily or nightly rest of not less than eight hours within a 24-hour period; and

(d) weekly rest of at least a full calendar day.

19.2.3. Extended workdays (over eight hours) should be contemplated only if:

(a) the nature of the work and the workload allow work to be carried out without increased risk to safety and health;

(b) the shift system is designed to minimize the accumulation of fatigue.

In countries where the maximum work hours limit is higher than 60 hours, the Bonsucro Production Standard prevails.

Normal hour means the time during which the persons employed are at the disposal of the employer; it does not include rest periods during which the persons employed are not at the disposal of the employer.

Overtime means the time worked above the normal hours, as defined by national legislation. Maximum overtime is 12 hours with 24 consecutive hours of rest every 7 days

For each worker, the operator should ensure that the total number of hours worked does not exceed the level set by the national legislation or regulation.

In arranging overtime, due consideration should be given to pregnant women, nursing mothers and people with disabilities²³

The operator should keep record of and control the number of hours worked by all workers. In the case of excessive hours, the operator should perform a working hour risk analysis in relation with working hours performed during last 24 months in order to identify the root causes of excessive work hours. Corrective actions should be implemented to reduce working hours and meet the maximum 60h/week.

If legal legislation does not include a maximum number of hours which can be worked or does not specify conditions framing the number of hours worked (for example by requiring the implementation of a fatigue management plan or other mitigation measures), the operator shall ensure workers do not exceed 60 hours of work.

The operator should ensure that overtime is voluntary and understand how many hours the overtime will include and payment rates. This applies to permanent, temporary and piece rates employees.

There are a number of exceptional criteria that will allow the temporary and non-systematic working hours to go above the 60 hours (if allowed by national legislation). All these exceptions below need to be met in those cases.

Exceptions Criteria							
Job role	Is there any possibility to replace this worker?	H&S risk analysis considering extreme fatigue and quality of life	Business continuity in risk	Circumstantial without or with emergency and no systematic	Voluntary overtime guarantee	Union agreement	Facility has implemented corrective action plans?

²³ https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:R116

xx key role injured or with illness or sickness	no	yes	yes	yes	yes	yes	yes
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2.2.3 Overtime is paid at a premium rate

Implementation Guidance:

Overtime refers to all hours worked in excess of the normal hours, unless they are taken into account in fixing remuneration in accordance with custom [Reduction of Hours and Work Recommendation, 1962 (No. 116)].

Include Overtime equivalents and fair rates and references regarding ILO Convention 1, ILO Convention 110, ILO C131 - Minimum Wage Fixing Convention, and ILO, Minimum Wage Policy Guide

The ILO Hours of Work (Industry) Convention (No. 1) of 1919 introduced a maximum standard working time of 48 hours per week and eight hours per day as an international norm. In several exceptional cases, working time is allowed to exceed these limits, as long as daily working time remains not higher than ten hours, and weekly working time not higher than 56 hours.²⁴

Overtime work should be voluntary. The total overtime hours should not exceed the level set by national legislation.

²⁴ Information Sheet No. WT-2. Conditions of Work and Employment Programme Conditions Programme. ILO. May, 2004

Overtime pay:

According to ILO Conventions No. 1 and No. 30, *the rate of pay for overtime shall be not less than one-and-one-quarter times the regular rate. Often, overtime premia rise progressively with the number of extra hours worked.*²⁵

The operator should pay any overtime hours at a premium rate which shall be more or equal to 25% of the normal hour rate. Alternatively, the operator can compensate overtime work by other means (e.g. extra hours of rest) with the condition that it complies with local legislation and respects the 25% premium rate.

Overtime procedures should be adapted from the national legislation.

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2.2.4 Ratio of lowest entry level wage including benefits to minimum wage and benefits required by law

Implementation Guidance:

Minimum wages have been defined as “the minimum amount of remuneration that an employer is required to pay wage earners for the work performed during a given period, which cannot be reduced by collective agreement or an individual contract”.²⁶

The term “wage” is generally understood to be the payment an employer makes to his or her employees – including to employees with regular, casual, short-term, intermittent or seasonal jobs, as well as to apprentices and trainees. Is often synonymous with terms such as “earnings” or “remuneration”.

- Applicable labour laws, union and/or other collective agreements and documentation of pay and conditions should be available to the workers in national languages and explained to them in a language they understand.
- Management-required training should take place during normal working hours and is fully compensated.

²⁵ Informaton Sheet No. WT-2. Conditions of Work and Employment Programme Conditions Programme. ILO. May, 2004

²⁶ ILO: General Survey concerning the Minimum Wage Fixing Convention, 1970 (No. 131), and the Minimum Wage Fixing Recommendation, 1970 (No. 135), Committee of Experts on the Application of Conventions and Recommendations, 2014

- Total wages or earnings should include different components, such as:
 - basic pay
 - annual bonuses
 - tips
 - in-kind benefits
 - productivity and performance pay
 - allowances and premiums for non-standard work hours or dangerous work.

As specified in ILO Convention C95 and Article 24 to 35 of ILO C110:

- *The operator shall pay to the workers all mandated benefits and allowances;*
- *The operator shall not include essential services for employees to perform their work as benefits (e.g. protective equipment, tools, or special medical exams) nor deduct their cost to the wages paid to the workers;*
- *The slip shall provide adequate information as to how the wage was calculated and shall identify the amount and reason for any deductions of pay.*
- *The operator shall ensure workers understand the composition of their wage, including calculation of overtime and possible deductions;*
- *The operator shall pay wages on time (at least every month) and not halt them in such a way that arrears accumulate and has an effect of binding the workers to employment;*
- *The operator shall not make any unfair or non-agreed deductions;*
- *If the operator makes payments “in-kind” in the form of goods or services or clothing, this must be authorised by national law, regulation or collective agreement and does not create a dependency on the employer;*
 - *The operator shall not pay wage fully “in kind” and the operator shall not pay wage in the form of promissory notes, vouchers or coupon;*
 - *No payroll deductions for disciplinary measures or employment broker’s fees.*
 - *If housing is provided and rent deducted from wages, the deduction shall not be above the market rate;*
 - *If food is provided and deduction allowed by law, prices used for the food deduction shall not be above prices of food available in the market;*

The ILO Protection of Wages Convention, 1949 (No. 95) allows *“for the partial payment of wages in the form of allowances in kind in industries or occupations in which payment in the form of such allowances is customary or desirable because of the nature of the industry or occupation concerned” (Article 4.1). In such cases, it calls however for measures to ensure that:*

- (a) “such allowances are appropriate for the personal use and benefit of the worker and his family”; and*
- (b) “the value attributed to such allowances is fair and reasonable”.*

Social security contributions- payments in kind are one component of total earnings and for this reason should in principle count as part of the value on which social security contributions are based.

Article 3 of C95:

- o Wages payable in money shall be paid only in legal tender, and payment in the form of promissory notes, vouchers or coupons, or in any other form alleged to represent legal tender, shall be prohibited.*
- o The competent authority may permit or prescribe the payment of wages by bank cheque or postal cheque or money order in cases in which payment in this manner is customary or is necessary because of special circumstances, or where a collective agreement or arbitration award so provides, or, where not so provided, with the consent of the worker concerned.*
- o On the base of ILO C100, the operator shall ensure equal treatment and equal remuneration to all workers including migrant workers, contracted labour and piece rate workers irrespective of gender and ethnic/social origin.*

In absence of national minimum wage, the operator should determine a minimum wage using ILO C 131 article 3 taking into consideration sector/industry agreements and/or customary practices:

“The elements to be taken into consideration in determining the level of minimum wages shall, so far as possible and appropriate in relation to national practice and conditions, include--

- (a) the needs of workers and their families, taking into account the general level of wages in the country, the cost of living, social security benefits, and the relative living standards of other social groups;*
- (b) economic factors, including the requirements of economic development, levels of productivity and the desirability of attaining and maintaining a high level of employment.”*

If the mill operates in area where minimum wage payment is an issue, the operator should have in place a corporate social responsibility programme which acts toward ensuring compliance of the mill and farm.

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2.2.5 Minimum wage is guaranteed to piece rate paid workers

Implementation Guidance:

Piece rate pay occurs when workers are paid by the unit performed instead of being paid on the basis of time spent on the job.

Piece rate systems should be transparent, reward employees according to the difficulty and quality of their work, and ensure that motivated workers can earn substantially more than the minimum wage.

The operator should ensure that workers paid at piece-rate would receive the required minimum wage if only working the number of normal legal hours of work (see indicator 2.2.2);

The operator should provide workers with pay slips for each payment of wages.

The slip should provide adequate information as to how the wage was calculated and should identify the amount and reason for any deductions of pay.

On the base of ILO C100, the operator shall ensure equal treatment and equal remuneration to all workers including migrant workers, contracted labour and piece rate workers irrespective of gender and ethnic/social origin.

In absence of national minimum wage, the operator shall determine a minimum wage using ILO C 131 article 3 taking into consideration sector/industry agreements and/or customary practices:

“The elements to be taken into consideration in determining the level of minimum wages shall, so far as possible and appropriate in relation to national practice and conditions, include--

- *(a) the needs of workers and their families, taking into account the general level of wages in the country, the cost of living, social security benefits, and the relative living standards of other social groups;*
- *(b) economic factors, including the requirements of economic development, levels of productivity and the desirability of attaining and maintaining a high level of employment.”*

If the mill operates in area where minimum wage payment is an issue, the operator should have in place a corporate social responsibility programme which acts toward ensuring compliance of the mill and farm with this indicator.

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2.2.6 Movement to close living wage gap

Implementation Guidance:

Living Wage as defined by the chosen benchmark methodology for example: Living wage is the remuneration received for a standard workweek by a worker in a particular place sufficient to afford a decent standard of living for the worker and her or his family. Elements of a decent standard of living include food, water, housing, education, health care, transportation, clothing, and other essential needs including provision for unexpected events.²⁷

Workers paid at piece-rate should receive the required Living Wage (according to standard output, a calculation for piece-rate workers based on achievable quotas during regular work hours (as defined in 2.2.2)). Pay slips and records should be provided.

Depending on the methodology a Living Wage can be calculated by adding all related costs for housing, food and other essential needs (sometimes referred to as non food non housing or NFNH) plus a margin for unexpected expenses. Costs for food are based on a typical nutritious and balanced diet for the geographic area and housing costs are based on typical rents in the area. This total is then divided by the number of workers typically in a family, often referred to as full time equivalent, based on country average and a figure normally available from government. In most countries, it will be somewhere around 0.7 FTE, as e.g. family care-work is not remunerated. To the resulting figure, the so-called net living wage, the mandatory deductions are added, typically between 12-14% depending on the country, resulting in the gross living wage.

²⁷ <https://www.globallivingwage.org/about/what-is-a-living-wage/>

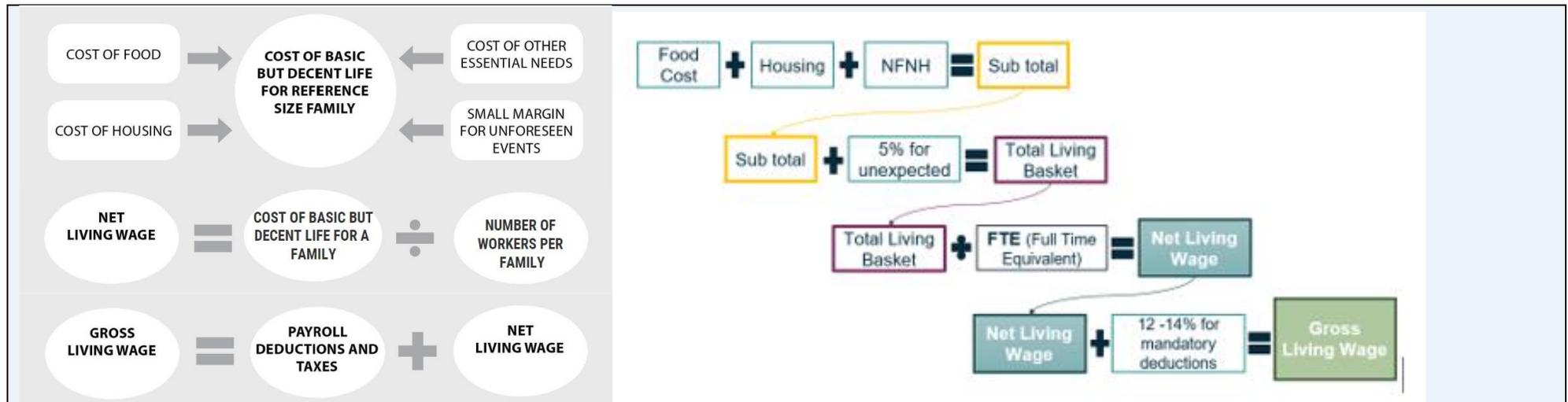


Image from [GLWC](#)

Simplified example calculation based on Anker Methodology

Should an operator provide housing, schooling or part of the food expenditure via provisions, the cost for these can be deducted from the Living Wage. Note however that not the entire Living Wage may be paid in kind.

Once the gap between current salary and the Gross Living Wage is calculated, the operator develops a timebound plan to gradually increase payments to close this gap. As a minimum, this is done in 10% intervals between each re-certification audit.

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Criterion 2.3 - To respect workers right to favourable working conditions

2.3.1 Absence of discrimination

Implementation Guidance:

The Equal Remuneration Convention, 1951 (No. 100) states the principle of equal remuneration for men and women workers for work of equal value.

There is evidence of equal pay for the same work scope.

The operator has a publicly available, implemented and communicated non-discrimination and equal opportunity policy.

In ILO C111, the term **discrimination** includes:

- (a) *any distinction, exclusion or preference made on the basis of race, colour, sex, religion, political opinion, national extraction or social origin, which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation.*
- (b) *such other distinction, exclusion or preference which has the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation as may be determined after consultation with representative employers' and workers' organisations, where such exist, and with other appropriate bodies.*

Discrimination may take the form of dismissal, transfer, relocation, demotion, denial of remuneration, social benefits and/or vocational training, amongst others.

Special care should be taken on the treatment of vulnerable groups subject to discrimination such as female workers, migrant workers or contracted workers, underrepresented ethnic or social groups, union representatives, union members or non-unionised workers. The operator should:

- o Have a non-discrimination policy and it is communicated to workers and implemented, including foreign and migrant workers.
- o Ensure equal pay for work of equal value; According to ILO, Equal pay for equal work limits the application of the equal pay principle to work undertaken by two individuals in the same area of activity and in the same enterprise.²⁸
- o Respect religious holidays;
- o Treat complaints equally and does not use complaints raised as a mean of discrimination;
- o Not use the medical conditions of workers in a discriminatory way
- o Guarantee that any segregation of workers is due to accepted cultural norms and that equal opportunities still apply across all groups.

²⁸ https://www.ilo.org/global/topics/wages/minimum-wages/rates/WCMS_433906/lang-en/index.htm#:~:text=When%20setting%20different%20minimum%20wages,for%20work%20of%20equal%20value.

- Encourage the formation of workers group aimed at representing and collecting views of under-represented groups (such as women's committee).
- Ensure that migrant workers are not required to pay anything that a local worker is not required to pay, unless mandated by the law.
- Demonstrate that the recruitment process (advertisement, selection, hiring), remuneration, access to training and promotion are non-discriminatory and are based on skills, capabilities, qualities and medical fitness necessary for the jobs available.
- The operator demonstrates that recruitment selection, hiring, access to training and promotion are based on skills, capabilities, qualities and medical fitness necessary for the jobs available.

The operator should also have in place a grievance mechanism which acts toward ensuring compliance of the mill and farm with this indicator.

Operators should know what percentage of their workforce (direct and indirect) is female / minority / disadvantaged, what percentage of wages go to females/minorities/disadvantaged groups, and what actions they are planning if those misalign.

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2.3.2 Absence of abuse/ harassment

Implementation Guidance:

Operator should adopt, implement and communicate, in consultation with workers and their representatives, a workplace policy on abuse, violence and harassment.

The workplace policy on violence and harassment should:

- (a) state that violence and harassment will not be tolerated.
- (b) establish violence and harassment prevention programmes with, if appropriate, measurable objectives.
- (c) specify the rights and responsibilities of the workers and the employer.
- (d) contain information on complaint and investigation procedures.
- (e) provide that all internal and external communications related to incidents of violence and harassment will be duly considered, and acted upon as appropriate;
- (f) specify the right to privacy of individuals and confidentiality, (...) while balancing the right of workers to be made aware of all hazards; and

(g) include measures to protect complainants, victims, witnesses and whistle-blowers against victimization or retaliation.

Workers and management should be trained to recognize abuse, discrimination and harassment and to report cases without fear of reprisal.

The following are prohibited:

- Violence, threats and intimidation
- Restrictions on toilet breaks
- Unwanted physical contact

The operator should take into account abuse and harassment and associated psychosocial risks in the management of occupational safety and health;

To effectively prevent and control violence and harassment at work, psychosocial risks (including violence and harassment) should be integrated into a sound Health and Safety Management System (HS-MS).

The ILO Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001) advocate that appropriate arrangements should be made for the establishment of an OSH-MS, which should contain the elements of a workplace policy – planning and implementing, evaluation.

The operator should identify hazards and assess the risks of violence and harassment, with the participation of workers and their representatives, and take measures to prevent and control them; and action for improvement (ILO, 2001).

The operator should provide to workers and other persons concerned information and training, in accessible formats as appropriate, on the identified hazards and risks of abuse, violence and harassment and the associated prevention and protection measures, including on the rights and responsibilities of workers and other persons concerned in relation to the policy.

The operator should support the facilitation of a Gender (Equality) Commission to promote suitable policies to be developed, to encourage, support and improve the promotion of women at all company levels and in all structures, with a view to implement the principle of equality between men and women. This can also serve as a complaint mechanism unit.

The operator should undertake awareness-raising campaigns.

A grievance mechanism for employees should be in place to present a grievance about abuse, violence and harassment

The operator should maintain good record keeping on reported cases of violence and harassment, as well as other records (e.g., exit interviews and records of absenteeism).

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2.3.3 Debt bondage, trafficking, and forced/compulsory labour are absent

Implementation Guidance:

ILO Convention C29 defines forced labour (also referred to as Modern Slavery) as: all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself/herself voluntarily. No forced labour shall occur, neither for men nor women irrespective of their employment status (permanent, temporary or contractual) and irrespective of their age. Forced labour may take different forms: prison labour, coercion, slavery, bonded labour and human trafficking. Menace of penalty can take different form: threats, violence, retention of identity documents, physical confinement (such as imprisonment), denunciation to authorities, non-payment of wage or loss of rights or privilege.

In accordance with ILO Convention C29 and C105, the aim of this indicator is to ensure that:

- *There is no forced, bonded or involuntary labour;*
- *There is no reliance on human trafficking*
- *There is no menace of penalty (for example deposits of money or ID on commencement of employment);*
- *Employees are free to leave at any time with reasonable notice;*
- *Employees are free to leave at the end of their shift.*

The operator should carry out a review of existing practices to be complemented by interviews with workers.

The operator should:

- Understand and comply with the law of the country/region in respect of this issue.
- Ensure that:
 - o The employment is entirely voluntary.
 - o The employees are free to leave.
 - o The workers are “free to move”.
 - o There is no retention of identification documents and;

- There is no lodging of deposits by the worker upon recruitment.
- Prison labour is not used.
- The purpose of any security guards posted is for normal security reasons but and not to monitor and control the workforce

The operator should refer to the ILO Handbook for Employers & Business²⁹ which defines the various assessment methods to be used to identify forced or compulsory labour:

- A review of relevant company and employee documentation.
- An inspection of the workplace and related facilities (e.g. dormitories);
- On- and off-site interviews with workers and their representatives.
- Interviews with different management representatives.

The list of examples below is non-exhaustive, nor is every item obligatory.

- Is the mill or its supply chain on any existing governmental black list registry, if available (e.g. black list of companies using the ILO definition and clear methodology);
- Review any practices employed by the operator or by agencies contracted by the operator that may demonstrate absence of coercion of workers:
 - The worker can enter employment without threat of a penalty.
 - The employment can be terminated freely by the worker:
 - The worker's original identity documents are not retained.
 - Financial penalties on workers are not imposed for termination.
 - Wages are paid on time and not withheld.
 - The workers are not threatened with violence, harassment or intimidation.
 - The security personnel are not armed at any of the workers' accommodation.
 - There is no financial coercion of employees such as:
 - Deposits paid by workers upon recruitment.
 - Recruitment fees, unless allowed by national law.
 - Unfair employment loan terms, or credit, for which workers have to pledge his/her work to repay.

²⁹ A Handbook for Employers and business, combating forced labour (http://www.ilo.org/sapfl/Informationresources/ILOPublications/lang--en/docName--WCMS_101171/index.htm)

- Unfair purchasing schemes (e.g. in the case of accommodation's store, no unreasonable pricing, or way to pay for the products, etc.) which is managed directly or indirectly by the employer and which might deprive workers of their financial freedom;
 - Delays in wage payment such that wage arrears accumulate.
 - Deception in the calculation and payment of wages, including unfair wage deductions.
 - Wage payment in the form of vouchers, coupons or promissory notes.
 - Payment "in-kind" in the form of goods or services that create a dependency on the employer, including absence of total payment of wage "in kind" without cash and only if authorised by national law, regulation or collective agreement.
-
- Evaluate potential vulnerable groups of workers that may be more at risk of forced or compulsory labour.
 - Review of any documentation of grievances or complaints against management, co-workers and security personnel.
 - Design policy and procedures for disciplinary action and ensure that policies exist for appeals and grievances to be heard.
 - Implement training programme for workers on their rights and on how to use such appeals and grievances procedures if necessary;
 - Design company documentation regarding disciplinary measures and sanctions to ensure the company does not impose work or use of violence as a means of disciplining workers;
 - Ensure that overtime practices are in accordance to national law and collective agreement, and not done as a threat to dismissal or economic sanction;
 - Ensure that workers are free to move and that the role of security guards is limited to security.
 - Verify that migrant workers are treated fairly, irrespective of their legal status.
 - Where temporary or migrant workers are employed, a specific labour policy and procedures should be established and implemented.
 - A grievance mechanism for employees should be in place to present a grievance about abuse, violence and harassment.

- Verification should use a mix of these methods. When interviews are used, they should include men and women, younger and aged workers, workers with different functions and contract types (e.g. permanent, seasonal and migrants), and relevant stakeholders e.g. churches, NGOs, etc. Any information from interviews needs to remain anonymous. Guidance on interviews is provided in the ILO Combating Forced Labour Handbook for Employers & Business, Chapter 430
- *The UN International Convention on the Protection of the Rights of All Migrant Workers and Members of their Families, adopted in 1990, explicitly prohibits both slavery and forced labour, in Article 11:*
 1. *No migrant worker or member of his or her family shall be held in slavery or servitude.*
 2. *No migrant worker or member of his or her family shall be required to perform forced or compulsory labour.*
 3. *Paragraph 2 of the present article shall not be held to preclude, in States where imprisonment with hard labour may be imposed as a punishment for a crime, the performance of hard labour in pursuance of a sentence to such punishment by a competent court.*
 4. *For the purpose of the present article the term “forced or compulsory labour” shall not include:*
 - (a) *Any work or service not referred to in paragraph 3 of the present article normally required of a person who is under detention in consequence of a lawful order of a court or of a person during conditional release from such detention;*
 - (b) *Any service exacted in cases of emergency or calamity threatening the life or well-being of the community;*
 - (c) *Any work or service that forms part of normal civil obligations so far as it is imposed also on citizens of the State concerned.*

The following are prohibited:

- Recruitment fees paid by workers
- Retention of workers' original identification papers
- Wage deductions for protective gear, meals, beverages or other essential work-related items
- Use of prison labour
- Restrictions on workers entering or leaving operation premises (aside from legitimate restrictions)
- Financial penalties or delayed wage payments to workers (including for non-completion of the season)
- Contract substitution (changing/worsening of contract terms)
- Involuntary overtime and overtime that exceeds legal limits

³⁰ Combating forced labour: a Handbook for employers and business: http://www.ilo.org/sapfl/Informationresources/ILOPublications/WCMS_101171/lang--en/index.htm

- Lack of freedom of workers to resign
- Penalty for termination of employment
- Withholding or unlawful deduction of wages
- Debt bondage

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2.3.4 Absence of child labour

Implementation Guidance:

No children below the legal minimum age can be working in the field.

Table based on ages included in ILO C138 (minimum age) and ILO C182 (worst forms of child labour)

General Minimum age requirements	Non-hazardous work	Hazardous work
Most countries	15 ³¹	18
Developing countries which have ratified ILO C138, Para 4 art.2	14	18

The operator ensures that the age limit for each category of work as summarized in the table above is respected: see www.ilo.org for countries that have ratified ILO C138 with potential special allowances.

- This is applicable to all children including contracted workers, migrant labour and family farms.

³¹ Not less than the minimum age of completion of compulsory education. If national law stipulates a higher age, the higher age will apply.

In every case, the operator should:

- Define the applicable references as per the law of the country/region or in absence of it, the adequate ILO convention;
- Have identified any potential risks as part of the risk assessment identifying impacts (potential and actual) on the human rights of workers, environment and communities (indicator 1.2.2)
- The operator should follow the more strict regulation or convention ratified by the country.
- Define, disclose and enforce age limit per job category.

The operator should:

- Implement a system for checking and recording workers' ages as part of the recruitment process;
- Ensure that persons responsible for hiring are aware of how to detect fraudulent documents. Documentary evidence for compliance may include one or more of the following:
 - o Any copies such as birth certificates, religious or other local record or passport or ID. Note that the producer should never retain workers' identity papers;
 - o Keep record of hours of work;
 - o Ensure that contracts are signed by a parent or guardian where workers are under age.
- Conduct a health and safety assessment to identify non-hazardous work positions for young workers.

National laws or regulations may permit the employment or work of persons 13 to 15 years of age on light work which is--

- (a) not likely to be harmful to their health or development; and
- (b) not such as to prejudice their attendance at school, their participation in vocational orientation or training programmes approved by the competent authority or their capacity to benefit from the instruction received.

Remediation

- Child labour remediation refers to the corrective measures that are taken when child labour is found to ensure the safety and wellbeing of the child/children concerned and to prevent similar situations from reoccurring (ILO, 2020b). Remediation can include removal of the child from the worksite, placing the child in a safe environment, repatriation, medical checks to assess the physical and mental health of the child, financial support to enable the child to return to school, etc.
- The operator should have effective remediation procedures in place in the case of any child labour found to be in their employment.

Each situation of child labour should be treated on a case-by-case basis and the remediation plan should be tailored to the child's specific needs and aspirations to ensure that the best interests of the child are paramount at all times.

- Child-focused organisations and local authorities should be consulted to ensure that the plans are appropriate for any child allegedly or confirmed to be involved in child labour.
- Operator should assign a responsible person or department to make sure this personalised plan is developed and carried out; The operator with the support of local child protection services and organisations or child rights expert should work to understand each child's needs and develop an appropriate and effective remediation plan. This includes choice of schooling, provision of financial support, including referral to existing social welfare schemes and ongoing monitoring.
- Operator should monitor any remediation plan's progress on a quarterly basis during the first year of implementation and then every 6 months going forward until the child is of legal working age.
- Operator should include an analysis on the Root Causes of Child Labour to be able (if possible together with other stakeholders) to adverse this risk.

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2.3.5 Adequate accommodation is provided

Implementation Guidance:

The housing provided and controlled by the mill meets local regulatory standards. If no regulatory standards exist, the following conditions should be met.

- Absence of rats, mice, insects and vermin, or conditions that favour their populations that could cause disease or carry parasites that function as vectors of diseases;
- Dry floors;
- Protection against rain, wind or cold weather conditions;
- No conditions posing imminent threats to the health or security of the occupants;

- A register of workers and family members that live in management provided housing;
- A separate bed for each worker;
- There is a minimum space between beds of 1 metre.
- Double deck bunks are not advisable for fire safety and hygiene reasons, and their use is minimised. Where they are used, there must be enough clear space between the lower and upper bunk of the bed. Standards range from to 0.7 to 1.10 metres.
- Triple deck bunks are prohibited.
- Each worker is provided with a comfortable mattress, pillow, cover and clean bedding.
- Separate accommodation of the sexes;
- Doors with locking mechanism;
- Toilets at 1:15 people and wash facilities for 1:6 people (1 per family), with gender separated facilities.
- Natural light during the daytime and artificial light for the night time;
- Functional and effective firewood smoke evacuation or ventilation mechanisms that are well maintained;
- Non-leaking windows, doors and roofs;
- At least one shower per 10 persons, separated by gender;
- At least one large laundry sink for every 30 persons;
- Fire extinguishing mechanisms are installed and well maintained;
- Marked emergency exits;
- the supply of clean water in the workers' dwelling in such ample quantities as to provide for all personal and household uses;
- Adequate sewage and garbage disposal systems. Specific containers for rubbish collection are provided and emptied on a regular basis.

- Appropriate protection against heat, cold, damp, noise, fire, and disease-carrying animals, and, in particular, insects;
- Workers' housing standards should be revised from time to time to take account of social, economic and technical developments
- Workers' housing and related community facilities should be of durable construction. The aim should be to construct workers' housing and related community facilities with the most suitable materials available, taking into consideration local conditions, such as exposure to natural disasters such as earthquakes, floods, etc.
- Access to an adequate and convenient supply of free potable water is always available to workers. Depending on climate, weather conditions and accommodation standards, 80 to 180 litres per person per day are available.
- Facilities for the storage of personal belongings for workers are provided. Standards vary from providing an individual cupboard for each worker to providing 475-litre big lockers and 1 metre of shelf unit.

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2.3.6 Working hours lost as percentage of total hours worked

Implementation Guidance:

Absenteeism reduces the effectiveness of health care provision and compromises the quality of services because fewer workers are left on duty, resulting in work overload or interrupted service delivery.

Absenteeism is any failure to report for or remain at work as scheduled, regardless of the reason (Cascio & Boudreau, 2015). This is usually unplanned, for example, when someone falls ill, but can also be planned, for example during a strike or wilful absence.

Absenteeism in the workplace is most commonly measured using an absenteeism rate. This rate is the number of absent days divided by the number of available workdays in a given period. This absenteeism rate is a key HR indicator. For example, excessive absenteeism can indicate problems within the workforce or organizational culture.

The operator should keep track of the working hours lost through absence, also referred to as “no-show”. It includes all unplanned causes of unjustified absence (according to company policies) which could be but are not limited to:

- Strikes;
- Non-justified sickness absence; and
- Absenteeism etc.

It does not include planned absence such as holiday, legal time off such as maternity leave, or training.

Even if the operator replaces an absent employee, the mill operator still counts this absence. Depending on operator policies, no shows due to meteorological conditions (e.g. rain) could be included in this indicator.

The operator should record number of hours worked during the reference period. Ideally, the denominator should be the number of hours actually worked by workers in the reference group. If this is not possible, it may be calculated by multiplying the number of workers by the numbers of normal hours of work, taking into account entitlements to periods of paid absence from work, such as paid vacations, paid sick leave and public holidays.

This indicator is not affected by any down time in the mills; it only refers to personnel working hours.

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Criterion 2.4 - To safeguard respect for labour rights through functioning social dialogue mechanisms

2.4.1 Respect the right of all workers to form and join trade unions and to bargain collectively free from interference from the operator

Implementation Guidance:

The Unions and conveners of other forms of worker engagement represent the expressed interest of workers, as validated through direct interviews with workers.

- Have an open approach to Freedom of Association, including a policy for supporting the implementation of an active Trade Union or an effective workers' committee.

Ensure that workers are free to form a union

- Ensure workers are free to join or not as they wish, especially if the operator has selected certain trade unions.

- Enable workers who choose not to join a union, can provide their feedback to the management in as many ways as possible e.g. a workers' committee, suggestion box, worker survey, focus groups, confidential hotline;
- Enable, if workers decide to join a union, that there is no discrimination against them.
- Enable that, if workers decide not to join a union, there is no discrimination against them.
- Ensure that workers are free to leave a union.
- Ensure workers are informed at the start of their employment of how to join a union.
- Not restrict the scope of activity of trade unions.
- Respect the right of collective bargaining.
- Typical issues on the bargaining agenda include wages, working time, training, occupational health and safety and equal treatment. The objective of these negotiations is to arrive at a collective agreement that regulates terms and conditions of employment.
- Implement an effective mechanism to make the workers' views known to management in places where the right to freedom of association and collective bargaining is restricted under law. For example, the operator can support the existence of workers' councils, suggestion boxes, worker surveys, focus groups or confidential hotlines.
- Ensure that workers representatives are voluntary and fairly selected, minutes of meetings are made available in an appropriate language and there is evidence of management action being taken following the raising of issues.
- Ensure that trade unions or workers' committees' officials are freely and democratically elected without undue influence (including financial) of the employer or employer's organisation, that they represent the whole workforce and that they are allowed the required time to perform their functions without financial penalty or being discriminated.
- Foreign workers should be encouraged to join unions, migrant workers, particularly women migrants. Should national union laws not permit this, ensure that parallel means are offered to the affected workers.

- Where the right to freedom of association and collective bargaining is restricted under law, the employer facilitates, and does not hinder, the development of parallel means for independent and free association and bargaining. This may include the facilitation of free choice by workers to elect their own workplace representatives.
- Parallel means could be organizational structures defined by workers with proper representation of the work force that is engaged in social dialogue with the operator in defined and relevant issues, these structures are such as works councils (established bodies elected or appointed by all employees), and/or workers' delegates. The agreements and outcomes of social dialogue is communicated. Another form of parallel means could be board-level employee representation is a form of workers' voice that also tends to strengthen workers' bargaining power and potentially enhance co-operative attitudes by allowing workers to engage in the strategic choices of mill and farms.
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2.4.2 Social Dialogue promotes consultation and information exchange between and among employers' and workers' organizations.

Implementation Guidance:

The main goal of social dialogue is consensus building and democratic involvement by involving the workers in search for correct solutions. It resolves economic and social issues, encourages good governance, advances social and industrial peace and stability and boosts economic progress.

The principle of social dialogue has been at the core of ILO activity since its foundation and has been outlined as a strategic objective in the 2008 *ILO Declaration on Social Justice for a Fair Globalization* under the "Social Dialogue" pillar.³²

The operator should apply social dialogue to at least all the indicators of P1 and P2.

Examples for concrete implementation include:

1.4.1 (Monitoring Mechanisms are in place): by creating a feedback function with the workers,

2.2.6 (Movement toward closing the LW gap): to develop a plan to close the gap together with workers (or their representatives).

³² As stated in the Preface of the *ILO Declaration on Social Justice for a Fair Globalization* "The International Labour Organization unanimously adopted the ILO Declaration on Social Justice for a Fair Globalization on 10 June 2008. This is the third major statement of principles and policies adopted by the International Labour Conference since the ILO's Constitution of 1919. It builds on the Philadelphia Declaration of 1944 and the Declaration on Fundamental Principles and Rights at Work of 1998. The 2008 Declaration expresses the contemporary vision of the ILO's mandate in the era of globalization", available at www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/genericdocument/wcms_371208.pdf.

Additionally, social dialogue should be included in indicators under 4.1 and 4.3 on Ecosystems and Water Stewardship, 4.5.2 on training to workers on hazardous materials, 5.1.3 on the Environmental and Social management plans, 5.1.3 and 5.1.4 on ESMP's and Grievance mechanisms, 5.3 on Vocational training for workers and finally on 5.4 on Continuous Improvement of Workers Welfare.

Definition of social dialogue: ILO defines social dialogue the different types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers, and workers, on issues of common interest relating to economic and social policy³³. Here, social dialogue is considered as bipartite relations between workers and management (or trade unions and employers' organizations). Social dialogue processes can be informal and/or institutionalised, and can be inter-professional, sectoral or a combination of both.

This should be done by the creation, facilitation or improving formal and informal access to participation of employers and workers and / or their representatives in H&S committees, wages committees, grievance committees, gender committee or other kinds of social dialogue spaces.

The operator should strengthen employers' and workers' organization and develop their capacity to engage effectively in social dialogues. This can be done by:

- Providing awareness raising and training to workers to improve their understanding of their legal rights and the means to exercise them
- Strengthening workers' organizations, by developing the expertise of trade union leaders on national policy issues through support and advice on a number of thematic areas (collective bargaining, freedom of association, migration and gender equality).
- Training management on sound governance practices and how to effectively communicate and engage constructively with stakeholders

The operator should create an enabling environment for social dialogue such as facilitating access to knowledge, knowledge sharing and dissemination, adapting to the local context and culture, promoting involvement and participation of workers and their chosen representatives.

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³³ International Labour Organization (ILO), *Collective Bargaining Convention, C154*, 1981, available at: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---dialogue/documents/publication/wcms_172186.pdf

2.4.3 Grievance mechanism for workers are in place

Implementation Guidance:

The operator shall provide an effective grievance mechanism for workers (and their organisations, where they exist) to raise workplace concerns, and publish a grievance log for transparency.

In practice it meets the following:

- It ensures anonymity of complainants where requested by complainants, protecting them from risk of reprisal or intimidation. It also safeguards against nondisclosure rules set by the company.
- Procedures are in place to ensure that the system is effectively communicated to and understood by the affected parties, including by illiterate parties or workers whose native language is not the operation's language.
- The operators keep parties to a grievance informed of its progress, timeframe and outcomes.
- The system allows for complainants to choose individuals or groups to support them and/or act as observers.

The mechanism should be tailored to meet the needs of each organisation, according to the sector, country, culture and workforce composition.

The mechanism should not impede access to other judicial or administrative remedies that might be available under law or through existing arbitration or mediation procedures, nor should it substitute for grievance mechanisms provided through workers' unions or collective agreements.

Grievance procedures should be included in collective agreements with an indicative time frame for each stage, and clarity on the types of process and outcome available and means of monitoring implementation.

The operator should monitor the effectiveness and credibility of the grievance mechanism and could invite external observers to provide feedback on processes, practices and outcomes to ensure continuous improvement. The operator should identify strategies to expand access and buy-in to the complaint mechanism, as well as develop interventions to address potential root-causes of existing complaints in a systematic manner.

It can be beneficial to involve workers in the design, review or even joint oversight of the mechanism, particularly where trust in the company or the mechanism is low. This can help ensure that the individuals for whom the mechanism is intended are willing to use it.

A grievance log is maintained and updated regularly, summarizing all complaints received and managed by the operation (anonymizing complainants and defendants as appropriate).

Once a grievance has been raised formally, it is important that proper written records are kept, to aid transparency and allow for any review of the process or to be undertaken. If possible, the original complaint should be in writing. Documentation should respect workers' rights to privacy and data protection. The operator's response should also be recorded. Any actions taken, along with the reasons for these, should also be recorded, for example, a grievance hearing and findings. Minutes of all meetings should be taken and signed off by both parties. The operator keeps parties to a grievance informed of its progress, timeframe and outcomes.

A responsible person or team should be identified to manage the grievance mechanism and maintain records and ensure monitoring outcomes.

Workers from vulnerable groups (migrant workers, young workers, ethnic minorities, etc) may find it particularly hard to raise complaints. It may be possible to identify specific ways in which they can raise concerns without increasing their vulnerability, including through legitimate trade unions or worker representatives speaking on their behalf. Wherever possible, it will be beneficial for the operator to seek ways to gain their views directly.

Workers should be made aware of the grievance channels that are available to them. The operator shall inform the workers of the grievance mechanism at the time of hiring and make it easily accessible to them. Training can help build the capacity of workers to use the grievance mechanism more effectively and should be conducted wherever possible with trade unions and other local civil society actors.

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Principle 3 – Manage Input, Production And Processing Efficiencies To Enhance Sustainability

Criterion 3.1 – To monitor production and process efficiency; to measure the impacts of production and processing so that improvements are made over time

3.1.1 Yield of production

Implementation Guidance:

Objective: to maximise yield taking into account the climatic conditions where cane is grown.

The indicator provides growers with a target yield adapted to the climate under which cane is grown. The indicator was developed by observing the ratios of sugarcane production to water consumption achieved by the 50% best performers within each climatic zone for rainfed and irrigated cane separately.

The yields to achieve are:

Climate Zone	Rainfed Sugarcane	Sugarcane Irrigated
	Yield (tons/ha)	Yield (tons/ha)
1	8	117
2	11	62
3	4	55
4	39	87
5	33	62
6	37	62
7	60	87
8	66	88
9	38	62
10	80	79
11	71	88
12	57	72
13	63	79
14	61	79
15	49	73

Value for reporting period or 5 year rolling average can be used. This allows for the effect of a catastrophic flood or drought to be accommodated.

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3.1.2 Theoretical recoverable sugar content of cane

Implementation Guidance:

Objective: This is a measure of the quality of cane delivered to the mill.

The operator shall collect the data used for calculation, as required by the Bonsucro Calculator.

FORMULA

is the sucrose content of cane in g/100 g.

The Theoretical Overall Recovery OR*, used if sugar only is being produced and normalized for juice purity and cane fibre content, is calculated as:

FORMULA

Where E* is the Standard Extraction, BHR* is the Standard Boiling House Recovery, **SYMBOL** is the fibre content of the cane in g/100 g and **SYMBOL** the purity of the raw juice.

Values for fibre content, raw juice purity and sucrose content shall be the ones for the reporting period or a 5 year rolling average can be used. This allows for the effect of a flood or drought to be accommodated.

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3.1.3 Fermentable total sugars content of cane, expressed as invert (TSAI)

Implementation Guidance:

This indicator applies only when ethanol is produced.

Objective: This is a measure of the quality of cane delivered to the mill, in the particular instance that fermentation of sugars is part of processing.

The operator shall collect the data used for calculation as required by the Bonsucro Calculator.

To determine the fermentable total sugars we assume a standard utilisation of 90.5 % of the TSAI to be converted to ethanol.

Value for total sugars content expressed as reducing and for reducing sugar/sucrose ratio shall be the one for the reporting period or a 5 year rolling average can be used. This allows for the effect of a flood or drought to be accommodated.

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3.1.4 Efficiency of harvesting operations

Implementation Guidance:

The objective of this indicator is to ensure that sugar cane does not lose its moisture by delays in the delivery of the cane to the mill.

- If only a part of the field is treated utilizing machine harvesting, it will be taken as if the entire field had had this treatment.
- This indicator is measured in days starting the loading of the first sugarcane begins until the freight is unloaded in the thousandth.

The operator and the holder should have proper communication and registration to ensure that the loading and unloading days are correctly calculated; in this sense, both should agree when unloading the sugar cane.

Calculation for the indicator do not apply in cases in which mishaps or accidents have happened, such as:

- Accidents on the road,
- Weather conditions
- Stoppages for reasons unrelated to the field,

It should be duly recorded with tests to show the auditor the support of the deviation of the days.

It is the operator's responsibility to verify the type of harvest of each delivered load (machine, green or burnt cane harvesting)

The operator should retain data for at least the last 12 months regarding his harvest method, such as areas harvested mechanically, manually and manually (green). Likewise, the records of the average time from harvest to crush are also necessary. The indicator measures the average delivery time of each of the areas harvested and delivered to the mill.

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3.1.5 Mill overall time efficiency

Implementation Guidance:

Objective: The aim is to measure the operational time efficiency of the processing operation.

The length of a season is calculated from the time the first cane is processed by the mill at the start of a season to the point at which the last cane is processed. Mill shall keep data which show the times that the mill was and was not processing cane for whatever reason. Any stops, including maintenance activities (corrective or preventive), or power supply failure must be counted, with only one exception being due to rainfall.

In the case of a mill having two extraction lines, the length of stoppage of one shall represent a pro rata number of hours related to the capacity of that line. It is calculated using the formula.

FORMULA

For example for a mill with two line crushing at 400 and 200 tC /h, if the smaller line stops for 10 h and the other keeps running, the time lost will not be 10 h but $200/600 \times 10$ hours = 3.33 hours. The total stoppage will be calculated by adding all pro-rata stoppage.

Value for reporting period or 5 year rolling average can be used. This allows for the effect of a catastrophic flood or drought to be accommodated.

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3.1.6 Factory Performance Index

Implementation Guidance:

Objective: This aims to measure the efficiency of recovery of sugar from cane. It is not an indicator of the quality of the cane.

The Factory Performance Index (expressed as %) is a measure of mill performance independent of cane quality and represents the ratio of actual sugar recovered to the theoretical recoverable sugar in cane, expressed as a percentage. A value of 100 % is what would be expected of an average-to-good mill.

FORMULA

Where OR is the Overall Recovery and OR* the Theoretical Overall Recovery The calculation takes into account the fibre content and the raw juice (mixed juice (from mills) or draft juice (from diffusers)) purity of the cane, both of which are cane quality factors that affect recovery of sugar.

The Theoretical Overall Recovery OR*, used if sugar only is being produced and normalized for juice purity and cane fibre content, is calculated as:

FORMULA

Where E* is the Standard Extraction, BHR* is the Standard Boiling House Recovery, **SYMBOL** is the fibre content of the cane in g/100g and **SYMBOL** the purity of the raw juice³⁴

³⁴ "Good Management Practices for the Cane Sugar Industry" by J Meyer et al.,p. 439.

In addition, refining all white sugar in a white end refinery is expected to increase the undetermined loss by 0.4 % of the sugar in raw juice. Then the factor 0.98 becomes 0.976.

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3.1.7 Industrial Efficiency

Implementation Guidance:

Objective: This aims to measure the efficiency of production of ethanol from cane. It is not an indicator of the quality of the cane.

The industrial efficiency (expressed as %) is calculated as follows:

$$IE = \frac{TSAI (sugar, ethanol, yeast, molasses)}{TSAI (cane, imported molasses)} \times 100$$

where IE = Industrial efficiency

Where TSAI, total sugar as inverted, is reducing sugars and sucrose converted to reducing sugars. Note that TSAI in yeast acquired is omitted from denominator. It is assumed 681.63 L of ethanol per tonne of sucrose and 2 kg TSAI/kg yeast.

Inputs needed to comply with the calculation are:

- Sugar production
- Ethanol production
- Average ethanol content of alcohol product
- Ethanol produced from final molasses only?
- Mass of molasses sold
- Mass of yeast sold

- TSAI content of molasses sold
- Equivalent TSAI output
- Sugarcane processed
- Total sugars content of cane expressed as reducing sugars (ART)
- Molasses imported
- TSAI content of imported molasses
- Equivalent TSAI input

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Criterion 3.2 -To monitor global warming emissions with a view to minimising climate change impacts

3.2.1 Climate change adaptation and resilience plan

Implementation Guidance:

The risks related to climate change, its remediation and opportunities are mostly related to greenhouse gases caused by practices (grazing, soil tillage and deforestation) that affect land use, water use, waste management, carbon sequestration and conservation of biodiversity. Climate change seriously affects the productivity of the field and the production planning and logistics of delivery of the products derived from sugar cane, for which the operator must always guide efforts to reduce GHG emissions, the intensity of water use and know the possible climatic risks that it may face. Through an exercise to identify risks and opportunities, the operator can know the operational effects and know financially (assets, revenues, expenditures, capital and financing) how they should be prepared. The following diagram describes such exercise:



Examples of risks can be the following ones:

- Policy: Operations affected by changes in foreign policies
- Legal: Expenses incurred for services resulting from fines
- Technological: Development and research of new forced alternatives in the market, development costs of new practices
- Reputational: changes in market preferences, changes in stakeholder interest
- Economical: Increase in energy costs, increase in commodity costs
- Physical: Floods, changes in weather patterns, cyclones, droughts.

Based on:

- A) Evaluation of the impact of sugarcane company projects related to biodiversity and ecosystem services requested in Principle 4
- B) Environmental and social impact study requested in Principle 5,
- C) Yield Production ordered in Principle 3

The operator can identify within its operations the effects of climate change derived from its operations and that could also affect its operations. A document must be delivered in which the different operations and activities carried out in the Mill and in Agriculture are described and that indicate the degree / risk for the effects of climate change which can take place. Likewise, it must be verified in what way and how likely it is that the effects of these same effects of climate change affect harvests and production in mills.

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3.2.2 Net GHG emissions per tonne of cane

Implementation Guidance:

Objective: To estimate the GHG emissions associated with the processes of growing and processing sugar cane.

Implementation consists of collecting the input data required for the calculation as listed in the Bonsucro Calculator. A detailed description of what is involved in the calculation is given in the Bonsucro Calculator.

There are three indicators for this criterion, one to estimate the GHG emission for the sugarcane production, one for the sugar production and one if ethanol is also produced instead of some or all of the sugar. If a mill produces sugar and ethanol both indicators apply.

The GHG emissions are allocated to either product according to their energy values as calculated in the Bonsucro calculator.

Note that the emissions coming from the production of exported molasses are included in the calculation of the GHG emissions for the sugar production.

To calculate GHG emissions, the Bonsucro calculator uses a series of default conversion factors used to convert energy use into GHG emissions expressed in CO₂ eq.

Default values used as secondary data when primary data is not available are those shown in **Annex 3**. Some data shall be adapted to local circumstances (e.g. GHG emissions from electricity generation will depend of the energy mix of a country). They have to be justified by supporting evidence.

In order to calculate the agricultural contribution all agricultural inputs including fertiliser and application rates, insecticide, herbicide, pesticide and their application rates, lime application and fuel used in agricultural operations are required.

Note that transport of workers and aerial spraying are excluded.

The records of crop chemical applications and other contributing farm operations would need to be kept and available.

The operator shall therefore give full attention to this input data and rely on production records. It is not necessary to include in the calculation inputs which have little or no effect on the result, such as chemicals used in low amounts in processing (less than 1% of the total mass of input). The GHG savings are normally rounded to the nearest percentage.

Average values for all supplying farms are required for the estimate of GHG emissions per unit of final product – where practically not feasible, it may be possible to use estimated values for all farms included in the unit of certification, pending the estimate can be justified.

In order to calculate the mill's contribution, all industrial inputs including data on the transportation of the cane from the field, data on additional energy sources used or chemical products used are required as well as information on the water treatment practices. The quality of the cane will affect the level of emissions coming from the burning of the bagasse in the boilers.

The data which has the most substantial influence on GHG emissions calculation is as follows:

- ✓ Export and import of power;
- ✓ Sugarcane yield and factory recovery;
- ✓ Amount of fertiliser and chemical inputs, particularly N fertiliser;
- ✓ The extent of cane burning;
- ✓ The quantities of any supplementary fuels purchased;
- ✓ Irrigation power input; and
- ✓ Cane transport distances. A credit is achieved by exporting bagasse and power generated in cogeneration.

The calculation assumes that additional export power generated in condensing turbines also attracts a credit.

If any of the sugarcane is produced on land which was new cane land after 1st January 2008, then emissions from direct Land Use Change (LUC) have to be taken into account in the calculation. Change from one annual crop to another is not regarded as land use change. For the purpose of LUC emissions, sugarcane is considered as an annual crop. The effect of LUC is to affect the carbon stock per hectare, above and below ground, of the land in question. The method of estimating the change in carbon stock is that proposed in the PAS 2050, developed by the Carbon trust and DEFRA and published by the British Standards. This uses the table of IPCC default land use change values for selected countries, and assumes emissions are released in equal quantities per year over 20 years (see annex 4). The table provides emissions in t CO₂eq/ha/year. Principle 4: Actively manage biodiversity and ecosystem services.

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3.2.3 Net GHG emissions per tonne of sugar

Implementation Guidance:

Same as 3.2.2

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3.2.4 Net GHG emissions per MJ of ethanol

Implementation Guidance:

Same as 3.2.2

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3.2.5 Total Net Primary Energy Usage per kg product

Implementation Guidance:

Objective: To promote efficient use of energy by monitoring energy usage in field and factory operations.

The operator shall collect the data used for calculation as required by the Bonsucro Calculator.

The Bonsucro Calculator sets the scope of assessment which includes both direct and indirect energy usage from field to mill gate. It includes also energy inputs in producing the fertilizers and chemicals.

The result is a net energy usage which takes into consideration potential energy exports. Therefore a negative value can be achieved if substantial export of power is undertaken. There are two ways to calculate the energy usage in transportation depending on the available data:

- Calculated from average distances, payload weights and fuel usage in spreadsheet calculations. The average consumption of a vehicle shall take into consideration the real usage of the machine (with and without payload). Therefore it must be assessed if manufacturer data are relevant;
- Calculated from total fuel usage.

Note that energy used in transporting workers and aerial spraying is excluded.

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3.2.6 Energy used in cane transport per tonne cane transported

Implementation Guidance:

Same as 3.2.5

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3.2.7 Primary energy use per tonne of sugarcane

Implementation Guidance:

Same as 3.2.5

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3.2.8 Energy Return on Investment

Implementation Guidance:

The objective of the indicator is to increase the mill system's energy efficiency related to ethanol production. For Bonsucro, the system's efficiency refers to the amount of energy used in machinery, equipment and different appliances that require energy of any type to function vs the amount of energy contained (also known as heat capacity) of the ethanol produced by the mill.

To know about the definition of calorific content and its calculation details, refer to indicator 3.2.7.

The operator should calculate the energy content of all its products (sugar, ethanol, molasses, fusel oil, yeast and other products) marketed or used as a by-product within the mill, to know the proportion of energy corresponding to ethanol.

- The said proportion rate should be applied to the mill's total energy input for at least the last 12 months. Said input energy refers to electrical energy or energy contained in diesel, gasoline, natural gas and coal among others; Bonsucro will calculate the heat capacity values for these inputs based on the quantities declared by the operator in the heat pump.
- For each unit of energy used resulting from the previous exercise, at least the mill must have 9 units of energy contained in ethanol.

Example: Company A is dedicated to producing and marketing Sugar and Ethanol. During 12 months, the operator performs the energy calculation of these products, resulting in 30,000 MJ of which 20,000 MJ (66%) come from the energy content of sugar and 10,000 MJ (34%) from ethanol's energy content.

Company A used an energy content for the operation of the mill of 8,000 MJ in 12 months, of which 34% were used to produce ethanol.

The calculation for the present indicator, in this case, would be $(30,000 \times 34\%) / (8,000 \times 34\%) = 3.75$; According to Bonsucro standards, the indicator would have a Non-Compliance

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Principle 4 - Actively Manage Biodiversity And Ecosystem Services

4.1 To protect and rehabilitate biodiversity and ecosystem services, as well as maintaining and enhancing HCVs

Implementation Guidance:

The mill operator should have map(s) identifying the sugar cane plantations and should include all supply areas. The map(s) should at least contain the following information:

- a. Location of all sugar cane plantations and mill under certification process.
- b. Natural land cover in and around the sugar cane fields (riparian areas, forest patches, rivers, streams, wetlands, lakes).
- c. Natural areas protected by law (national, sub-national or local protected natural areas).
- e. Indicators of presence of species in any category of threat by the IUCN, CITES species, or protected by national legislation.
- f. Areas of threatened ecosystems on the IUCN list or ecosystems protected by national legislation.
- g. Areas of elevated risks to HCVs that can be identified across the supply-base (using the HCV risk questionnaire), and any other environmental and biodiversity risk, threats and impacts.

The 6 categories of HCVs are³⁵:

- **HCV 1 Species diversity:** Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.
- **HCV 2 Landscape-level ecosystems:** Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL) that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.
- **HCV 3 Ecosystems and habitats:** Rare, threatened, or endangered ecosystems, habitats or refugia.
- **HCV 4 Ecosystem services:** Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.
- **HCV 5 Community needs:** Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc...), identified through engagement with these communities or indigenous peoples.
- **HCV 6 Cultural values:** Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

³⁵ <https://hcvnetwork.org/library/common-guidance-for-the-identification-of-high-conservation-values/>

The HCV Approach provides a framework to identify High Conservation Values and put in place measures to maintain or enhance them. It is linked to measures to protect basic biodiversity and ecosystem services, but places emphasis on critical environmental, social and cultural values that are considered irreplaceable. To do this in a simple but sufficiently robust way, a risk-based approach should be developed. Sugar cane is often grown in landscapes that are already highly modified for cultivation. HCVs are potentially most threatened when cane crops are newly expanded into natural ecosystems and/or where indigenous peoples and local communities have user and access rights, i.e. typically in scenarios of new conversion from natural ecosystems to agricultural production. Though of course there may still be threats in on-going cane cultivation as well. Standard Bonsucro HCV risk questionnaires will be developed by Bonsucro to account for the range of threats sugar cane production has on HCVs.

For areas under cultivation, the mill operator will identify HCV risks across the whole supply area as part of the mapping. Growers will then complete the HCV risk analysis at the farm level. This will result in a low, or elevated-risk rating outcome for various parts of the mill's certified supply-base. In many cases, the result outcome for the mill's certified supply will be a low-risk rating requiring no additional action to comply with the Standard.

Some general indicators of elevated risk for on-going cultivation are proximity to priority conservation areas, such as Key Biodiversity Areas and Protected Areas, and Indigenous People's Lands.

Where there is an elevated risk outcome, the HCV questionnaire provides generic instructions on additional actions and measures that should be taken to mitigate the risks. The specific mitigation measures must be integrated into the grower BESMP (4.1.2)

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4.1.2 Maintain and enhance biodiversity, ecosystem services and HCVs on and around farm areas

Implementation Guidance:

The mill processes the supply-shed mapped information (4.1.1) to identify specific biodiversity attributes (habitats and species), HCV risks and threats and potential measures that growers can use to mitigate these threats. This information is used by growers as a basis to verify these and develop and implement a Biodiversity and Ecosystem Services Management Plan (BESMP) which contains at least:

- a. Threats identified for each type of ecosystem, natural area, species of flora and fauna, community or HCV risk.
- b. Main mitigation and/or restoration measures for the identified threats, risks and impacts.
- c. Goals and objectives for management, mitigation and/ or restoration.
- d. Plan of specific activities to be carried out for each objective or target.
- e. Indicators to measure the achievement of the objectives and targets.
- f. Specific allocation of resources and persons responsible for the achievement of the objectives and goals.

Biodiversity refers to: rare, threatened, or endangered species, and habitats and habitat corridors; natural areas protected by legislation, patches of natural vegetation and natural ecosystems including woodlands, forests, wetlands and grasslands/rangelands.

Ecosystem services refer to: riparian areas, natural wind screens, vegetative buffer zones, flood control, filtration areas.

The grower operator should implement the activities described in the biodiversity and ecosystem services management plan (BESMP). These activities should be aligned with the protection, mitigation and/or restoration of natural areas, HCVs, and ecosystems identified in the sugar cane fields under certification and their surrounding area.

Some activities may include but are not limited to:

- a. limiting the use of agrochemicals
- b. not to use banned agrochemicals
- c. protecting critical ecosystems
- d. ensuring habitat connectivity
- e. restoration of aquatic ecosystems and riparian buffer zones
- f. restoration of farmed areas of marginal productivity to natural ecosystems
- g. incorporation of native trees/flora as border plantings and barriers around housing and infrastructure
- h. Live fences, shade trees, and permanent agroforestry systems.
- i. Signpost areas of ecosystem importance with messages prohibiting hunting of animals, deforestation, forest degradation, burning, etc.

The operator should train its workers and stakeholders in the care of important species and ecosystems of importance in the area around sugar cane plantations and industrial operations.

The operator should keep records of the implementation of the plan to enhance or maintain biodiversity and ecosystem services, as well as areas and species identified as HCVs (see 4.1.4 below), to enable effective monitoring of the efficiency of the measures.

Should the monitoring reveal ineffectiveness of measures, the BESMP should be revised, and additional or alternative measures described and implemented.

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4.1.3 Percentage of areas of natural ecosystems defined internationally or nationally as legally protected converted to sugarcane on or after 1 January 2008

Implementation Guidance:

The operator should conduct a historic land use change analysis, i.e. a multi-temporal analysis of land cover change with a starting date of 01 January 2008. A multi-temporal analysis in Geographic Information Systems (GIS) language is the analysis of satellite imagery from different dates in order to identify the changes in land use. It can serve as evidence that there has been no damage to nationally and internationally protected natural ecosystems due to the growing of sugar cane.

The analysis should be carried out by professionals with expertise in GIS and remote sensing.

The operator should have the report of the historical analysis of land use change and the satellite images of the different dates used for this purpose, until the implementation of the last unit of certification (last developed sugar cane crop under certification).

The operator should provide a map showing areas not acceptable for development [based on national interpretation of HCV categories 1-6 (see also 4.1.4 below) or research identifying HCV and based on local legislation, taking into account national protected areas and similar] and a map showing new areas developed after 1 January 2008 (or equivalent documentary evidence, for example satellite imagery, research surveys, stakeholder consultation) to demonstrate that expansions or new developments do not involve areas internationally or nationally legally protected, important areas for conservation (Intact Forest Landscape, Key Biodiversity Areas, RAMSAR areas, Important Bird Areas, IUCN red list of ecosystems) or HCV categories 1-6.

The operator may make available any documentary evidence (purchase records, photographs, maps) indicating land use or land cover before 01 January 2008, in addition to maps showing the multi-temporal analysis.

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4.1.4 – Across the whole cane supplying area future expansion is conducted in non-HCV areas

Implementation Guidance:

The grower operator should conduct the 'Bonsucro HCV Risk Assessment for expansion' for the planned expansion areas and implement the HCV Risk Assessment procedures.

The operator should not develop areas identified as natural ecosystems or HCVs and should keep records of the implementation of activities to mitigate and manage identified risks.

If the HCV risk assessment reveals high risk, a full HCV assessment by an HCVRN licensed assessor should be conducted.

For areas outside the unit of certification, the mill operator supports non-certified growers to implement a set of minimum precautionary practices designed to protect natural ecosystems and HCVs. The mill operator can prioritize supporting growers in the highest risks area as indicated from supply-base biodiversity and HCV risk mapping (4.1.1) and stakeholder mapping (1.2.1).

These precautionary practices should incorporate information on specific biodiversity attributes (habitats and species) compiled under 4.1.2 and include:

- no expansion of cane into natural ecosystems (forests/natural grasslands/wetlands etc),
- no expansion on steep slopes, or in riparian vegetation,
- no hunting/collecting of RTE species,
- mitigating farming-related impacts on communal lands.

If the HCV risk assessment reveals high risk, a full HCV assessment by an HCVRN licensed assessor should be conducted

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4.1.5 Percentage of greenfield expansion or new sugarcane project covered by ESIA

Implementation Guidance:

The operator should carry out an ESIA study before starting with the planning of new developments (for expansions greater than 5% of total supply area under certification or 1000 ha, whichever is smaller).

According to the IFC (2018)³⁶, The Environmental and Social Impact Assessment (ESIA – note that IFC reverses the order to SEIA) process is a way to identify, predict and assess the type and scale of potential biodiversity impacts, and opportunities to benefit conservation, associated with any business activities or projects.

The operator should conduct a ESIA to identify the social and environmental impacts of its activities and to propose and manage a set of actions aimed at mitigating the negative impacts on the environment and affected stakeholders.

The operator should:

- Identify and involve the potentially affected stakeholders (local communities, other growers) in the form of a consultation;
- Identify the natural resources on which its operation relies and the impacts of its activities on them;
- Describe the consultation process followed [Free, Prior and Informed Consent (FPIC) should be used for the process and consensus should be sought when decisions are being made or conclusions agreed; see also criterion 1.X for further information on FPIC];
- Identify the positive and negative impacts on the identified stakeholders.
- Keep the records from the consultation process and actions decided.
- Propose actions (preventive and corrective) to mitigate the identified impacts and to manage or enhance the natural resources;
- Set measurable objectives;

and document all this in the ESIA report.

It should include stakeholder consultation and pay attention to potential impacts that may occur especially on vulnerable communities. Records of workshops, focus groups and/or participatory interventions with communities should be kept. The operator should always have records of agreements on possible alternatives or appropriate mitigation measures with stakeholders, accompanied by independent third-party experts.

The operator should carry out the identified impact mitigation strategies and should always keep records of their monitoring, evaluation and adaptation if necessary (see 5.1.3 for the Environmental and Social Management Plan).

³⁶ IFC. (2018). *A Guide to Biodiversity for the Private Sector*. Retrieved from https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/biodiversityguide

A retrospective ESIA should be carried out for extension projects that have taken place in the 12 months prior to initial certification.

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Criterion 4.2 - 4.2 Soil Management Plan in place to avoid erosion and maintain and improve soil health

4.2.1 - Mapping of soils and/or soil management units of the farm

Implementation Guidance:

Objective: To identify different soils and their distribution across the farm, to serve as a foundation for identifying and implementing appropriate BMP's.

The soil management unit approach is a simpler and more cost-effective approach compared to traditional soil classification approaches. It allows for grouping of soil types into units by using characteristics that behave in a similar agronomic manner and thus will receive similar treatment or management.

To define a locally appropriate set of SMU's, soil experts would usually use a framework to combine two or three of the following characteristics:

- Parent material
- Soil system
- Topographical sequence
- Colour
- Texture
- Available water
- Aspect

The soil map should contain:

- Defined soil management units, including mapped boundaries and area.
- Dominant soil types and/or parent materials related to each soil management unit.
- Note any local legal limitations for soils to agricultural production.

For each SMU the following information should be defined measured or collected:

- Clay (and optionally sand and silt) percentage in topsoil (up to 20 – 30 cm) and subsoil (at least up to 60 cm), whenever applicable.
- Total soil depth and effective rooting depth.
- Available water parameters (measured or estimated from clay whenever applicable).
- Identification of soil constraints and crop limiting conditions such as compaction and poor drainage, sodic and saline areas, acidity and any others of relevance to sugarcane production or soil health.

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4.2.2 - Soil samples are taken and used to develop objectives for soil health and crop nutrition programmes

Implementation Guidance:

Objective: To implement a soil monitoring programme to plan optimal crop nutrition and to detect changes in soil health.

Records of all soil and leaf samples must be retained.

Soil acidity

In conjunction to topsoil fertility sampling, sampling subsoil is carried out at least once per crop cycle, immediately after the last harvest before a replant. Samples are collected from the surface to at least 80 cm in increments of 20 or 30 cm.

Where corrective actions have been applied, based on the initial soil sampling and recommendations, there is no need to resample and analyse the soil immediately after corrections have been applied. However, follow-up resampling and analysis is encouraged to evaluate the success of the corrective action and permit further corrections if required. Retesting of sub soils is done at least every 5 years, but can be coincided with routine topsoil sampling at replant if shorter than 5 years.

Salinity/sodicity

Salinity/Sodicity refer to two salt conditions in soils. Electrical conductivity (EC) is an important indicator of salinity and exchangeable sodium percentage (ESP) an indicator of sodicity. Samples are collected from the surface to a depth of at least 80 cm at increments of 20 or 30 cm, or as determined locally by appropriately qualified soil specialists.

Where corrective actions have been applied based on the initial soil sampling and recommendations, there is no need to resample and analyse the soil immediately after corrections have been applied. However, follow-up resampling and analysis is encouraged to evaluate the success of the corrective action and permit further corrections if required. Retesting of sub soils is done at least every 5 years, but can be coincided with routine topsoil sampling at replant if shorter than 5 years.

Regular analysis of irrigation water is required to monitor Salinity/sodicity contributed by irrigation practices.

Crop nutrition

The operator has a “fit for purpose” sampling plan which is articulated in the Soil Management Plan, that accurately represents all fields, taking into account parameters such as soil uniformity and field sizes.

At a minimum, soil testing determines the levels of:

- Plant available macro nutrients (Nitrogen, Phosphorus and Potassium; Calcium, Magnesium, Sulphur)
- Organic carbon content (readily oxidisable or total organic carbon)
- Measures of soil acidity (pH(water), , exchangeable acidity and/or aluminium.)

Soil sampling

Sampling (top 0- 20 cm) should be undertaken at every replant cycle with samples being taken in a representative way to ensure analysis accurately represents field conditions. Consideration must be given for split sampling fields bigger than 10ha. Analysis should include compressive nutrient status as well as measure of acidity and Salinity/sodicity .

As a minimum, the frequency of soil sampling should ensure all fields are sampled every 5 years. More regular sampling is encouraged on sandier soils (<20% clay) or areas with high rainfall and/or extreme rainfall events.

The same sampling methodology/protocol must be followed from one sampling event to the next to ensure consistency in sample representativeness. Regional guidelines should be followed in this regard. Ideally the same reputable laboratory should be used for consistency in methods and results.

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4.2.3 – Health of the soil improved and maintained through setting objectives and implementing appropriate BMPs

Implementation Guidance:

Objective: To promote the use of practices aimed at maintaining soil health or improving declines therein, with regular monitoring of key parameters to permit detection of changes in soil health.

Soil Management Plan shall identify practices that aim to enhance soil health, these may include:

- Identification, prevention, remediation and monitoring of unfavourable soil and crop growth limiting conditions (i.e. crusting, compaction, acidification, salinization, poor drainage, weeds).
- Attempting to reduce uncovered and exposed soil through the use of ground covers (either by tops and leaves after each harvest and cover crops, green manures, etc during replant fallow cycles),
- Adopting practices that minimize top soil disturbance (minimum tillage or reduced tillage, controlled traffic, etc), and permanent beds
- Ensuring properly designed contours and waterways and permanent cover of non-tilled areas (verges, waterways, contour banks, etc.).
- Adopting sound crop nutrition guidelines and soil fertility management
- Undertaking activities that promote the conservation of soil organic matter, which may include residue and mulch retention, application of organic mill wastes by-products (filtercake, bagasse) and other readily available organic ameliorants (manures), green manure fallowing, while adopting practices that slow loss of SOM (conservation tillage, prevention of erosion)

Soil acidity (where applicable)

- Soils with non-optimal acidity status as determined by soil testing are corrected through the use of liming materials that aim to reduce acidity levels to regionally established and accepted norms. Records are maintained.
- Where corrective actions have been applied based on the initial soil sampling and recommendations, there is no need to resample and analyse the soil immediately after corrections have been applied. However, follow-up resampling and analysis is encouraged to evaluate the success of the corrective action and permit further corrections if required. Retesting of sub soils is done at least every 5 years, but can be coincided with routine topsoil sampling at 2-3 years after corrective actions.

Salinity/sodicity (where applicable)

- Soils with non-optimal salinity/sodicity status as determined by soil testing must be corrected in partnership with an expert in this field. In most cases a prerequisite before reclamation can begin, is to ensure that the soil is well drained.
- Records are maintained of practices adopted.
- Regular analysis of irrigation water is required to monitor Salinity/sodicity contributed by irrigation practices. Areas within 30km of the coast should also analyse rainwater for its Na concentration.

- Where corrective actions have been applied based on the initial soil sampling and recommendations, there is no need to resample and analyse the soil immediately after corrections have been applied. However, follow-up resampling and analysis is encouraged to evaluate the success of the corrective action and permit further corrections if required. Retesting of sub soils is done at least every 5 years, but can be coincided with routine topsoil sampling at 2-3 years after corrective actions.

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4.2.4 - Fields with samples indicating low organic matter, acidity or Salinity/sodicity are corrected

Implementation Guidance:

Objective: To verify mitigation and remediation practices have corrected crop limiting low organic matter, acidity or Salinity/sodicity status in a field through soil sampling.

Verification done during soil sampling cycle.

Local industry norms must be used and the soil analyses results used to confirm the objectives set in the SMP are being achieved, or where they are not achieved, the corrective action plans are being implemented.

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4.2.5 - Ratio of fertiliser N P K applied to fertilizer N P K recommended by soil analysis

Implementation Guidance:

Objective: To promote the optimal use of fertiliser to improve nutrient use efficiency in the crop and minimise environmental degradation.

The operator should ensure crop nutrient requirements are used to develop a crop nutrition programme based on local industry recognised best practices (or where none are available, from suitably adapted guidelines from another region), and includes the application of chemical and organic fertilizer. It must be adapted for local (site specific) conditions to achieve optimal production in terms of both yield and quality while minimising environmental risk.

The amount of Nitrogen, Potassium and Phosphorus applied through fertilisers within a season should be determined by actual and target crop nutrient supply, taking into account all sources of nutrients already available to the crop. This should include nutrients:

- present in the soil
- that are being co-applied in that season (e.g. mill wastes, manures)
- derived from previous fertiliser applications (including manures, mill mud and mill ash, composts, vinasse, CMS)
- derived from harvest residues
- provided by other crops, such as legumes, green manures and cover crops

Fertiliser shall be of an appropriate type applied at the correct rate, time and placement for optimal crop use as guided by local recommendations

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4.2.6 Practices to minimise and control soil erosion and compaction

Implementation Guidance:

Objective: To promote the use of practices that mitigate and minimise erosion.

The Soil Management Plan considers and implements, where relevant and practically possible, the following:

- Compliance with relevant regulations aimed at limiting soil erosion
- Use of contour planting, terraces or strip planting

- Use of minimum or conservation tillage
- Use of mulch/residue blankets
- Use of cover crops or green manures
- Application and retention of organic matter
- Use of windbreaks
- Use of buffer strips (to reduce water flow and capture nutrients)
- Installation of drainage and waterflow control measures to avoid water-logging or excess runoff
- Avoiding the use of machinery on wet soil
- Use of machinery with extended reach, wide spacing between tracks or low-pressure tyres
- Limits on machine weight
- Use of permanent vehicle routes (controlled traffic)

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4.2.7 - Burning of sugarcane tops and leaves after harvest is prevented

Implementation Guidance:

Objective: To promote the retention of biomass and harvest residues to improve soil cover.

Where cane burning is required or necessary, cool burns are advised.

Clear reasons for the requirement to burn sugarcane prior to harvest must be documented.

After harvest of burnt cane, tops and residual biomass must be retained, either by spreading across fields or by raking and windrowing between the interrows

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Criterion 4.3 - Water Stewardship Plan in place

4.3.1 – Identify main water resources, the basin, sub-basin or micro-basin where the water resource is provided and develop and implement an action plan to contribute to its sustainability and setting objectives for water stewardship

Implementation Guidance:

The operator should identify on a map the main water resources found in the supply area under certification. The map should identify the water bodies according to the basin, sub-basin and micro-basin where the crops are located. It is not necessary to have a map for each crop, a general map can identify all supply areas. The level of availability of each water body should be identified.

Additionally, the map should identify the surrounding communities that make use of the water sources, as well as other productive activities (mining, livestock, other crops).

The operator should develop a Water Stewardship Plan (WSP) according to the level of availability or water stress identified. The plan should have at least:

- achievable actions
- agreed responsibilities
- timeframes and allocated resources
- identification of other initiatives for sustainable water care and management that have local action

The operator can consider the definition of "basin/catchment" provided by the Alliance for Water Stewardship³⁷:

“CATCHMENT. The geographical zone in which water is captured, flows through and eventually discharges at one or more points. The concept includes both surface water catchment and groundwater catchment. A surface water catchment is defined by the area of land from which all precipitation received flows through a sequence of streams and rivers towards a single river mouth, as a tributary to a larger river, or to the sea. A groundwater catchment is defined by geological structure of an aquifer and groundwater flow paths. It is replenished by water that infiltrates from the surface. It has vertical thickness (from a few metres to 100s of metres) as well as area. Depending on local conditions, surface and groundwater catchments may be physically separate or interconnected. “Catchment of origin” refers to a catchment, distinct from the site’s catchment(s), where a product or service is manufactured or sourced. It may be anywhere from an adjacent catchment to the other side of the world. Alternative terms are watershed, basin and river basin”.

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³⁷ For more details: https://a4ws.org/?gclid=EAIaIQobChMI1bWPrNTs7gIVbMyzCh2IbwvQEAAAYASAAEgLGQPD_BwE

4.3.2 Mapping of land/water titles & claims is conducted

Implementation Guidance:

Legal ownership should be the official title in the country or equivalent (e.g. notary, government agency or other). Rights to water refer to the right to extract & use water, including cap on quantity extracted. Customary rights can be evidenced in other forms by a local statutory or customary body. Guidance for customary rights is provided in ILO Conventions 169 and 117.

The operator should:

- Demonstrate land rights by keeping land titles (or their equivalent to legally accepted in the country).
- Demonstrate water rights by maintaining official water abstraction permits that include the maximum authorised flow for each water body used.
- Have a system in place to track suppliers' compliance with declared land tenure and water rights documents and to encourage compliance.
- Have a clear procedure for land and water rights claims and socialise with stakeholders the procedures, response times and communication channels.
- Have a complaints map covering the entire supply chain. When land rights have been relinquished to the benefit of the operator, the operator demonstrates the decision was taken using Free Prior Informed Consent (FPIC – see also criterion 1.X) and has been negotiated.

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4.3.3 – Engaging in collaborative action to promote sustainable water use

Implementation Guidance:

The operator should demonstrate active participation in local community initiatives and processes, with NGOs, regional and national public entities, etc., aimed at sustainable water management and care. If there is no local or other stakeholder initiative being developed in the area, the operator is expected to generate the initiatives in the area to promote sustainable water use.

The operator should keep records of the measurement of water stress and take collaborative actions to reduce it.

The operator should plan and implement internal sustainable water use plans or programmes involving crop and mill workers.

The operator should record any evidence of the implementation of the internal plans or programmes, such as attendance lists, photographs or videos of training sessions and development of information and training material.

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4.3.4 Net water consumed per unit mass of product

Implementation Guidance:

The operator should have the necessary water permits and use on-site devices that account for the flow in m³ per hour.

The operator should keep and maintain records of the quantities of water captured for use in the mill. Records of water consumed at the mill should equal water used minus water returned to the environment.

Mill effluent should be returned to crops for irrigation, the operator calculates it as water returned to the environment.

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4.3.5 – Irrigation Water Productivity

Implementation Guidance:

The operator should keep records for the entire growing cycle of the daily rainfall on his crops expressed in mm and records of all water inputs to the crops, including abstracted water, recycled water, diluted stillage and diluted effluent.

Note: 1 mm = 10 m³/ha

The calculation is:

Rain = total rainfall over the growing cycle in mm

Irr = net irrigation applied over the typical growing season in mm

CY = the cane yield at harvest in t/ha (for the whole farm derived from all cane harvested / area harvested in the season)

The benchmark water productivity (W_{Po}) and the actual water productivity (W_{Pa}) for the farm can then be calculated (in units of kg/ha/mm) as:

- $W_{Po} = 66 + (0.05 \times \text{Rain})$
- $W_{Pa} = (\text{CY} \times 1000) / \text{Irr}$

These two values can then be compared:

W_{Pa} >= W_{Po} is acceptable

W_{Pa} < W_{Po} is not acceptable

The calculation assumes net irrigation (interception, drainage and soil evaporation losses included, conveyance losses excluded in the irrigation amount).

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4.3.6 - Dissolved oxygen in effluent point

Implementation Guidance:

The operator should carry out analyses of the effluent water from the mill (periodicity of analyses to be determined). The water sample should be taken at the exact point of discharge.

The operator should ensure that the dissolved oxygen results at the effluent point comply with the parameters defined by Bonsucro: >2.5 PPM or 1 Kg COD / T product or 0.25 kg/T BOD

The operator should implement corrective measures in case the dissolved oxygen test results are not the minimum required by Bonsucro.

The operator should keep records of dissolved oxygen analyses of the effluent, as well as evidence of corrective measures if necessary.

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Criterion 4.4 - Agro-ecological Pest, Disease and Weed Management Plans in place and implemented

4.4.1 – Identification and monitoring of current, historical and potential pests and diseases

Implementation Guidance:

The operator should create and implement a pest and disease monitoring plan in which the damage threshold of each pest and disease is defined for when control is necessary. The pest and disease monitoring plan should cover all crop areas under certification.

The operator should keep:

- Records of historical, current and potential pests according to different factors such as rainfall, winds, relative humidity, among others.
- Records of the implementation of field monitoring methodologies by types of pests or diseases, types of sampling, dates, persons responsible, results of sampling and crops where it is implemented.
- Field records of plant symptomatology caused by pests or diseases.
- Historical records of pest and disease monitoring, as well as weeds and symptoms presented in each crop.

In the case of new developments, thorough sampling should be carried out to identify future pests and diseases, in order to prevent new outbreaks affecting new and established developments.

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4.4.2 - Agro-ecological pest and disease management practices implemented

Implementation Guidance:

The overall aim should be to minimise economic impact and reduce the build-up of pests and diseases whilst minimising any off-site impacts. Different pests and diseases have different ecologies, distributions, potential impacts and different controls. In addition, farming systems vary due to different environmental and societal limitations. Thus, there is no one set of strategies applicable to all situations.

Agroecological strategies for management may vary according to each type of pest or disease so the operator must implement good practices, which can be at least:

- • Manual removal

- • Selective tillage
- • Selective application of insecticides and fungicides
- • Trash retention and cover crops
- • Biological control agents
- • Use of 'clean' seed sources at planting
- • Use of cane varieties resistant/tolerant to pests and diseases
- • Management of surrounding flowering plants to encourage those that provide nectar that feeds natural enemies of pests and/or discourage those that provide protein sources for rodents
- • Field hygiene to prevent the spread of pests and diseases
- Insecticide and fungicide use should be based on action thresholds or using risk-based approaches appropriate to the target species. Application should be in a manner that minimises any off-site movement.

The operator should keep records of the implementation of the management plan and of the preventive and corrective measures applied.

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4.4.3 - Integrated Weed Management plan

Implementation Guidance:

The overall aim should be to minimise economic impact and reduce seed banks whilst minimising any off-site impacts. Different weeds have different ecologies, distributions, potential impacts and different controls; grasses, broadleaves and vines all require different considerations. In addition, farming systems vary due to different environmental and societal limitations. Thus, there is no one set of strategies applicable to all situations. Some useful strategies may include:

- Manual removal
- Selective tillage
- Selective application of herbicides

- Trash retention and cover crops
- Biological control agents
- Use of cane varieties that close the canopy quickly and shade-out weeds
- Field hygiene to prevent the spread of weeds

Herbicide use should be based on action thresholds or using risk-based approaches (eg for pre-emergent herbicides) appropriate to the target species. Application should be in a manner that minimises any off-site movement.

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4.4.4 - Agro-chemicals applied per hectare per year

Implementation Guidance:

The operator should keep records of the agrochemicals applied to the crops.

The minimum information to be recorded is:

- Date of application
- Active ingredient
- Quantity of product
- area of application
- responsible
- Cause of application (insect pests, fungi, bacteria, weeds, nematodes)

The operator should apply only products registered for their specific use and at the rates recommended on the label.

The operator should keep records of the quantities of active ingredients applied and must not exceed 5 kg active ingredient / ha/year. It is normally measured with the registration of agrochemical application per plot. The template should allow to record how much of each active substance is used. At the end of the period the total amount of kilograms or tons used in the total area is added and the calculation per hectare is made.

- Verify if there is a national law to be comply with that govern agrochemical use. Usually, this law will also indicate who is in charge to regulate the import, manufacture, registration, packaging, labelling, distribution, and retail sale of agrochemicals to ensure that when used as directed they are safe and effective.
- Follow the label instructions on agrochemicals.
- ensure that the agrochemicals do not move beyond your targeted application area.
- Communicate with neighbours about the agrochemical application. Effective communication can prevent misunderstanding and unnecessary conflict and provide reassurance.
- Method of application of the pesticide(s) should be noted, record equipment settings and calibration reports, weather conditions, the date, time and location of the application and the name and quantity of the agrochemical applied.
- The name of the agrochemical technician who applied the agrochemical.
- The proximity of other people to the area where the agrochemical was applied.
- The total surface area of the land building treated with the agrochemical

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4.4.5 - Banned agro-chemicals applied per hectare per year

Implementation Guidance:

The operator should not apply prohibited agrochemicals listed below:

- Pesticide formulations that meet the criteria of classes Ia (extremely hazardous) or Ib (highly hazardous) of the WHO Recommended Classification of Pesticides by Hazard³⁸;

³⁸ https://apps.who.int/iris/bitstream/handle/10665/205561/9789241510417_eng.pdf;jsessionid=A903785CB56E7D2B3731DEC20EBA57FD?sequence=1

- Pesticide active ingredients and their formulations that meet the criteria of carcinogenicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS)³⁹;
- Pesticide active ingredients and their formulations that meet the criteria of mutagenicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS)⁴⁰;
- Pesticide active ingredients and their formulations that meet the criteria of reproductive toxicity Categories 1A and 1B of the Globally Harmonized System on Classification and Labelling of Chemicals (GHS)⁴¹;
- Pesticide active ingredients listed by the Stockholm Convention⁴² in its Annexes A and B, and those meeting all the criteria in paragraph 1 of Annex D of the Convention;
- Pesticide active ingredients and formulations listed by the Rotterdam Convention in its Annex III⁴³;
- Pesticides listed under the Montreal Protocol⁴⁴

Note that when national legislation goes against one of the international conventions, protocol or WHO lists, by allowing only banned agrochemicals and therefore when no non-banned alternative is allowed by legislation, the national legislation shall be complied with.

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Criterion 4.5 - To ensure hazardous chemicals and materials do not negatively impact biodiversity and ecosystem services

4.5.1 - Management of storage facilities and safe handling and disposal of chemicals, fuel, lubricants and hazardous materials, with the objective of preventing negative impacts to biodiversity and ecosystems

³⁹ <https://unece.org/ghs-rev8-2019>

⁴⁰ <http://www.fao.org/pesticide-registration-toolkit/special-topics/highly-hazardous-pesticides-hhp/identification-of-hhps/hhp-criteria-2-3-4/en/>

⁴¹ <http://www.fao.org/pesticide-registration-toolkit/special-topics/highly-hazardous-pesticides-hhp/identification-of-hhps/hhp-criteria-2-3-4/en/>

⁴² <http://chm.pops.int/TheConvention/ThePOPs/ListingofPOPs/tabid/2509/Default.aspx>

⁴³ <http://www.pic.int/TheConvention/Chemicals/AnnexIIIChemicals>

⁴⁴ <https://www.environment.gov.au/protection/ozone/montreal-protocol>

Implementation Guidance:

The operator should ensure safe storage and handling conditions for agrochemicals, fuels, lubricants and hazardous materials, as well as their safe disposal (e.g. for the regular oil changes in vehicles/machinery)

Storage sites should have at least the following characteristics:

- Closed, locked areas with restricted access to authorised and trained personnel for the handling of these substances.
- Floors, walls and shelves made of non-absorbent, non-flammable material, allowing for easy cleaning and tidiness.
- Chemical inputs (agrochemicals and fertilisers) must be kept separate from lubricants, fuels and other hazardous materials.
- Agrochemicals must be separated by biocidal action (fungicide, herbicide, insecticide, rodenticide, etc.) and by presentation (powders, liquids, pastes, etc.).
- the space must be conditioned to retain possible spills (a spill containment wall must be provided) and with an appropriate kit to recover the spilled material.
- The site must have appropriate signage according to the type of material being stored.

The operator should have an adequate bio-bed for the final disposal of spilled agrochemicals to avoid serious damage to aquifers and groundwater.

The operator should limit access to authorised adequately trained personnel.

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4.5.2 Specific training for handling and correct use of farm chemicals, fuel, hazardous materials, and record keeping of training and use.

Implementation Guidance:

The operator should ensure it provides proper training for the handling and manipulation of agrochemicals and hazardous materials and should maintain training attendance lists and regularly update its records. These trainings minimise the risk of spills that can cause serious damage to health and the environment.

The training should have at least the following themes:

- Training is specific and relevant to the task(s) performed.
- An explanation of the names, formulations, toxicity, health risks, and other relevant MSDS information related to farm chemicals, fuel, hazardous materials all substances to be used.
- Techniques for correct handling of these substances.

- Correct use of PPE.
- Preventative measures for reducing possible damage to health and the environment caused by the substances.
- Emergency procedures, first aid and medical attention for cases involving poisoning or undue contact with these substances.

Personnel who apply agrochemicals and use fuels, lubricants and/or hazardous materials should have the appropriate personal protective equipment (PPE) for each type of input, as well as a record of the delivery of PPE to workers and a record of the appropriate use of masks to avoid inhalation of toxic gases.

The operator should have photographic and documentary records of the constant and correct use of PPE by workers.

The operator should keep records of training, where appropriate on an individual basis.

The operator should keep records of all use of farm chemicals, fuel, hazardous materials and reports. Records are accurate, complete, up to date and accessible.

Records should be retained by the operator for a minimum of two years.

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Principle 5 – Continuously Improve Other Key Areas Of The Business

Criterion – 5.1 To promote economic and social sustainability

5.1.1 Research and innovation plan in place

Implementation Guidance:

Valid research and Development plan should consider the following categories:

- **Product innovation:** A good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics.
- **Process innovation:** A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.
- **Marketing innovation:** A new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
- **Organisational innovation:** A new organisational method in business practices, workplace organisation or external relations.

The research and development plan can also consider R&D levied by research institutions or other organisations by which the operator has the right to utilize the learnings.

For innovation, this should be centralized and coordinated, encompassing business continuity plans and response protocols for emergencies (including health emergencies, environmental disasters, and others).

For research, this includes the testing of technology and practices to improve the results of the operator at both the mill and agriculture levels.

The operator should record the direct costs of R&D. This can include the cost of running tests, cost of personnel, material, and products. It also includes trials on new machines but not the cost of investment in new machines or equipment.

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5.1.2 Value added per tonne cane

Implementation Guidance:

Clarification: Value added is not the same as profit. Value added by the operation is the value of sales less the cost of goods, raw materials (including energy) and services purchased. It does not include depreciation.

The operator should estimate the added value of their operations, including mill and agriculture operations and estimate the actual value per ton.

For the mill the added value is calculated from the sale of sugar, ethanol, molasses, bagasse and power, minus the costs of goods, raw materials and services purchased, divided by the tonnes produced.

In the case of growers, value added is calculated the following way: cane sales minus the cost of inputs, divided between the tonnes produced.

The calculation should exclude all subsidies, salaries, taxes and benefit repartition.

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5.1.3 Environmental and social impact Management Plans updated biannually

Implementation Guidance:

According to the IFC (2018)⁴⁵, The Environmental and Social Impact Assessment (ESIA – note that IFC reverses the order to SEIA) process is a way to identify, predict and assess the type and scale of potential biodiversity impacts, and opportunities to benefit conservation, associated with any business activities or projects.

The operator should then proceed to:

- Implement the actions as detailed in the ESMP;
- Monitor progress against the objectives;
- Make adjustments if monitoring reveals the proposed actions are not sufficient.

The operator should make the summary of the plan publicly available in a way that is accessible to affected communities and does not disclose any confidential information. The operator should keep records of the implemented activities.

As a minimum, the operator should review the ESMP every year.

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5.1.4 Findings of business context analysis continuously addressed in a time-bound manner

Implementation Guidance:

According with Six Sigma (2016)⁴⁶, the continuous improvement plan should include the mechanisms to measure the implementation of actions across social, environmental, quality and productive issues. A systematic implementation review mechanism should be in place, in line with to the defined timeframe.

⁴⁵ IFC. (2018). *A Guide to Biodiversity for the Private Sector*. Retrieved from https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/biodiversityguide

⁴⁶ Six Sigma. (2016). *Six Sigma And Continuous Improvement*. *Academic Press*, 44-48.

The operator should demonstrate that they have developed a mechanism to regularly measure the implementation of the continuous improvement plan, specifically by collecting environmental, social, quality and productivity monitoring data, according to the timeframes given in the plan. The operator maintains the records of implementation and demonstrate that at least 90% of activities have been implemented.

The grievance mechanism, which is part of a broader approach toward stakeholder engagement, provides community members with a way to consistently engage with the company, enhance relationships, reduces social risk, and enables more responsive and responsible management. To demonstrate the effectiveness of the grievance mechanism, it is important to consider the following elements:

1. Capability to receive the grievance on time,
2. Acknowledgment of the situation,
3. Definition of a responsible of evaluation and investigation (complaints owner),
4. Evaluation of investigation of the situation reported,
5. Definition of procedure for recourses or appellations,
6. Development of resolutions in collaboration with the complainant,
7. Implementation of resolutions,
8. Monitoring and closure.

The implementation should cover the whole cane supplying area and include the identified risks from the Business Context Analysis identified in 1.1.1, as well as the elements covered in P2. These include but are not limited to:

- decent wages,
- abolishment of child labour,
- non discrimination,
- gender violence,
- freedom of association etc etc. This is important because here in P5 it concerns the whole supply area and not only the Unit of Certification.

The operator should record the grievances received from stakeholders, workers & clients. The operator should demonstrate that at least the 90% of the grievances have been resolved in a positive manner.

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Criterion 5.2 - To reduce emissions and effluents. To promote recycling of waste streams where practical

5.2.1 Operators have a documented monitoring and evaluation system for ambient air quality in nearest populations/communities

Implementation Guidance:

Acronyms: PM: particulate matter, SO₂: Sulphur dioxide, NO₂: Nitrogen dioxide

1. PM₁₀, NO_x and SO_x should be monitored through passive sampling placed in residential and high-traffic areas. Definitions for acronyms can be found in the Definitions section of this document.
2. Where these parameters are not met, the operator should demonstrate an action plan for improving air quality (this can include collaborative efforts with government and other businesses if appropriate).
 - a. The action plan should include management of emissions associated with
 - i. Cane truck idling/parking areas
 - ii. Cane truck traffic to mills
 - iii. Harvester entrainment of dust
 - iv. Emissions from mill drifting to residential areas
 - v. Emissions from aerial spraying
 - vi. Emissions from cane burning
 - b. It should involve management using technological and community based solutions. Technological e.g.
 - i. rerouting roads that generate dust in residential areas
 - ii. Relocation of lots where trucks idle to be distant from schools/clinics
 - iii. Equipping all aerial sprayers with an App/technology to measure and evaluate wind flow - no spraying when climatic conditions would affect communities
 - c. Community-based solutions e.g.
 - i. reducing vehicle speeds in residential areas to reduce dust entrainment,
 - ii. eliminating daytime traffic during school days if roads are within 100m of schools
 - iii. eliminating crop spraying when school is in session
 - iv. Requiring training for aerial sprayers and banning any areal spraying within 50 m of residences or community buildings.
 - v. Receiving permission from the bureau of meteorology prior to the burning of cane
 - vi. Requiring training for all employees who are involved in the lighting of cane fires on the elements to consider before lighting a fire (how, when, what to consider).

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5.2.2 Fugitive and point-source air emissions align with Best Available Technology and established safety/ environmental parameters

Implementation Guidance:

Air emissions may be categorised as 'Fugitive' or 'Point Source':

Fugitive Emissions These are emissions that are not released through a vent or stack. Examples of fugitive emissions include dust from stockpiles, volatilisation of vapour from vats, open vessels, or spills, and materials handling. Emissions emanating from ridgeline roof-vents, louvres, and open doors of a building as well as equipment leaks and leaks from valves and flanges, are also examples of fugitive emissions. *Emission factor EETs are the usual method for determining losses through fugitive emissions.*

Point Source Emissions These emissions are exhausted into a vent (excluding roof vents) or stack and emitted through a single point source into the atmosphere.

These emissions sources are frequently regulated by environmental agencies and authorized through licenses. The aim of this Indicator is to facilitate reductions in emissions over time for certified mills. Emissions can be directly measured or estimated using EETs, elaborated below. This indicator has two components: 1. Demonstrating measurement and monitoring of emissions, and 2. Implementing cleaner production measures.

Implementing cleaner production includes activities such as:

- regular maintenance scheduling,
- improved record keeping and procedures,
- optimising production schedules,
- installing vapour recovery systems
- using cleaner raw materials, and/or
- installing Pollution Control Equipment.

Definition: Pollution Control Equipment: such as electrostatic precipitators, fabric filters or baghouses, and wet scrubbers, are commonly installed to reduce the concentration of substances in process off-gases before stack emission.⁴⁷

Measuring and monitoring emissions involves a variety of potential EETs:

⁴⁷ Australia's National Pollutant Inventory. Emission Estimation Technique Manual for Combustion in Boilers Version 3.6, 2011

- sampling or direct measurement should demonstrate adherence to licenses and regulations
- mass balance calculations should demonstrate reducing emissions over time
- fuel analysis and/or other engineering calculations should demonstrate fuel switches and emission control technologies implemented over time
- emission factors (most commonly used for fugitive emissions from operations) are available through USEPA to assist operators in estimating emissions associated with components of their operations.

To demonstrate the role of wet scrubbers on particulate emissions (implementing cleaner production), emission factors for bagasse boilers are as follows (used to demonstrate improved measuring and monitoring):

- Dry scrubber/uncontrolled
 - Carbon monoxide 2.61
 - Oxides of Nitrogen 0.76
 - Particulate matter $\leq 10.0 \mu\text{m}$ 6.15
 - Particulate matter $\leq 2.5 \mu\text{m}$ 3.51
 - Polycyclic aromatic hydrocarbons (B[a]P_{eq}) .0005
 - Sulfur dioxide .25

- Wet scrubber
 - Carbon monoxide 2.61
 - Oxides of Nitrogen 0.76
 - Particulate matter $\leq 10.0 \mu\text{m}$ 0.22
 - Particulate matter $\leq 2.5 \mu\text{m}$ 0.126
 - Polycyclic aromatic hydrocarbons (B[a]P_{eq}) .0005
 - Sulfur dioxide .25

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5.2.3 Non-production waste plan for safely recycled or disposal

Implementation Guidance:

According with the Environmental Protection Agency (2020), waste management systems are designed to protect the environment and improve conditions. Holistic waste management includes the following practices:

- Disposal of waste in a responsible manner
- Recycling of solid waste
- Reuse of waste
- Minimisation of use
- And prevention of negative impacts

The operator should develop a documented program for recycling at least 50% of the following categories:

- Fibre (including paper),
- Metal (including steel),
- Plastic (including agro-chemical containers),
- Oil and lubricants,
- Batteries,
- Chemical products,
- Rubber,
- Wood,
- Hazardous waste,
- Glass,
- Medical waste, and
- Electronics.

According to the Environmental Protection Agency (2020)⁴⁸, some key activities that can help for the implementation of the plan are:

- **Assess Needs.** By carefully identifying your needs, it is easier to avoid overbuying and to cut down on excessive materials.
- **Minimize Impact.** Sourcing products locally means less resources are required. Additionally, lower-impact alternatives should be considered as well as biodegradable or ecologically friendly products.
- **Order in Bulk.** Ordering products in bulk ensures less packaging is required for any single product and fewer shipments are required.
- **Repair Products.** Repairing products and materials is one way to ensure they don't end up in landfill.
- **Sell Unwanted Items.** The second-hand market is a great way to ensure your items go to a good home and don't go to waste.
- **Repurpose Raw Materials.** Reuse raw materials where possible: from packaging to old clothes, raw materials almost always have a secondary purpose.
- **Education and awareness.**

The operator should identify the actions for recycling, re-use & responsible disposal/storage for each category. The operator should implement the practices described in the program and keep the records.

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⁴⁸ Environmental Protection Agency. (2020). *Best Practices for Solid Waste Management: A Guide for Decision-Makers in Developing Countries*. United States: United States Environmental Protection Agency.

Criterion 5.3 - To train workers and other workers in all areas of their work and develop their general skills

5.3.1 Time spent by workers in vocational training sessions

Implementation Guidance:

This applies to workers of the mill and/or the farm. The training includes all direct vocational and professional training, including the ones required by law, requalification, literacy training, as well as transposable skills going beyond those required within the unit of certification. Note that Health and Safety trainings should not be included as vocational trainings, unless required by the law. The training can be in the form of classroom training, online training and/or field training.

An example of vocational training includes the training of permanent and seasonal workers displaced by mechanisation plans.

The operator should keep records (including training material, name of trainers, duration of training, presence list) related to the training.

The operator should ensure that:

- Trainers are competent;
- Training is tailored to the level of the audience;
- All workers are given the same opportunity to access training.

The mill should verify the overall efficiency of the training provided. This can be achieved by various means (questionnaire, exam or follow-up) to ensure the training reached the expected goal. If feedback or subsequent observations show that training was not sufficient, the training programme should be revised and considerations given to alternative approaches, methodologies or trainers or an increased frequency.

The operator should record the total number of hours of vocational training for each worker, with a minimum of 16 hour per worker per year (or proportional to that for part-time/seasonal workers, i.e. full-time equivalent of 16 hours per worker per year).

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Criterion 5.4 - Continuous improvement of worker welfare

5.4.1 - Occupational health and safety is promoted in the whole cane supply area.

Implementation Guidance:

Please also see guidance for criterion 2.X for the health and safety risk assessment in the unit of certification. Findings of the health and safety risk assessment on the operator's own premises and subsequent development of the health and safety plan should inform on which likely risks might also occur in the wider supply area and how these could be mitigated.

The operator includes corresponding clauses in contracts with their suppliers.

The evaluation should use national legislation when defining risks and measures or, in its absence, recommendation 192 of ILO Convention C184, which provides guidance for identifying the key potential hazards for assessment:

1. hazardous chemicals and waste;
2. toxic, infectious or allergenic biological agents and waste;
3. irritant or toxic vapours;
4. hazardous dusts;
5. carcinogenic substances or agents;
6. noise and vibration;
7. extreme temperatures;
8. solar ultraviolet radiation;
9. contact with wild or poisonous animals;
10. the use of machinery and equipment (for mechanised farms and mills);
11. the manual handling or transport of loads;
12. intense or sustained physical and mental efforts, work-related stress and inadequate working postures;
13. risks from new technologies; and
14. Inflammable products
15. Transportation of workers

The operator should identify the activities for risk mitigation with objectives, activities of mitigation, timeline of implementation and responsibilities. The risk mitigation plan should include outreach and training and a mechanism of monitoring and evaluation.

The operator should record evidence of awareness raising and training activities to involved parties and track improvements on the ground.

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5.4.2. Safe worker accommodation in cane supplier area

Implementation Guidance:

The operator is recommended to conduct a diagnostic of existing accommodation facilities. The diagnosis needs to cover the minimum legal standards for accommodation, such as location of the facilities against other facilities for the storage of hazardous materials and production areas, construction materials, number of rooms against the number of users and gender distribution, the presence/absence and number of bathroom and shower facilities against the number of beneficiaries and gender distribution, sufficient ventilation and illumination, provision of equipment for rest and protection of belongings, areas for cooking and laundry, and others.

In the absence of national legal requirements for worker accommodation, the operator should refer to ILO Guidance on Workers' Housing Recommendation No. 115^[2], specifically providing:

- The operator shall develop a document plan to improve access to accommodation found not to meet the minimum standards.

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5.4.3. Gender inclusion in management and technical positions

Implementation Guidance:

According to the UN Women (2011)⁴⁹ and its women's empowerment principles, all businesses stand to benefit from greater equality for women. UN principles emphasize the business case for corporate action to promote gender equality and women's empowerment. This goal can be achieved through the implementation of 7 principles:

1. Establish high-level corporate leadership for gender equality
2. Treat all women and men fairly at work – respect and support human rights and non-discrimination
3. Ensure the health, safety and well-being of all women and men workers

^[2] ILO (1961), [Guidance on Workers' Housing Recommendation No. 115](#) Geneva: International Labour Organization

⁴⁹ UN Women. (2011, Oct 21). *Women's Empowerment Principles: Equality Means Business*. Retrieved from <https://www.unwomen.org/en/digital-library/publications/2011/10/women-s-empowerment-principles-equality-means-business>

4. Promote education, training and professional development for women
5. Implement enterprise development, supply chain and marketing practices that empower women
6. Promote equality through community initiatives and advocacy
7. Measure and publicly report on progress to achieve gender equality

Examples of technical positions in the sugarcane sector include:

- Agriculture machinery drivers
- Agronomists

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According to the ILO (2014)⁵⁰ impact report, issue 8, a training programme for women empowerment can include, but is not limited to: trainings to develop business skills, vocational trainings and life skills, legal rights and civic education. The operator should develop a training plan to increase the women's empowerment.

According to the ILO (2014)¹⁰ guide on gender issues in employment and labor market policies, by ensuring equal access to employment and income opportunities for all those women and men who are available for work and have the skills and knowledge to be gainfully employed, is not only a human right, but also is good for economic growth, poverty reduction, and social progress. To integrate a gender inclusion and equality framework in the business, the operator should develop a policy for gender equality during the recruitment process and should develop a plan for increasing women's presence in the workforce to a minimum of 15%. The plan should cover all the technical positions of the unit of certification, including mill and agriculture.

Based on ILO C100, the operator should ensure equal treatment and equal remuneration to all workers in similar positions independently of gender and ethnic/social origin.

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⁵⁰ ILO. (2014). *Resource guide on gender issues in employment and labour market polices*. Geneva: International Labour Organization

ANNEX 3 GHG EMISSIONS CALCULATION FOR PRINCIPLE 3 ONLY

1. System Boundary

"The operational boundary includes growing and processing of sugarcane. It considers the boundary to include each individual mill and its growers as a unit, rather than a company owning and operating more than one mill. In the case of IPPs (Independent Power Producers) providing steam and power to a mill from bagasse that has been provided by the mill, the IPP is considered together with the mill concerned. The system boundary includes in addition the energy embedded in the manufacture and supply of all fertilizers and chemicals, but excludes the energy embedded in agricultural and milling capital equipment. All the activities of a plant on one site are considered, to reflect the sustainability of the total system producing food, fuel, energy and chemicals.

This analysis represents a B2B analysis, considering the operation of a cane sugar processing facility, producing raw sugar and/or ethanol at the factory gate. Stand-alone refineries are not considered to be within the boundary. It accounts for the provision of products to a third party that is not the end user (cradle-to-gate). "

2. Direct and indirect effects

"The energy and GHG calculations are associated with direct energy inputs and at a second level by indirect inputs. Direct inputs are mainly fuel and power inputs, expressed in terms of their primary energy value. Indirect inputs include, in addition, the energy required for the production of chemicals, fertilizers and other materials used. The indirect inputs do not include the additional energy necessary for the manufacture and construction of farm, transport and industrial equipment and buildings.

3. Land Use Change

Land use change can be separated into direct and indirect components:

- Direct land change refers to a change from the original state of the land to use for sugarcane production. Depending on the previous use of the land in question, it is surmised that the land use change can unlock some of the carbon in the existing soil and vegetation.

- Indirect land use change concerns secondary effects induced by large scale expansion. This displaces existing crops, leading to expansion of crop land elsewhere, either in the same country or in other parts of the world. The effects of these changes are very difficult to estimate.

If the product's supply chain directly caused non-agricultural land to be converted to agricultural use on or after 1 January 2008, then GHG emissions associated with the direct land use change are included in the carbon footprint calculation. The table of IPCC default land use change values for selected countries published in the PAS 2050 are used in the calculation.

4. Handling of co-products and multiple products

Two approaches are possible:

- The “substitution” or “displacement” method attempts to model reality by tracking the likely fate of residues. Each co-product generates an energy and emission credit equal to the energy and emissions saved by not producing the material that the co-product is most likely to displace.
- The “allocation” method allocates energy and emissions from a process to the various products according to mass or energy contents or monetary values.

"In the case of sugarcane processing, a factory exporting power or bagasse achieves a credit in terms of energy and emissions saved, according to the displacement of energy in that country. Some standards recommend the use the grid average GHG intensity to calculate the GHG credit for the exported power, although it may be more realistic to use the marginal energy mix. Since the marginal energy provision is likely to be from fossil fuels, the saving estimate is conservative when using the average generation mix. In this case, the approach aligned with the EU RED is adopted, which states that for calculating exported power credits, the average factor shall be used. The country specific table of values used is given below.

Where a factory produces only sugar and molasses, the allocation in proportion to market value is adopted; in most cases the allocation to molasses is less than 10 % of the total. Although the prices will change over time, the relative values will be far more stable. It is possible to use a displacement calculation, assuming that molasses displaces certain ingredients in an animal feed. However this is likely to vary significantly in different countries.

In the case of a factory producing more or less equivalent quantities of sugar and ethanol, the split of energy input and GHG emissions between the two products becomes a more difficult issue. The calculation assumes that allocation shall be by energy content of the products. Sugar has a calorific value of

16500 MJ/t and ethanol 21 MJ/L; on the basis that 600 L of ethanol are produced from one tonne of sucrose, this implies a sugar equivalent value of 27.5 MJ/L for sucrose. On this basis, 57 % of the emissions shall be allocated to sugar and 43 % to ethanol. As an alternative, the calculation procedure also allocates the energy use and emissions on a mass basis on equivalent sugar, on the basis that 1 tonne sugar is equivalent to 600 L ethanol.

In the case of an autonomous distillery, where the only product is ethanol, energy use and emissions are related to litres of ethanol produced or to MJ in ethanol."

5. Components contributing to emissions

"CO₂ from sugarcane emitted in combustion and in ethanol fermentation is considered zero CO₂ emission to the air, because this is the carbon taken in from the air during sugarcane growth. CO and VOCs emitted in combustion are assumed to be converted to CO₂ fairly rapidly, but methane and nitrous oxides from burning bagasse are accounted for in GHG emissions. CO₂ emissions arising from biogenic carbon sources are excluded from the calculation of GHG emissions from the life cycle of products, except where the CO₂ arises from direct land use change.

The greenhouse gases covered are CO₂, N₂O and CH₄. Methane and N₂O have global warming potentials 23 and 296 times that of CO₂ respectively (IPCC 2007). Greenhouse gas emissions are aggregated on a carbon dioxide equivalent (CO₂eq) basis.

Non-CO₂ emissions arising from both fossil and biogenic carbon sources are included in the calculation of GHG emissions. In the case of burning bagasse in sugar mill boilers, it is assumed that 30 g CH₄ and 4 g N₂O are produced per 1000 MJ of energy in the bagasse burnt, based on IPCC data for burning of biomass. Changes in the carbon content of soils, either emissions or sequestration, other than those arising from direct land use change, are excluded from the assessment of GHG emissions. Any GHG emissions arising from transport required during the product and raw materials life cycle are included in the carbon footprint assessment. Emission factors for transport include emissions associated with creating and transporting the fuels required.

6. Calculation method

"A materiality threshold of 1 % has been suggested to ensure that very minor sources of life cycle GHG emissions do not require the same treatment as more significant sources.

Both the energy usage and emissions are calculated in the same spreadsheet, since the latter are largely determined by the former. The calculation includes the effects of the manufacture of fertilizer. Farming operations include chemicals application, irrigation, tillage and harvesting (and preparation of cane setts for planting). Cane transport covers getting the cane to the mill. The cane is processed to sugar and molasses or ethanol, and may include export of electric power or bagasse. The energy embedded in the manufacture of milling and other equipment is excluded. Inclusion of energy embedded in capital goods and equipment generally has an effect of less than 10 % on calculated emissions and is excluded. No allowance for transport of products from the factory is allowed for. Transport of workers is not included.

The primary energy is calculated. It differs from the direct energy input in that it takes into account the efficiency of generation and supply of the secondary energy source e.g. using a conversion factor from energy in the fuel used to generate electricity to the energy in the power produced. This applies to power, fuel, steam and any other energy input.

The GHG balance is particularly uncertain because of fertilizer nitrous oxide emissions and error margins can be enormous. The use of nitrogen fertilizers results in GHG emissions in two stages: fertilizer manufacture (primarily CO₂ emissions from energy used) and fertilizer application (primarily N₂O emissions from nitrification and denitrification processes in the soil). The assumption is made that 1.325 % of N in nitrogen fertilizer is converted to N in N₂O through nitrification and denitrification, following the IPCC recommendations.

In addition, agricultural lime application results in GHG emissions from both production energy use and in-soil reactions that release CO₂. These latter emissions are a further source of uncertainty. The model uses the IPCC factor of 0.44 kg CO₂eq/kg lime, which assumes that all C in lime becomes CO₂. This is the upper limit; it is possible in weakly acidic soils that limestone results in a net sink of CO₂.

The calculation approach adopted in this study is similar to that used in the EBAMM model (Farrell et al. 2006), which itself is similar to the GREET model (Wang et al. 2008). These models have been used in the past mainly to model the production of biofuels from corn, and they have had to be modified for sugarcane to incorporate additional issues as follows:

"1. Modifications to incorporate sugar manufacture as the major activity. This includes power, fuels and lubricants.

2. Emissions due to cane burning. This is based on IPCC emission factors for burning biomass of 0.07 kg N₂O/t dry matter and 2.7 kg CH₄/t dry matter.

3. Allowance for N₂O emissions from filter cake, vinasse and cane residue left in the field. This assumes 1.225 % of N in the residue is converted to N in N₂O (Macedo et al. 2008).
4. Emissions of CH₄ and N₂O in burning bagasse in sugar mill boilers; values of 30 and 4 g /1000 MJ energy in bagasse respectively are used (Wang et al. 2008).
5. Energy value of process chemicals.
6. A credit for molasses (where produced) based on its economic value relative to that of sugar.
7. Emissions from anaerobic treatment of effluent in the case that methane is not captured and used as a fuel. IPCC guidelines suggest 0.21 t CH₄ produced per t COD removed.
8. Allowance for any imports of molasses, bagasse and/or other biomass.

7. Default and secondary data

Secondary data (obtained from sources other than direct measurement) are used to calculate emissions where primary data are not available or inappropriate, to enable consistency and, where possible, comparability:

- "• Global warming potential of greenhouse gases
- Electricity emissions (in kg CO₂eq/kWh) from various energy sources
- Energy content of fertilizers per kg
- Energy use of pesticides and herbicides per kg
- Fuel emissions per litre
- Waste emissions per kg

- N₂O and CH₄ emissions from burning bagasse
- N₂O and CH₄ emissions from burning cane
- Energy embedded and emissions for process chemicals
- Direct land use change
- Agriculture emissions from soils

Default values used are given below

8. Presentation of results

The agricultural and processing phases are dealt with separately. Thus outputs are available as:

Net energy use in agriculture	MJ/ha or MJ/t cane
Energy used in cane transport	MJ/t cane
Net energy use in processing	MJ/t cane or MJ/t sugar
Total net energy use	MJ/t sugar or MJ/L ethanol
Agricultural GHG emissions	kg CO ₂ eq/t cane
Processing GHG emissions	kg CO ₂ eq/t cane or kg CO ₂ eq/t sugar
Total net GHG emissions	g CO ₂ eq/g sugar
	g CO ₂ eq/L ethanol and/or g CO ₂ eq/MJ fuel

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DEFAULT VALUES USED

It is expected that some of these default values will change as more accurate or realistic values are published. Further fine tuning may also be incorporated in future e.g. in allowing for different emissions from different types of nitrogenous fertilizer. It may also be necessary to introduce country specific default values where they are seen to make a material difference to the calculations.

Most of the default values are obtained from the EBAMM model (Farrell et al. 2006), often based on the GREET model using data from Shapouri et al. (2004) and Graboski (2002), or from Macedo et al. (2008).

Fertilizer and agricultural chemicals, in MJ/kg:

	Energy Demand (MJ/kg)	Emissions Factor (kg CO ₂ eq/kg)	Emissions on Application (kg CO ₂ eq/kg)
Nitrogen (elemental)	56.9	4	6.2
Potash (K ₂ O)	7	1.6	
Phosphate (P ₂ O ₅)	9.3	0.71	
Lime (CaCO ₃)	0.12	0.07	0.44
Herbicide	355.6	25	
Insecticide	358	29	

Data from EBAMM

Primary energy inputs and emissions:

	Energy Demand (MJ/MJ fuel)	Total emissions (g CO ₂ eq/MJ)
Gasoline	1.14	85
Diesel	1.16	91
Fuel Oil	1.24	96
Natural Gas	1.12	66
Coal	1	107
Electricity	2.5	150*

Energy demand data from Macedo et al. (2008), emissions from EBAMM

*Average value; country specific values should be used.

The energy value is multiplied by the Energy Demand factor to give the primary energy value.

Embedded energy and emissions for process chemicals:

	Energy Demand (MJ/kg)	Emissions Factor (g CO₂eq/MJ)
Lime (CaO)	0.11	951
Biocide	3.02	951
Nitrogen	56.33	951
Caustic	75	951
Sulfuric acid	2.4	951
Anti-foam	10	951
Miscellaneous	50	95

¹ Macedo et al. (2008); ² Mortimer et al. (2004); ³ EBAMM

Emissions factor for electricity, in kg CO₂/MJ:

Country/Region	Grid average
Argentina	0.0763
Australia	0.241
Brazil	0.022
Canada	0.062
China	0.214
Finland	0.0826
France	0.0228
Germany	0.139
India	0.253
Indonesia	0.216
Ireland	0.165
Malaysia	0.137
Mozambique	0.0009
Netherlands	0.13

Pakistan	0.103
Philippines	0.128
Poland	0.184
Portugal	0.115
South Africa	0.237
Spain	0.106
Sweden	0.016
Russia	0.091
Ukraine	0.095
United Kingdom	0.131
United States	0.16

Source: RFA, UK

*ANNEX 4 DEFAULT LAND USE CHANGE VALUES FOR SELECTED COUNTRIES (FROM PAS 2050:2008) (IN T CO₂EQ/(HA.YR))
FOR PRINCIPLE 3 ONLY*

Country	Current Land Use	GHG Emissions of Change from Previous Land Use (t/CO ₂ e/ha/yr)
Argentina	Annual cropland	Forest land 17 Grassland 2.2
	Perennial cropland	Forest land 15 Grassland 1.9
Australia	Annual cropland	Forest land 23 Grassland 2.2
	Perennial cropland	Forest land 21 Grassland 1.9
Brazil	Annual cropland	Forest land 37 Grassland 10.3
	Perennial cropland	Forest land 26 Grassland 8.5

Canada	Annual cropland	Forest land 17 Grassland 2.2
	Perennial cropland	Forest land 16 Grassland 1.9
Finland	Annual cropland	Forest land 15 Grassland 7.3
	Perennial cropland	Forest land 14 Grassland 6.9
France	Annual cropland	Forest land 18 Grassland 4.5
	Perennial cropland	Forest land 14 Grassland 4.2
Germany	Annual cropland	Forest land 21 Grassland 7.0
	Perennial cropland	Forest land 14 Grassland 6.7

Indonesia	Annual cropland	Forest land 33 Grassland 19.5
	Perennial cropland	Forest land 31 Grassland 17.7
Malaysia	Annual cropland	Forest land 37 Grassland 10.3
	Perennial cropland	Forest land 26 Grassland 8.5
Mozambique	Annual cropland	Forest land 24 Grassland 3.6
	Perennial cropland	Forest land 22 Grassland 3.2
Pakistan	Annual cropland	Forest land 16 Grassland 3.6
	Perennial cropland	Forest land 15 Grassland 3.2

Poland	Annual cropland	Forest land 21 Grassland 7.0
	Perennial cropland	Forest land 14 Grassland 6.7
South Africa	Annual cropland	Forest land 26 Grassland 1.6
	Perennial cropland	Forest land 25 Grassland 1.2
Ukraine	Annual cropland	Forest land 18 Grassland 6.2
	Perennial cropland	Forest land 18 Grassland 5.8
United Kingdom	Annual cropland	Forest land 27 Grassland 7.0
	Perennial cropland	Forest land 20 Grassland 6.7

United States	Annual cropland	Forest land 17 Grassland 1.9
	Perennial cropland	Forest land 16 Grassland 1.5

