From Safeguard Requirements to Assessable Outcomes: A Cross-Programme Framework for Environmental and Social Risk Evidence in Plastic Credit Projects

Chinmaya Bhat

Independent Researcher

DOI: https://doi.org/10.51584/IJRIAS.2026.11100074

Received: 29 October 2026; Accepted: 03 November 2026; Published: 10 November 2026

ABSTRACT

A plastic credit certifies an environmental outcome, but the activity it pays for is carried out by people, and what a programme requires by way of evidence that those people are protected is a separable question from what it requires about tonnes. This study scores what the four programmes require on fifteen safeguard domains, at four ascending evidence levels: a written policy, an implementing procedure, a monitored outcome indicator, and independent verification of the outcome. The Verra Plastic Waste Reduction Standard, the Ocean Bound Plastic (OBP) suite, the PCX Solutions Plastic Pollution Reduction Standard (PPRS) and the Circular Credits Mechanism (CCM) were read clause by clause and each programme-domain pair scored at the highest level its documents require, with the clause relied on recorded for every cell. Coverage is high and similar: Verra and PCX address 13 of fifteen domains each, the Circular Credits Mechanism 12, and the Ocean Bound Plastic programme 11. Depth differs far more, and the ordering is not the one coverage suggests. PCX requires independent verification of a safeguard outcome in 4 domains and Verra in 1, while the Circular Credits Mechanism and the Ocean Bound Plastic programme require it in none; mean evidence level runs from 2.53 for PCX down to 1.27 for OBP, and OBP requires a monitored outcome indicator in no domain at all. The depth result turns on who is directed to check, and on whether the direction names the domain. All four of PCX's verified domains rest on one foreword sentence requiring that occupational health and safety, gender equality, social inclusion, and feedback and grievance mechanisms be validated by third-party auditors; its wider due-diligence duty over social safeguards is not domain-specific and does not raise any cell on its own. Where a checkpoint's stated evidence is instead the organisation's own signed declaration, as in the Circular Credits Mechanism's child and forced labour rows, the auditor records an assertion rather than verifying an outcome, and the cell is scored accordingly. Three earlier readings of this matrix did not survive audit and are withdrawn: that no programme-domain pair required independent verification; that verification was concentrated in the programmes whose written safeguards are thinnest; and that the Circular Credits Mechanism reached the top level on consent and remuneration. The study sets out in full the scoring matrix with its clause basis, a safeguard assessment checklist and the field data that testing these requirements would need.

Keywords: safeguards, informal waste workers, occupational health and safety, grievance mechanisms, due diligence, plastic credits, social risk

INTRODUCTION

Plastic recovery in the regions where most credited projects operate is performed by people sorting mixed waste by hand, often informally, often without contracts, and frequently in proximity to traffic, fire risk and biological hazard. Crediting programmes acknowledge this, and all four examined here carry safeguard provisions of some kind. The question this study asks is narrower than whether the provisions exist: it asks what evidence each programme requires that they are being met.

That distinction matters because the gap between a policy and an outcome is where safeguard regimes usually fail. A programme may require a written commitment against child labour. It may go further and require a procedure, such as age verification at engagement. It may further require an indicator, such as the reported age

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

distribution of the workforce. Or it may require that an independent party verify the outcome. These are four different levels of assurance, and a comparison that records only whether a programme mentions child labour treats them as equivalent.

A second difficulty is that the risks are unevenly distributed across the activities a programme certifies. Collection from a waterway, sorting at a material recovery facility and operating a recycling line carry different hazards, and a safeguard that applies to one part of a programme but not another leaves the others uncovered. Whether safeguard requirements track the activities that generate the risk is therefore a structural question about programme architecture rather than a matter of wording.

This study makes no claim about conditions in any project. Assessing whether workers are safe requires site inspection, incident records and worker interviews, none of which is available from documents. What documents can establish is what each programme requires and at what evidentiary level, and that is what is assessed here. An absence of required evidence is not evidence that a safeguard is being breached, and nothing in this paper should be read that way.

Four research questions follow from that framing, and the study is organised around them. First, on which safeguard domains does each programme require evidence at all, and how far does coverage differ between them? Second, at what evidentiary level is that evidence required, and does the ordering of programmes by depth match the ordering by coverage? Third, do safeguard requirements track the activities that generate the risk, or do they attach to some parts of a programme and not others? Fourth, which domains does the corpus as a whole leave to no programme, or to only one? The first two are answered from the scored matrix, the third from the fit between the matrix and the activities each programme certifies, and the fourth from the two gap measures defined below.

The contributions are a fifteen-domain safeguard taxonomy with four evidence levels; a scored matrix across the four programmes with each cell grounded in a located clause, reproduced in full with its clause basis; an analysis of where safeguards fail to track the activities generating the risk; a monitoring checklist; and a specification of the primary data future field validation would need.

Related Work

The object of study here is a private certification scheme regulating labour and environmental conditions in a supply chain its sponsors do not own, which is a form that has an established literature. Bartley [5] traced the emergence of transnational private regulation of exactly this kind and argued that such schemes take the shape they do because of the political conflicts that produced them, rather than because of the problems they nominally address; the consequence he draws is that the content of a private standard is not a reliable guide to the severity of the problem it governs. That is a warning against reading a dense safeguard chapter as evidence of a well-governed risk, and it is one reason this study scores evidentiary level rather than counting provisions.

The accounting literature on assurance supplies the second strand. Simnett, Vanstraelen and Chua [16] found that whether a sustainability report is assured, and by whom, varies systematically with a country's legal system and stakeholder orientation; O'Dwyer and Owen [14] found assurance statements to disclose little about the evidence actually examined, with the scope of the engagement often set by the reporting entity. Both findings bear directly on the distinction this study draws between an assertion recorded by an auditor and an outcome verified by one, which is the difference between level three and level four of the scale used here.

The third strand concerns the workers the safeguards govern. Marello and Helwege [12] examined inclusion programmes for wastepickers across Latin America and found that gains in livelihood and in recycling rates depend on municipal capacity and on whether pickers can participate in the wider economy, rather than on the existence of an inclusion policy as such. Barford and Ahmad [4] followed waste pickers through the recycled plastics supply chain and argued that a circular economy which does not restore the position of the people who supply its feedstock reproduces the inequity it claims to remedy. Neither study examines what a crediting

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

programme requires by way of evidence, but both establish why the question matters: the activity being credited is performed under conditions that the credit buyer never sees.

On plastic credits specifically the critical literature is recent and directed at claims rather than at safeguards. Moon and colleagues [13] argue that the schemes shift responsibility away from producers and rest on claims difficult to substantiate, and Bokor [6] finds voluntary initiatives and European regulation each insufficient alone and both exposed to greenwashing. Kirchherr, Reike and Hekkert [11], coding 114 definitions of the circular economy, found that social equity and the position of workers are barely mentioned in how the concept is defined at all. The gap this study addresses sits in that space: the environmental claims of plastic credits have begun to be scrutinised, and the social provisions that accompany them have not.

METHODOLOGY

The corpus was fixed before coding began, by two criteria. A document was included if it was issued by one of the four programmes and was operative at the time of reading, meaning a standard, methodology, procedure, guideline, protocol, checklist or template that a project or an auditor is required to apply; and if it was publicly retrievable from the programme's own site, so that a reader can obtain the same text. Marketing material, press releases, blog posts, individual project documents and superseded versions were excluded, with one exception recorded in each place it arises: where a provision present in a superseded version is absent from the current one, both are read and the discrepancy is reported rather than resolved. The documents read are listed in the references, and every cell in the matrix names the clause it rests on.

Fifteen safeguard domains were derived inductively from the four programmes' own provisions rather than imposed from an external framework, so that no programme is scored against a requirement none of them makes. Every domain named by at least one programme was retained.

Each programme was then scored in each domain on a four-level scale measuring what the documents require as evidence. Level one, policy, means a written commitment exists. Level two, procedure, means an implementing procedure is required. Level three, indicator, means an outcome must be monitored and reported. Level four, verified, means independent verification of the outcome is required. A programme is scored at the highest level its documents require, and zero where no provision was located in the operative instruments read.

The scoring is a coding judgement, not a measurement, and the reliability of that judgement was tested on this study's own matrix rather than asserted. The clause underlying every cell is set out in the appendix below, so that a reader who disagrees with a score can see exactly what it rests on and substitute their own. The aggregate figures should be treated as indicative of shape rather than as precise measurements of programme stringency.

Coding proceeded in a fixed order. Each programme's corpus was read in full and every passage bearing on any of the fifteen domains was extracted with its clause reference. Each extracted passage was then assigned to a domain, and each programme-domain pair scored at the highest level any of its passages supports. Where a passage could be read as supporting two adjacent levels, four tie-breaking rules were applied, and they are stated here because they decide a material number of cells. A general rule of audit evidence that applies to every requirement of a programme alike does not raise one domain above the others, since it would otherwise raise all of them equally. Where an auditor records an assertion, a declaration or a self-certification, the cell is scored at the level of the thing asserted and not at level four, because what is verified is that the statement was made. A conditional or aspirational formulation is a written commitment rather than a required procedure. And where a passage remains ambiguous after those three rules, the lower of the two candidate levels is recorded, so that the aggregate figures understate rather than overstate what the programmes require.

A deliberate asymmetry in the scoring should be stated. A programme that cites an external framework as optional guidance is scored at the level its own binding text requires, not at the level the cited framework would require if it bound. This is why PCX scores at procedure rather than higher in several domains despite citing four international frameworks.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

Three quantities summarise the scored matrix and each is defined here so that Table 2 can be recomputed from the cell-by-cell matrix reproduced below. Coverage counts the domains a programme reaches at all; depth averages the level it reaches across every domain, scoring an unaddressed domain zero rather than omitting it, so that silence counts against a programme rather than being excluded from its average:

Equation 1 is coverage: the share of the fifteen domains in which the programme requires evidence at any level, which answers the first research question and says nothing about how strong that evidence must be.

$$Cov_p = \frac{100}{D} \sum_{d=1}^{D} 1\left[L_{\mathrm{p,d}} > 0\right] \tag{1}$$

Equation 2 is depth: the mean evidence level across all fifteen domains, counting an unaddressed domain as zero, which answers the second.

$$\bar{L_p} = \frac{1}{D} \sum_{d=1}^{D} L_{\mathrm{p,d}} \tag{2}$$

Equation 3 counts the domains reaching a given level or above, and is reported at the indicator and verification levels because those are the two thresholds at which a requirement stops being a statement and starts being a test.

$$n_{\mathrm{p,l}} = \sum_{d=1}^{D} 1\left[L_{\mathrm{p,d}} \geq \ell\right] \tag{3}$$

where

$L_{p,d}$ = evidence level programme p requires in domain d, an integer from 0 for no provision located to 4 for independent verification

D = number of safeguard domains, here fifteen

Cov_p = share of domains programme p addresses at any level, in per cent

$\bar{L_p}$ = mean evidence level across all fifteen domains

$n_{p,\ell}$ = number of domains at level ℓ or above, reported at ℓ equal to 3 and to 4

$1[\cdot]$ = indicator function, one where the bracketed condition holds

Two gap measures are taken over the same matrix, counting the domains the corpus leaves to no programme and the domains it leaves to a single one:

Equation 4 counts the domains that no programme addresses, and Equation 5 the domains that exactly one addresses. Both answer the fourth research question, and they measure a property of the corpus as a whole rather than of any programme in it.

$$G_0 = \sum_{d=1}^{D} 1\left[\max_{p} L_{\mathrm{p,d}} = 0\right] \tag{4}$$

$$G_1 = \sum_{d=1}^{D} 1\left[\sum_{p=1}^{4} 1\left[L_{\mathrm{p,d}} > 0\right] = 1\right] \tag{5}$$

where

G_0 = number of domains no programme addresses at any level

G_1 = number of domains exactly one programme addresses

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

The mean is an average over an ordinal scale and is used as a summary rather than as a measurement: the distance from a policy to a procedure is not necessarily the distance from an indicator to independent verification. The counts at level three and above are given alongside it for that reason, since they involve no such assumption.

The Safeguard Evidence Matrix

Table 1: Safeguard evidence level required by each programme, by domain

Safeguard domain	Verra	OBP	PCX	CCM
Child labour	procedure	procedure	indicator	procedure
Forced labour	policy	procedure	indicator	procedure
Occupational health and safety	procedure	procedure	verified	policy
Fair remuneration	procedure	procedure	indicator	indicator
Freedom of association	none located	policy	none located	policy
Non-discrimination	procedure	policy	verified	procedure
Working hours	procedure	policy	procedure	none located
Informal worker livelihood protection	indicator	procedure	indicator	procedure
Community engagement and consultation	verified	procedure	indicator	none located
Free prior and informed consent	procedure	none located	none located	procedure
Grievance access for workers	indicator	none located	verified	policy
Grievance access for communities	indicator	none located	verified	policy
Environmental harm prevention	indicator	procedure	procedure	indicator
Remediation of harm caused	procedure	procedure	procedure	policy
Anti-corruption	none located	none located	policy	none located

Table 1 reports the matrix and Table 2 summarises coverage. Three structural findings stand out, and each concerns architecture rather than stringency.

The first is that OBP's environmental safeguards attach to the wrong part of its programme. The do-no-harm requirement and the associated remediation plan sit in the Neutrality Standard [22], which governs credit issuance. They are absent from the Collection Standard [21] and the Recycling Organization Standard [24], which govern the activities that generate the environmental risk. An organisation certified for collection but not issuing credits is therefore outside the do-no-harm and remediation requirements, though the Collection and Recycling standards impose environmental duties of their own, each requiring evidence of the environmentally adequate final disposition of waste. OBP's social safeguards are differently placed, and the placement needs care. The mandatory labour core sits in the operating standards themselves, at clause 5.1 of the Collection, Recycling and Neutralization standards, and it is from there that the child-labour age floor and the enumerated banning ground come. The Social+ component [20] is a separate and optional certification, and it is clause 6 of that component which applies the Ethical Trading Initiative (ETI) Base Code [8]; freedom of association, non-discrimination and working hours are reached only through it, so an organisation that has not taken Social+ is not bound by them at all. The audit protocol [19] adds that the presence of documentation alone is not sufficient to demonstrate that a practice is in place and that the auditor shall determine it by interview and observation, but that rule governs every OBP requirement alike rather than this one.

A documentary inconsistency should be recorded alongside that. The child-labour age floor is stated as fourteen in the operative standards and as fifteen in the Definitions Guidelines [23]. The two are not reconciled, and the difference is material where national law sits between them.

The second finding concerns PCX [15]. Its safeguard module cites the International Finance Corporation (IFC) Performance Standards [9], the Asian Development Bank safeguard policy, the World Bank Environmental and Social Framework and the International Labour Organization (ILO) conventions on minimum age [10], forced labour, occupational safety, discrimination and employment policy. Citing four international frameworks is more than any other programme does. But they are cited as guidance for project partners to consider rather than as

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

binding requirements, so the substantive content of the safeguard rests on the programme's own criteria and on the verification body's due-diligence list rather than on the frameworks named. A reader who takes the citations at face value would overestimate what the standard requires.

The third is that CCM [3] goes furthest on two specific points and least far on another. It alone requires free, prior and informed consent of workers, and it alone makes enforcement of safeguards an explicit evidentiary requirement, stating that "enforcement of these safeguards must be monitored and demonstrable", with the corresponding audit rows in its validation checklist [2]. It also makes sub-standard working conditions a baseline exclusion rather than merely a prohibition, so that improving conditions becomes creditable. Against that, its grievance provision is two guidance sentences in the auditing protocol [1], not in the standard: "any grievances or operational dysfunctions should be recorded and resolved through a systematic process. When applicable, any damage should be recorded and remediated". A third provision asks the verifier for explanations of how grievances raised during the period were addressed. Between them they supply no procedure, no timescale and no route by which an affected party may invoke the mechanism.

Verra's distinctive provision is livelihood protection. Where a project eliminates informal waste workers' income it "shall ensure the creation of alternative activities that generate the same or increased income and require similar knowledge, skills and working hours" [18]. That is the most specific livelihood requirement located in any of the four, and it is paired with a thirty-day public comment period at each assessment carrying an obligation to act on comments received. Anti-corruption, by contrast, has no clause in the Plastic Standard; the only provision located sits in SD VISta [17], which is a separate standard.

Coding Reliability

All sixty cells were coded a second time, independently, and the two codings compared. The procedure was as follows. The clause evidence recorded for each programme-domain pair, the four-level scale and the four tie-breaking rules stated above were given to a second coder with the first coder's scores withheld; the second coder assigned a level to every cell from that material alone and the two sets of scores were then compared. The second coding was produced by a large language model applying the written protocol, not by a second human analyst, and the figures below should be read in that light. What the exercise tests is whether the published rubric yields the same score when applied independently to the same clause evidence. It does not test whether the right clause was found in the first place, because both codings worked from the same extracted evidence; clause retrieval remains a single-analyst judgement and is the weaker link of the two.

On the sixty cells the two codings agreed exactly on 47 of 60, or 78.3 per cent, with Cohen's kappa of 0.72. Because the scale is ordinal rather than nominal, a disagreement between adjacent levels is less serious than one across the range, and the weighted coefficients are the more informative figures: linearly weighted kappa is 0.82 and quadratically weighted kappa 0.91. Agreement within one level was 59 of 60. Only a single cell in the matrix drew a disagreement of more than one level, Verra on informal worker livelihood protection, which the first coder scored at indicator and the second at policy. Seven cells carry evidence recorded as identical to another cell rather than separately stated; excluding them changes exact agreement only from 78.3 to 77.4 per cent, so the figure is not an artefact of cells inheriting a score.

Two features of the disagreements are worth stating because they bear on how the results should be read. Eleven of the thirteen fell at the boundary between a written commitment and a required procedure, or between a procedure and a monitored indicator, which is where a rubric of this kind is always least determinate: the difference between a clause that prohibits a practice and one that prescribes machinery against it is a matter of degree in the drafting. And the direction is informative. Nine of the thirteen were cases in which the second coder scored lower than the first, which suggests that the levels reported here, if anything, read the programmes generously rather than harshly.

The four PCX cells that reach level four through the Foreword are the single most consequential coding decision in the study, and the second coder reached level four on all four of them independently. That is not proof the reading is correct, since both codings applied the same tie-breaking rule about named groups of safeguards, but

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

it does establish that the rule is applied consistently and that the classification does not depend on a judgement made only once.

The exercise also exposed three places where the rubric itself is underdetermined, and they are recorded here rather than smoothed over. Level four requires verification of an outcome, while a duty to validate that a safeguard system exists is verification of a procedure; the PCX Foreword cells sit precisely on that line. Level three requires that an outcome be monitored and reported, and several clauses require monitoring while saying nothing about reporting. And the scale is written as a ladder, but a programme can require domain-specific auditor checking without requiring an indicator first, so whether level four presupposes level three is a question the scale does not answer. A coder who resolves any of these differently will produce a different matrix, and the clause basis is published so that they can.

Justifying The Level-Four Classifications

Level four is the scale's strongest claim and the one on which the comparison most depends, so each of the five cells scored there is set out individually, with the objection to it.

Four of the five are PCX, and all four rest on a single sentence in the Foreword to Version 8 of the Plastic Pollution Reduction Standard, which names occupational health and safety, gender equality, social inclusion, and feedback and grievance mechanisms as the safeguard systems the standard operates, and states that all of them must be validated by third-party auditors. That sentence satisfies the test used here for level four in two respects. It is specific rather than general: it names a closed list of four safeguard systems and attaches the validation duty to that list, so it is not the programme-wide audit duty that the tie-breaking rule above excludes. And the object of validation is the system itself rather than a document about it. The four cells scored at level four map onto that list exactly: occupational health and safety; non-discrimination, which the sentence reaches through gender equality and social inclusion; grievance access for workers; and grievance access for communities, the last two being the two populations to which the named grievance mechanisms run.

The objection is that the sentence sits in a Foreword. A reader who holds that only numbered modules are operative will score all four cells at the level the modules alone support, which is two for occupational health and safety and non-discrimination and three for the two grievance domains, since Module 2.2(D) prescribes a mechanism with five stated deadlines. On that reading PCX requires independent verification in no domain and its mean evidence level falls from 2.53 to 2.13, which leaves it narrowly ahead of Verra at 2.07 rather than clearly ahead. The two findings that matter survive the change: depth and coverage still order the programmes differently, and Verra and PCX still separate from OBP and CCM. What does not survive is the margin, and with it any claim that PCX is decisively the deepest of the four. Readers who prefer the narrower reading should treat the PCX column accordingly; the clause basis for every cell is reproduced below so that the substitution can be made.

The fifth cell is Verra on community engagement and consultation, and it does not depend on a Foreword. Clause 3.13 of the Plastic Standard requires a thirty-day public comment period, requires the proponent to take due account of comments, and requires it to demonstrate to the validation and verification body what action it has taken, addressing all comments before certification. The verification body therefore tests an outcome, which is how the comments were answered, rather than confirming that a procedure exists. That is the pattern the scale calls level four, and it is the only cell in the corpus where a named verifier is required to test the substance of a safeguard outcome in a single identified domain.

RESULTS

Coverage differs less between programmes than the differences in their architectures would suggest. Verra and PCX each address 13 of the fifteen domains, CCM 12 and OBP 11. On raw coverage the ordering is Verra and

PCX together, then CCM, then OBP, and the spread is narrow.

Depth is the more informative measure, and it does not follow coverage. Mean evidence level ranges from 1.27 for OBP to 2.53 for PCX on a four-point scale, with Verra at 2.07 and CCM at 1.40. PCX reaches indicator level or above in 9 domains, Verra in 5 and CCM in 2, against 0 for OBP. The OBP figure is the one worth pausing on: across fifteen domains, OBP requires a monitored outcome indicator in none. Its safeguards are written as conditions of certification rather than as things to be measured over time.

The clearest result is at level four, and it turns on a single question: who is directed to check, and by what means. Independent verification of a safeguard outcome is required in 4 domains by PCX, 1 by Verra, and in none by OBP or CCM. All four of PCX's rest on one sentence of its foreword, which provides that the safeguard systems protecting the people involved in waste management projects — it names occupational health and safety, gender equality, social inclusion, and feedback and grievance mechanisms — are "all of which must be validated by third-party auditors". That sentence names four domains and so meets the domain-specific test; PCX's wider due-diligence duty at Module 3.1 Criteria 3, requiring the verification body to "conduct due diligence activities, including stakeholder consultations and onsite validation", is written for social safeguards generally and does not. Verra reaches level four once, on consultation, where the proponent "shall demonstrate to the validation/verification body the action it has taken" on public comments before certification. CCM reaches it nowhere: its two strongest checkpoints, on consent and on remuneration, both rest on a signed declaration by the organisation, with auditor interviews offered as something the auditor "may also" do.

Two readings of this matrix have now been withdrawn, and saying why is more useful than presenting the third as though it had been obvious. The first reading held that not one of the sixty programme-domain pairs required independent verification. That came from reading each programme's safeguard chapter without reading its foreword, its audit protocol and its validation checklist, and it was wrong. The second reading corrected the count but concluded that verification was concentrated in the programmes whose written safeguards are thinnest and absent from the most detailed. That did not survive either, for two reasons. It rested on cells that could not bear the weight: OBP's child-labour cell was scored at level four on a general rule of audit evidence that applies to every OBP requirement alike and therefore cannot distinguish one domain from another, and CCM's child and forced labour cells were scored at level four on a checklist row whose stated evidence is the organisation's own signed declaration. And it overlooked cells that genuinely do put safeguard evidence to an auditor, in PCX's foreword and in Verra's consultation rule. A third reading, in which CCM reached level four on consent and remuneration and PCX reached it on child and forced labour, has also been withdrawn: CCM's two checkpoints are satisfied by a signed declaration, with auditor interviews offered permissively, and the PCX clause that would have carried child and forced labour — a lettered list of documents the auditor must review, naming child and forced labour policies — is in Version 7 of the standard and not in the Version 8 text on which this comparison rests.

The rule now applied at level four is stated in the methodology and was applied uniformly: a cell scores four only where a programme document directs an auditor to establish the outcome in that domain by a means other than reading a self-declaration, and does so for that domain specifically. The same test is applied at level three, so that a monitoring duty written across a whole principle does not raise an individual domain either. Under those rules the depth ordering is PCX, then Verra, then CCM, then OBP, and it no longer runs opposite to the detail of the written safeguards: PCX is both specific and audited, and OBP is neither. What survives of the earlier claim is narrower. A signed declaration is the most common form of safeguard evidence in the corpus, and three of the four programmes rely on it somewhere for labour conditions.

Two domain-level observations complete the picture. Freedom of association is the weakest-covered domain: CCM addresses it under a guidance chapeau, OBP reaches it only through the Ethical Trading Initiative Base Code that its optional Social+ component incorporates, and no clause was located in Verra or PCX, whose cited ILO conventions do not include the one on it. Anti-corruption is addressed by one programme only, PCX, whose Module 2.2 prohibits partners from using bribery, corruption, harassment, violence or coercion; Verra's only anti-corruption clause sits in a different programme of its own. No domain is unaddressed by all four.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

Table 2: Safeguard coverage and evidence depth by programme

Programme	Domains addressed	Coverage	Mean evidence level	Domains at indicator or above	Domains independently verified
Verra	13 of 15	86.7 per cent	2.07	5	1
OBP	11 of 15	73.3 per cent	1.27	0	0
PCX	13 of 15	86.7 per cent	2.53	9	4
CCM	12 of 15	80.0 per cent	1.40	2	0

Clause Basis For Every Cell

Every cell of Table 1 is reproduced below with the clause it rests on, so that a reader who disagrees with a score can see exactly what it was read from and substitute their own. A cell recorded as none located means that no provision was found in the operative instruments listed in the methodology, under the search terms given there; it does not assert that no such provision exists anywhere in the programme.

Child labour. Verra — procedure: Plastic Standard s3.14 Labor: six operative conditions on project actors under 18, covering school-completion age, hazardous work, protective equipment, equivalent wages, school hours and a 10-hour combined daily cap; OBP — procedure: COL/REC/NEU s5.1b age floor, with working with children an enumerated banning ground. OBP-CPA-PRO s4.2 requires the auditor to determine by interview and observation that a practice is in place, documentation alone being insufficient, but that is a general rule of audit evidence applying to every OBP requirement alike and so does not raise this domain above the others; PCX — indicator: Module 2.2(B) partner duties require a policy and the identification of workers under 18; Module 3.1 Criteria 3 Req. 3.1 of Version 8 requires the verification body to "conduct due diligence activities, including stakeholder consultations and onsite validation". That duty is written for social safeguards generally rather than for this domain, so by the rule stated above it does not reach level 4. The lettered list of documents to be reviewed, which does name child and forced labour policies, appears in Version 7 and not in the Version 8 text; CCM — procedure: Validation Checklist Part 2 Principle 6 item 5 asks for "Evidence of no child labour or forced labour involved in the project activity", but the rationale column states that the evidence is a signed legal declaration by the organisation, so the auditor records an assertion rather than verifying an outcome.

Forced labour. Verra — policy: Plastic Standard s3.14 Labor: forced labour named among the prohibited practices, with no implementing procedure prescribed; OBP — procedure: COL/REC/NEU s5.1: labour core in the operating standards; PCX — indicator: as above; CCM — procedure: as above.

Occupational health and safety. Verra — procedure: Plastic Standard s3.14: the project proponent shall implement measures to address potential hazards to worker health and safety; OBP — procedure: Social+ s5.3a; optional component only; PCX — verified: PPRS V8 Foreword: the safeguard systems it names are occupational health and safety, gender equality, social inclusion, and feedback and grievance mechanisms, "all of which must be validated by third-party auditors"; CCM — policy: Auditing Protocol Principle 6 B)4: projects should, to an appropriate extent, aim at establishing OHS management systems, and the audit indicator asks for an indication, if any, of such systems. A conditional aspiration is a written commitment rather than a required implementing procedure.

Fair remuneration. Verra — procedure: Plastic Standard s3.14: wages equivalent to those of other workers performing the same work; OBP — procedure: COL-STD s5.1e: payments above minimum market prices to independent collectors; Social+ s5.6a premium of at least 10 per cent above market price; PCX — indicator: Module 3.1 Req. 2.1.b qualitative route, with higher wages given as an example indicator and the benefits claimed subject to VVB evidence-based assessment; CCM — indicator: Validation Checklist Principles 4 and 5 require remuneration levels before and after credit sales as an evidence row, which is an outcome indicator for this domain. The auditor is directed to check payroll and receipts and is permitted, not required, to interview workers, and the fair-distribution row is itself satisfied by a signed declaration, so the outcome is not independently verified.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

Freedom of association. Verra — none located; OBP — policy: no clause in the core standards; OBP-SOC-STD s6 mandatorily incorporates the ETI Base Code, which covers this domain, but only within the optional Social+ component and the incorporated code was not among the documents read; PCX — none located: no clause located; ILO C087 is not among the conventions cited; CCM — policy: Auditing Protocol Principle 6 B)6(c) under a should chapeau.

Non-discrimination. Verra — procedure: Plastic Standard s3.13 Anti-Discrimination: appropriate measures shall be taken to ensure that the project proponent and all other entities involved are not involved or complicit in any form of sexual harassment or discrimination, cooperative membership being among the protected grounds; OBP — policy: as above: reached only through the Social+ incorporation of the ETI Base Code; PCX — verified: Module 2.2(C) requires policies safeguarding against discrimination and exclusion, and the Foreword requires third-party validation of social inclusion and gender equality; CCM — procedure: Validation Checklist Part 2 Principle 6 item 4, whose stated evidence is a signed legal declaration by the organisation.

Working hours. Verra — procedure: Standard s3.14: 10-hour combined daily cap for minors, and replacement livelihood activities must require similar working hours; OBP — policy: as above: reached only through the Social+ incorporation of the ETI Base Code; PCX — procedure: Module 2.2(B.2): partners must identify all workers under 18 and monitor minors' health and hours, and must ensure compliance with national employment and labour laws; CCM — none located: no provision located; the ILO conventions CCM adopts are 29, 87, 98, 100, 105, 111, 138 and 182, none of which is an hours-of-work convention, and no working-hours clause appears in any document read.

Informal worker livelihood protection. Verra — indicator: Standard: alternative activities of equal income required; OBP — procedure: COL-STD s5.1e: when purchasing from independent collectors the Organization shall ensure the criteria are met through the enforcement of fair business practices, including payments above minimum market prices — the same mandatory clause scored for fair remuneration; PCX — indicator: Module 3.1 Req. 2.1.b qualitative route: inclusion of vulnerable groups given as an example benefit, with monitoring and reporting mechanisms required for the benefits claimed; CCM — procedure: Standard s3.1 social additionality, phrased as a definition rather than a requirement, read with the Checklist remuneration evidence.

Community engagement and consultation. Verra — verified: Plastic Standard s3.13: 30-day public comment period; the proponent shall take due account of comments and shall demonstrate to the validation/verification body the action it has taken, addressing all comments prior to certification; OBP — procedure: NEU s6.1f: the Organization shall identify factors that could be negatively affected by project implementation with stakeholders; PCX — indicator: Module 3.1 Criteria 3 Req. 3.1: the verification body shall conduct stakeholder consultations and onsite validation, which names this domain in its operative words; PPRS M2 records project-level stakeholder engagement as mandatory; CCM — none located: no public-consultation, local-community-consultation or stakeholder-comment requirement located in any document read; the only sentence is guidance that applying safeguards can be an important opportunity for stakeholder engagement.

Free prior and informed consent. Verra — procedure: Standard s3.13: free, prior and informed consent shall be obtained from directly impacted stakeholders or their legitimate representatives; OBP — none located; PCX — none located; CCM — procedure: Auditing Protocol Principle 4 and Validation Checklist Part 2 Principle 4 item 1: persons directly involved in waste recovery must provide free, prior and informed consent to the creation and sale of the credits. The required evidence is a signed legal declaration by the organisation; the Checklist adds that the auditor "may also conduct interviews (random sampling) with workers", which is permissive and so does not make the outcome auditor-verified. For waste-picker associations and cooperatives the Protocol records the requirement as automatically met at the organisational level.

Grievance access for workers. Verra — indicator: Plastic Standard s3.13: a grievance redress procedure publicised and accessible to all project stakeholders, with grievances and project responses, including appropriate redress, to be documented in the next project description or monitoring report; OBP — none located: Only certifier-side complaints about the certification process; PCX — verified: Module 2.2(D) grievance mechanism with five stated deadlines, and the Foreword requires third-party validation of grievance

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume XI Issue X October 2026

mechanisms; CCM — policy: Auditing Protocol Principle 7 B)7, guidance worded: any grievances or operational dysfunctions should be recorded and resolved through a systematic process, and when applicable any damage should be recorded and remediated; Principle 7 C)6 asks the verifier for explanations of how grievances raised in the period were addressed.

Grievance access for communities. Verra — indicator: as above; the procedure reaches interested stakeholders as well as project stakeholders; OBP — none located; PCX — verified: as above; CCM — policy: as above; neither sentence names a class of complainant or a route by which one may invoke it.

Environmental harm prevention. Verra — indicator: Plastic Standard s3.14: the proponent shall monitor greenhouse gas emissions and ensure any unavoidable increase is minimal, and shall monitor habitat conversion and proximity to protected areas; OBP — procedure: NEU 6.1f do-no-harm; REC s5.9a-b and COL s5.7a require evidence of environmentally adequate final disposition; PCX — procedure: Module 2.2(C) environmental safeguards: partners must hold policies addressing environmental harm; no outcome indicator for this domain was located; CCM — indicator: Auditing Protocol Principle 6 B)8: negative social and environmental impacts must be identified and minimised; Checklist Principle 7 item 6 asks for evidence that impacts raised at previous verifications have been addressed.

Remediation of harm caused. Verra — procedure: Plastic Standard s3.14.1: the proponent shall identify potential intended or unintended negative social and environmental impacts and shall take steps to mitigate them in a manner appropriate to the local context; OBP — procedure: NEU 6.1f remediation plan; Neutrality subprogram only; PCX — procedure: Module 2.2(B.4): where child or forced labour risks exist in the supply chain, partners must identify, remedy and monitor them; CCM — policy: Auditing Protocol Principle 7 B)7: when applicable, any damage should be recorded and remediated.

Anti-corruption. Verra — none located: No Plastic Standard clause located; SD VISta only; OBP — none located; PCX — policy: Module 2.2(A.3): partners must not use bribery, corruption, harassment, violence or coercion; CCM — none located.

Where Safeguards And Risks Diverge

A safeguard is only useful where the risk is, and the comparison shows two cases where the requirement and the risk sit in different places.

The first is OBP's placement of environmental do-no-harm in the Neutrality Standard. Collection from shorelines and waterways is where the environmental and physical risk concentrates: working near water, handling contaminated material, operating in traffic. The do-no-harm and remediation provisions govern the organisation issuing credits rather than the organisation performing the collection, and a collection organisation that sells certified material without itself issuing credits is not bound by them.

The second is more general. Every programme's safeguards attach to the certified entity, and every programme permits subcontracting. Three address it. OBP requires that subcontracted transactions be recorded and that a subcontractor taking ownership obtain its own certificate, though the operative instrument on subcontractor labour conditions is a subcontractor self-declaration. CCM reaches subcontracted workers more directly: where the leading organisation subcontracts waste recovery, its validation checklist states that the sale of credits should result in additional remuneration for those workers, and applies the same rule to autonomous waste pickers, with evidence rows on remuneration before and after credit sales. PCX requires partners to identify, remedy and monitor child and forced labour risk in the supply chain. Verra does not state how a safeguard reaches a subcontractor’s workforce. Since subcontracting is how most informal collection enters a formal chain, this is the point at which safeguard coverage is most likely to lapse in practice, and it is the least specified point in all four, and wholly unaddressed in Verra.

The Findings Against The Literature

Three of these findings bear on claims in the existing literature, and two of them cut against it.

Bartley [5] argued that the content of a private standard reflects the politics that produced it rather than the severity of the risk it governs. The matrix is consistent with that in one respect and awkward for it in another. Consistent, because coverage is high and similar across all four programmes while depth is not: writing a safeguard domain into a standard is cheap and the four have converged on doing it, whereas requiring an outcome to be verified is expensive and they have not converged at all. Awkward, because the depth ordering does not follow the prominence of the four. The programme requiring independent verification in the most domains is PCX, which is also the most regionally concentrated of the four, while the two with the widest international recognition require it in one domain and in none respectively. This study cannot measure political exposure and so cannot test Bartley's argument directly; what it can say is that the ordering is not the one a simple reading of that argument would predict.

Marello and Helwege [12] found that wastepicker inclusion programmes succeed or fail on municipal capacity and on access to the wider economy, rather than on the existence of an inclusion policy. The matrix suggests the crediting programmes have gone some way towards that finding and stopped short of it. Informal worker livelihood protection is addressed by all four, and two of them, Verra and PCX, reach indicator level: Verra requires alternative activities of equal income, and PCX requires monitoring and reporting of the benefits a project claims for vulnerable groups. But no programme requires independent verification of an outcome in this domain, so the evidence that reaches a verifier is the project's own account of the livelihoods it has affected. A programme designed around the Marello and Helwege result would require that account to be tested, and none of the four does.

Barford and Ahmad [4] argued that a circular economy which does not restore the position of the people supplying its feedstock reproduces the inequity it claims to remedy, and the gap measures speak to that directly. The domains the corpus leaves thinnest are not the ones about the worst abuses. Child labour, forced labour and occupational health and safety are addressed by all four programmes and score eight or more across them. The thin domains are anti-corruption, which one programme addresses at the level of a written commitment and three do not address at all; freedom of association, which two address at policy level and two not at all; and free, prior and informed consent, which two address and two do not. Those are the domains that bear on whether a worker or a community can organise, object or refuse, rather than on whether an employer is prohibited from the worst conduct. That is a weaker form of the asymmetry Barford and Ahmad describe, located in the certification instruments rather than in the supply chain itself.

One claim from the assurance literature is confirmed without qualification. O'Dwyer and Owen [14] found that where the scope of an assurance engagement is left to be settled between the parties, the resulting statement says little about what was examined. Every level-three cell in this matrix has that property: an outcome must be monitored and reported, and no programme states what a verifier must do with the report. The distinction between level three and level four is, in substance, the distinction O'Dwyer and Owen draw between a statement that something was done and evidence that it was.

A Safeguard Monitoring Checklist

The following is directed at project developers documenting safeguard compliance and at verifiers assessing it. It is ordered by where the matrix shows evidence to be thinnest.

1. Report safeguard outcomes, not only policies and procedures. No programme requires it across all fifteen domains: OBP requires it in 0, CCM in 2, Verra in 5 and PCX in 9. Extending it to the remaining domains is the single change that would move safeguard assurance from self-declared to assessable, and three of the four programmes have the mechanism already.
2. State explicitly which entities in the chain each safeguard binds, including subcontractors and their workforces. OBP, PCX and CCM each reach subcontracted workers in some respect and Verra does not, but none states the point comprehensively, and it is where coverage most plausibly lapses.
3. Where an external framework is cited, state whether it binds or informs. PCX cites four and binds none of them, which a reader is likely to misread.

4. Publish a grievance procedure with a route, a responsible party and a timescale, not merely a commitment that grievances will be resolved. PCX's five stated deadlines are the model here; CCM's two guidance sentences are not.
5. Record the age-verification method used, not only the age floor applied. OBP's own documents state two different floors, so the method matters more than the number.
6. For any project displacing informal livelihoods, document the replacement activity against Verra's test of equal income, similar knowledge, similar skills and similar working hours, whichever programme is used. It is the most specific livelihood requirement located and is useful as a general benchmark.
7. Record incidents, not only controls. An incident log is the only evidence class that distinguishes a safeguard that works from one that is merely in place.

Data Required For Field Validation

Moving from documented requirements to demonstrated outcomes requires five data classes that this study could not obtain, and naming them is more useful than a general call for further work. Worker interviews conducted independently of the project are the only source that can establish conditions as experienced rather than as reported. Incident and near-miss logs distinguish a functioning safety regime from a documented one. Payroll records, including for subcontracted and piece-rate workers, are required to assess remuneration against any benchmark. Grievance registers, with dates raised and resolved, are the only test of whether a grievance mechanism is used. And site inspection records establish the physical conditions that no document can. All five are confidential or unrecorded in most settings, which is why safeguard assessment from the outside currently stops at the level this study reaches.

Limitations

The matrix is a coding of documents by one author. The level assigned in each cell is a judgement about what a clause requires, and a different coder could reasonably assign a different level in several cells. The clause basis for every cell is reproduced in full, in its own section, so that disagreement can be located precisely rather than inferred, but the aggregate figures carry the uncertainty of the underlying coding and should be read as indicative.

The domains were derived from the programmes' own provisions. This avoids scoring a programme against a requirement none makes, but it also means a safeguard that no programme addresses will not appear as a gap unless, like anti-corruption, it is named by at least one. The taxonomy is therefore a map of what these programmes consider safeguard territory, not of what safeguard territory is.

Absence claims are stated as no provision located in the operative instruments read. Several OBP documents cross-referenced by binding clauses, including guidance on remediation and on social requirements, were not available, and a provision in one of those would change the relevant cells.

The study assesses requirements, not conditions. Nothing here indicates whether any worker is safe, fairly paid or able to raise a grievance. A low score records that a programme requires little evidence, not that a project performs badly, and a project may exceed its programme's requirements by a wide margin.

The level-four rule stated in the methodology is itself a coding choice, and it is the one that most affects the results. Scored instead so that a general rule of audit evidence raises every cell it touches, OBP would score at level four in every domain carrying a mandatory clause in an operating standard, and its mean level would rise above CCM’s. Scored so that a signed declaration counts as verification, CCM would regain two level-four cells. Both alternatives were rejected because they make the level meaningless — the first assigns it to every requirement a programme has, the second to the organisation’s own word — but a reader who disagrees can recompute from the published clause basis.

Finally, the evidence-level scale treats independent verification as the highest level. That is appropriate for assessability, which is this study's question, but it is not the same as effectiveness: a verified indicator poorly chosen may assure less than an unverified procedure well designed.

CONCLUSION

This study compared environmental and social safeguard requirements across four plastic credit programmes using a fifteen-domain matrix scored on four evidence levels, with the clause relied on recorded for every cell.

Coverage is broadly similar: Verra and PCX address 13 domains each, CCM 12 and OBP 11. Depth is not similar. Mean evidence level ranges from 1.27 for OBP to 2.53 for PCX on a four-point scale, and OBP requires a monitored outcome indicator in no domain at all.

Independent verification of a safeguard outcome is required in 4 domains by PCX and 1 by Verra, and in none by the Circular Credits Mechanism or OBP. The ordering follows a single question rather than the elaborateness of the written safeguards: whether a programme directs an auditor to establish the outcome in that domain, by name, and by a means other than reading a self-declaration. PCX does so in one foreword sentence that names four domains and requires third-party validation of each; its wider due-diligence duty over social safeguards generally does not, because a direction that bears on every domain alike cannot distinguish one from another. Verra does so once, on consultation, where the proponent must demonstrate to the verification body what action it took on public comments. CCM comes closest without arriving: its consent and remuneration checkpoints are satisfied by a signed declaration, with auditor interviews offered as something the auditor may also do.

The signed declaration is the quiet finding. It is the most common form of safeguard evidence in the corpus, and three of the four programmes rest a labour-conditions checkpoint on one. A checklist row that asks for evidence of no child labour, and then names the evidence as the organisation’s own signature, records an assertion. Whether that is adequate is a policy question this study does not try to settle; what it can say is that the distinction between an assertion recorded and an outcome verified is not visible anywhere in the published matrices, and a buyer reading a certification cannot tell which they are being offered.

Three structural findings follow. OBP’s environmental do-no-harm and remediation requirements sit in the standard governing credit issuance rather than in those governing collection and recycling, though the collection and recycling standards carry environmental duties of their own. PCX cites several international safeguard frameworks as alignment statements and ILO conventions as optional guidance, while its own binding provisions are the ones that carry its score. Freedom of association is the weakest-covered domain, reached by CCM only under a guidance chapeau and by OBP only through a code incorporated into an optional component; anti-corruption is addressed by one programme; and no domain is unaddressed by all four.

The practical recommendation is to extend a mechanism that already exists rather than to invent one. A programme that writes a safeguard into thirteen domains and verifies an outcome in one has the harder half of the job done; what is missing is the instruction to the auditor. Two earlier readings of this matrix were withdrawn in the course of the work, and both failed in the same way: by reading safeguard chapters without reading the forewords, audit protocols and validation checklists that say who checks what. The matrix is published with the clause basis for every cell so that the next correction can be made by a reader rather than by the author.

Declarations

Declaration on the use of artificial intelligence [7]. In preparing this manuscript the author used a generative artificial intelligence assistant (Anthropic Claude) to support the structured coding of programme documents, the implementation and checking of the analysis described in the methodology, the drafting of text and the formatting of the manuscript. The research design, the selection of source documents, the interpretation of the coded results and all substantive conclusions are the author's own. The author reviewed and verified the content of the manuscript, including every quantitative result and every cited source, and takes full responsibility for its accuracy and integrity. No artificial intelligence tool is listed as an author, in accordance with COPE guidance on authorship and artificial intelligence [7].

Declaration of competing interests. The author declares no financial or non-financial competing interests in relation to the plastic credit programmes examined in this study. The author is not affiliated with, funded by, or

contracted to Verra, the Ocean Bound Plastic Certification Programme, PCX Solutions or the Circular Credits Mechanism.

Funding. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Ethics statement. This study analyses publicly available programme documentation only. It involves no human participants, no personal data and no primary data collection, and therefore did not require ethical approval.

Data availability. All programme documents analysed are publicly available from the respective programme websites cited in the references. The coding protocol, the full coded matrix and the clause on which every cell rests are reproduced in this article, so the coding can be checked against its sources and changed. No dataset was generated and no model, stochastic or otherwise, produced the reported figures: they are counts over the matrix. No data repository accompanies this article.

ACKNOWLEDGEMENTS

The author thanks the four programmes for publishing the safeguard requirements compared here.

REFERENCES

1. BVRio. 2022. Circular Credits Mechanism Auditing Protocol, Version 2.2, February 2022. BVRio Institute.
2. BVRio. 2022. Circular Credits Mechanism Validation Audit Checklist, Version 2.5, February 2022. BVRio Institute.
3. BVRio. 2024. Circular Credits Mechanism Standard, Version 2.0, November 2024. BVRio Institute.
4. Barford, A. and Ahmad, S.R. 2021. A call for a socially restorative circular economy: waste pickers in the recycled plastics supply chain. Circular Economy and Sustainability, 1(2): 761-782.
5. Bartley, T. 2007. Institutional emergence in an era of globalization: the rise of transnational private regulation of labor and environmental conditions. American Journal of Sociology, 113(2): 297-351.
6. Bokor, B. 2024. Corporate engagement in mitigating plastic pollution: examining voluntary initiatives and EU regulations. Frontiers in Sustainability, 5: 1420041.
7. Committee on Publication Ethics. 2023. Authorship and AI tools: COPE position statement. Committee on Publication Ethics.
8. Ethical Trading Initiative. 2018. ETI Base Code. London: Ethical Trading Initiative.
9. International Finance Corporation. 2012. IFC Performance Standards on Environmental and Social Sustainability. Washington DC: IFC.
10. International Labour Organization. 1973. Minimum Age Convention, No. 138. Geneva: ILO.
11. Kirchherr, J., Reike, D. and Hekkert, M. 2017. Conceptualizing the circular economy: an analysis of 114 definitions. Resources, Conservation and Recycling, 127: 221-232.
12. Marello, M. and Helwege, A. 2018. Solid waste management and social inclusion of wastepickers: opportunities and challenges. Latin American Perspectives, 45(1): 108-129.
13. Moon, S., Tangri, N., Bonisoli-Alquati, A., Ralston, R., Bergmann, M., Syberg, K., Olsen, T., Wang, M., Castillo Castillo, A., Colombini, G. and Alegado, J.E.B. 2025. Unpacking plastic credits: challenges to effective and just global plastics governance. One Earth, 8(5): 101303.
14. O'Dwyer, B. and Owen, D.L. 2005. Assurance statement practice in environmental, social and sustainability reporting: a critical evaluation. The British Accounting Review, 37(2): 205-229.
15. PCX Solutions. 2024. Plastic Pollution Reduction Standard, Version 8.0, effective 5 June 2024. Manila: PCX Solutions.
16. Simnett, R., Vanstraelen, A. and Chua, W.F. 2009. Assurance on sustainability reports: an international comparison. The Accounting Review, 84(3): 937-967.
17. Verra. 2019. Sustainable Development Verified Impact Standard, Version 1.0, 22 January 2019. Washington DC: Verra.
18. Verra. 2021. Plastic Waste Reduction Standard, Version 1.0, 10 February 2021. Washington DC: Verra.

19. Zero Plastic Oceans. 2025. OBP Certification Program Audit Protocols, OBP-CPA-PRO Version 1.6, release date 8 September 2025. Zero Plastic Oceans.
20. Zero Plastic Oceans. 2025. Social+ Ocean Bound Plastic Component, OBP-SOC-STD Version 1.1, release date 8 September 2025. Zero Plastic Oceans.
21. Zero Plastic Oceans. 2026. OBP Collection Organization Standard, OBP-COL-STD Version 2.3, release date 8 September 2026. Zero Plastic Oceans.
22. Zero Plastic Oceans. 2026. OBP Neutralization Services Provider Standard, OBP-NEU-STD Version 2.3, release date 8 September 2026. Zero Plastic Oceans.
23. Zero Plastic Oceans. 2026. OBP Program Definitions and Annexes, OBP-DEF-GUI Version 1.6, release date 8 September 2026. Zero Plastic Oceans.
24. Zero Plastic Oceans. 2026. OBP Recycling Organization Standard, OBP-REC-STD Version 2.4, release date 8 September 2026. Zero Plastic Oceans.