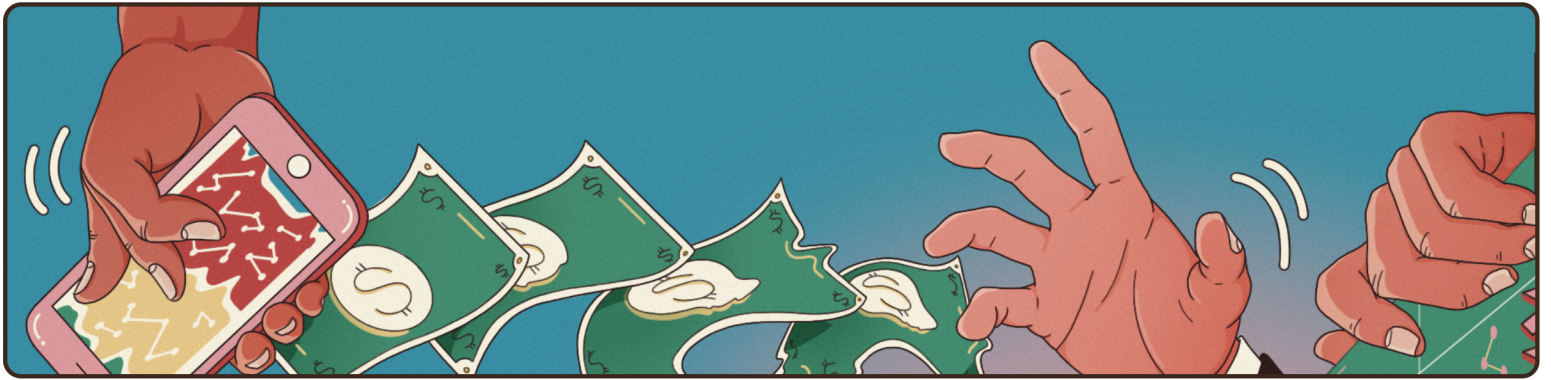


REPARATIVE ALGORITHMIC IMPACT ASSESSMENTS

A Human-Centered, Justice-Oriented Accountability Framework



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Reparative Algorithmic Impact Assessments: A Human-Centered, Justice-Oriented Accountability Framework

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Abstract

While artificial intelligence (AI) promises transformative societal benefits, it also presents critical challenges in ensuring equitable access and gains for the Global Majority. These challenges stem in part from a systemic lack of Global Majority involvement throughout the AI lifecycle, resulting in AI-powered systems that often fail to account for diverse cultural norms, values, and social structures. Such misalignment can lead to inappropriate or even harmful applications when these systems are deployed in non-Western contexts. As AI increasingly shapes human experiences, we urgently need accountability frameworks that prioritize human well-being—particularly for marginalized and minoritized populations.

Building on emerging research on algorithmic reparations, algorithmic impact assessments, and participatory AI governance, this policy paper introduces Reparative Algorithmic Impact Assessments (R-AIAs) as a solution. This novel framework combines robust accountability mechanisms with a reparative praxis to form a more culturally sensitive, justice-oriented, and human-centered methodology. By further incorporating decolonial, Intersectional principles, R-AIAs move beyond merely centering diverse perspectives and avoiding harm to actively redressing historical, structural, and systemic inequities. This includes colonial legacies and their algorithmic manifestations. Using the example of an AI-powered mental health chatbot in rural India, we explore concrete implementation strategies through which R-AIAs can achieve these objectives. This case study illustrates how thoughtful governance can, ultimately, empower affected communities and lead to human flourishing.

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Introduction: Defining the Problem and Novel Solution

As artificial intelligence (AI) rapidly reshapes human experiences, decisions, and well-being, it has emerged as a critical governance priority. But while AI offers transformative potential to tackle complex global challenges (Vinuesa et al., 2020), current regulatory frameworks fail to address how these systems can amplify biases, reproduce injustices, and exacerbate global inequities (Ashar et al., 2024; Davis, Williams, & Yang, 2021). This policy gap demands immediate attention as AI increasingly mediates access to essential services and economic opportunities. The need is particularly acute in the Global South where unique infrastructure limitations and socio-cultural considerations create urgent challenges for effective governance.

However, the Global Majority—comprising diverse communities across Africa, Asia, Latin America, and other regions—remains critically underrepresented in the design, development, deployment, research, and governance of AI-powered technologies (Igarapé Institute, 2024). This systematic exclusion has measurable negative impacts on billions of people worldwide:¹

- Healthcare AI systems trained primarily on Western populations deliver suboptimal care in Global South contexts, directly affecting patient outcomes.
- Commercial facial-analysis technologies consistently misidentify individuals who are not white cisgender men (Birhane, 2022; Buolamwini & Gebru, 2018), enabling discrimination, privacy violations, wrongful policing, and the reinforcement of harmful stereotypes.
- Content moderation systems struggle to interpret culturally specific expressions, leading to both unwarranted censorship/suppression and harmful content (Sambasivan et al., 2021).
- Critical AI functions like data labeling are routinely outsourced to the Global Majority, often subjecting workers to traumatic conditions and low pay (Igarapé Institute, 2024).
- Major tech platforms collect personal data from users in the Global South without transparent practices or proper compensation.
- The concentration of AI power—e.g., 14 of the 15 largest AI companies are US-based (Stash, 2024)—limits technological sovereignty for many in the Global Majority.
- Current AI safety efforts often fail to incorporate diverse conceptions of human values and well-being, creating systems that may be 'aligned' with Western values but potentially harmful in other contexts.

This policy paper introduces **Reparative Algorithmic Impact Assessments (R-AIAs)** as a governance framework to truly harness AI's potential for human flourishing. While existing Algorithmic Impact Assessments (AIAs) offer important oversight mechanisms, they often fall short in addressing power asymmetries, cultural contexts, and historical inequities. Building on these established frameworks, R-AIAs prioritize the development of inclusive, equitable algorithmic systems that center human agency, dignity, and well-being as defined by the Global Majority. This includes protecting diverse human values and knowledge systems. This novel approach further enhances traditional AIAs by grounding practices in reparative, decolonial principles, offering a feasible but impactful path forward. By surpassing conventional notions of algorithmic fairness and addressing critical gaps in existing assessment frameworks, R-AIAs can actively redress historical, structural, and systemic inequities, while delivering measurable outcomes.

Delving Deeper: Reparative Algorithmic Impact Assessments

Algorithmic Impact Assessments (AIAs) have emerged as a promising participatory accountability mechanism for evaluating the potential societal impacts (e.g., social, environmental, economic, cultural) of algorithmic systems before their implementation (Ada Lovelace Institute, 2021; Stahl et al., 2023; Watkins, Moss, Metcalf, Singh, & Elish, 2021). These assessments can generate greater accountability, explainability, transparency, and reflexivity (Ada, 2021; Ashar et al., 2024; Metcalf, Moss, Watkins, Singh, & Elish, 2021; Reisman, Schultz, Crawford, & Whittaker, 2018; Selbst, 2021; Watkins et al., 2021; Stahl et al., 2023). Consequently, they can also mitigate risks, maximize benefits, and foster increased understanding of and trust in AI-powered technologies (Ada, 2021; Ashar et al., 2024)—including for the purposes of sustainable development. And when designed with diversity and accessibility in mind, they can be a powerful advocate for inclusion and equity. However, as highlighted in the recent systematic review by Stahl et al. (2023), the field of AIAs is still maturing, with a lack of full agreement on

¹ We have expanded on both the challenges in ensuring AI benefits the Global Majority and the manifestations of algorithmic colonialism in the Appendix. While we focus on Global Majority inclusion, this framework holds significant relevance for marginalized communities in Western contexts as well.

the structure, content, and implementation of these assessments.

For these assessments to be effective, however, they must incorporate diverse perspectives. The key is meaningful, active engagement that goes beyond tokenism, where lived experiences directly inform AI design, development, and deployment. As it stands, marginalized voices have been routinely omitted from accountability mechanisms and traditional algorithmic fairness efforts, a gap that is well-documented in both AI fairness literature and critiques of current participatory approaches (Birhane, 2021, 2022; Birhane et al., 2022; Davis et al., 2021; Racine, 2024). Traditional AIAs also often fail to ameliorate the deep-rooted inequities that shape the context in which these systems operate. Ultimately, our analysis reveals several critical limitations:

1. They treat impact assessment as a technical checkbox rather than a transformative process.
2. They fail to address underlying power asymmetries that shape how AI systems affect communities.
3. They lack mechanisms for meaningful community participation in defining and assessing impacts.
4. They focus on avoiding harm rather than actively building community power and capability.

These limitations underscore the urgent need for not only clearer frameworks, but more cohesive, context-specific, and human-centered strategies. This is where the concept of algorithmic reparations comes in. As Davis et al. (2021) articulate, algorithmic reparations aim to "name, unmask, and undo allocative and representational harms as they materialize in sociotechnical form." This approach goes beyond technical performance to (a) consider how power flows through these systems and (b) place these developments within broader patterns of oppression, privilege, marginalization, and disadvantage (Johnson, 2021; Kalluri, 2020; Racine, 2024).

Building on these concepts, we propose a novel, transformative approach: Reparative Algorithmic Impact Assessments (R-AIAs). R-AIAs combine the structured participatory evaluation process of AIAs with the justice-oriented focus of algorithmic reparations. They seek to actively rectify historical imbalances and ongoing disparities in technological development and deployment, particularly centering experiences and knowledge from the Global Majority. This approach is grounded in the understanding that AI does not operate in a vacuum but is embedded in complex social, economic, and political contexts shaped by histories of global power dynamics (Birhane, 2022; Davis et al., 2021; Kalluri, 2020; Racine, 2024). Furthermore, it respects differing values and maintains that incorporating such diversity is crucial to effective AI alignment and safety.

The key components of R-AIAs are:

1. Deep consideration of historical context and lived experiences,
2. Thorough analysis of power dynamics and asymmetries,
3. Commitment to meaningful community engagement and harm co-construction,
4. Incorporation of decolonial, Intersectional principles that recognizes human diversity and the complex interplay of various aspects of identity, and
5. Ongoing monitoring, evaluation, and adaptation based on real-world impacts,
6. Focus on sustainable development, long-term impacts, and opportunities for redress.

Through these steps, R-AIAs move beyond simply identifying potential harms and a narrow focus on technical fairness to actively empowering the Global Majority.

Centering Humans: Incorporating Decolonial, Intersectional Principles

To foster inclusive and equitable AI for the Global Majority, centering human experiences and agency is essential. Decolonial, Intersectional principles provide a crucial framework for achieving this across AI design, development, deployment, research, and governance. Intersectionality, as introduced by Crenshaw (1991), recognizes that individuals experience overlapping forms of discrimination/oppression based on aspects of their identity (e.g., race/ethnicity, gender, class, sexual orientation, disability, religion). A reparative praxis builds on this foundation by addressing these intersections and actively working to repair associated harms (Davis et al., 2021; Racine, 2024). By weaving Intersectionality into every step of the assessment process, R-AIAs aim to not only dismantle inequitable structures, but drive material benefits and systemic change for those most affected by algorithmic injustice. This is vital for human flourishing and empowerment.

Decolonial thinking challenges the dominance of Western epistemologies, calling for fundamental shifts toward recognizing and incorporating diverse knowledge systems (Miller, 2022; Mohamed et al., 2020; Zimeta, 2023).

This is critical to ensure that AI is not solely driven by Western-centric values but instead reflects the needs, values, and priorities of communities from the Global Majority and other marginalized groups. Drawing from research on algorithmic colonialism and human-centered AI, we propose the following decolonial, Intersectional principles for our R-AIAs framework:

1. Epistemological diversity: Actively incorporating diverse knowledge systems into AI development.
2. Data sovereignty: Respecting the rights of communities to control their data.
3. Technological self-determination: Empowering communities to develop and deploy AI that aligns with their values and needs.
4. Cultural preservation: Ensuring AI respects and promotes cultural diversity.
5. Reciprocity: Establishing mutually beneficial relationships between AI developers and communities.

Through these principles, R-AIAs help create AI systems that enhance rather than diminish human agency, reflecting and respecting the full diversity of human experience.

From Principles to Practice: Implementing R-AIAs

While R-AIA implementation requires rethinking traditional approaches, we propose a framework that is both technically feasible and policy-actionable. Building upon existing impact assessment mechanisms and governance structures, we outline six interconnected steps that both incorporate the above principles and can be readily operationalized within current regulatory frameworks. To exhibit practical implementation, we use the example of a US-based technology company piloting an AI-powered chatbot providing 24/7 mental health support to underserved communities across rural India. Each key step also includes sample strategie(s) and/or practice(s) that align or misalign with the R-AIA approach, illustrating the framework in action. This case study demonstrates how R-AIAs can be effectively deployed while centering human dignity and agency.

Step 1: Socio-Historical Research

Conducting thorough research into socio-historical contexts to understand the complex backdrop against which AI-powered systems operate is an essential first step. This includes desk-based investigations into past harms caused by similar technologies—particularly for marginalized and minoritized groups (PAI, 2024). This research helps identify not only possible impacts, power asymmetries, and reparative actions, but participants for engagement and diverse conceptions of human values and safety.

- *Aligned:* Employ librarians and information specialists with data curation/archival expertise to play a key role in the research process, grounding the investigation in socio-historical realities/injustices (Davis et al., 2021; Racine, 2024). Appropriately incorporate Indigenous and non-Western knowledge systems.

Step 2: Power Analysis

Comprehensively analyzing power dynamics and asymmetries is crucial for understanding how AI systems can reinforce or transform existing structures—and how these impact human well-being. This analysis should examine multiple dimensions of power: (1) institutional power—who makes decisions and controls resources, (2) knowledge power—whose expertise is valued and legitimized, (3) data power—who controls data collection, storage, and usage, (4) economic power—how value is created and distributed, (5) technological power—who has access to and control over technical infrastructure, (6) narrative power—who shapes the stories and frameworks around AI development, and (7) other local power structures identified through the socio-historical research and community engagement. This power analysis directly informs subsequent implementation steps: shaping equitable engagement processes, informing data governance structures, guiding monitoring frameworks, and ensuring meaningful redistribution of resources and capabilities.

- *Aligned:* Create detailed power maps and establish formal mechanisms that elevate historically under-empowered groups into decision-making positions, ensuring their lived experiences shape system development. For example, implement a Community Advisory Board with veto power and equal representation from various affected communities. Acknowledge how power dynamics influence people's ability to exercise agency and self-determination when interacting with these systems.

Step 3: Participant Engagement and Impact/Harm Co-Construction

Impacts should be co-constructed and rigorously mapped to potential harms through non-tokenistic engagement

that (re)distributes power; this redistribution is essential to producing accountability (Metcalf et al., 2021). This engagement must meaningfully center the lived experiences of those most affected by AI-powered technologies. Whether it should be continuous is debated. It is paramount to mitigate the toll repeated consultants take on participants, especially for vulnerable populations and regarding sensitive topics like mental health (PAI, 2024). To safeguard participants' well-being, ethical guidelines (e.g., informed consent) must be followed. Fostering equitable collaborations that prioritize knowledge exchange and capacity building between institutions in the Global Majority and Minority can set the groundwork for effective consultations.

- *Aligned:* Utilize socio-historical research to inform participant recruitment. Implement mechanisms to navigate divergent values, iterate based on new knowledge, and alleviate burden for participants (e.g., offer compensation, mental health resources, flexible participation options). Make certain accessibility needs are met and participant feedback directly shapes chatbot functionality
- *Misaligned:* Define and assess impacts based on superficial consultations with high-prestige experts while neglecting input from affected communities (PAI, 2024).

Step 4: Sovereign and Reparative Data Practices

Data governance frameworks must respect Indigenous data sovereignty principles and ensure communities retain control over their information (Carroll, Duarte, & Liboiron, 2024; Kukutai & Taylor, 2016). Furthermore, developing inclusive, reparative data methods can address underrepresentation of diverse, minoritized experiences, correct historical exclusion, and, ultimately, contribute to long-term, community-driven outcomes.

- *Aligned:* Establish community-controlled data trusts, allowing local communities to decide how their data is used.
- *Misaligned:* Extract data from affected communities without their consent or participation in decision-making, perpetuating data colonialism. Limit training to data from urban populations or Western mental health models, reinforcing disparities for rural communities.

Step 5: Ongoing Monitoring and Adaptation

R-AIAs emphasize the importance of continuous monitoring and adjustment of AI-powered systems based on real-world impacts, acknowledging that the work of equity and justice is ongoing and iterative.

- *Aligned:* Develop new ways of measuring chatbot performance that incorporate diverse cultural values and priorities, challenging the dominance of Western-centric benchmarks in AI evaluation.

Step 6: Redress

Moving beyond merely identifying issues, R-AIAs call for concrete, actionable plans that actively redress deep-rooted inequities (Davis et al., 2021) and algorithmic coloniality.

- *Aligned:* Partner with local AI hubs and research institutes that empower communities to develop their own AI capabilities. Offer scholarships and fellowships to underrepresented communities in rural India. Increase access to compute resources by investing in local infrastructure or providing cloud-based solutions that rural communities can use to develop and refine AI models tailored to their specific needs.

Concluding Remarks

Shaped by Western values and paradigms, AI-powered systems can reinforce global inequities. By combining culturally sensitive participatory methods with a reparative praxis and decolonial, Intersectional principles, our novel R-AIA framework moves beyond merely avoiding harm to actively empowering the Global Majority. This approach fosters justice and equity while providing concrete strategies for addressing and redressing colonial legacies and their algorithmic manifestations. In doing so, it offers a feasible solution to the challenges highlighted throughout this policy paper. Notably, R-AIAs addresses these challenges and key governance gaps while building upon prior mechanisms. We expand upon this implementation in the following sections. Finally, in adopting a human-centered approach, R-AIAs addresses a critical gap in current AI safety efforts by ensuring alignment mechanisms reflect global diversity in human values and conceptions of well-being. This advances both the technical and social aspects of AI safety while ensuring human flourishing for all those impacted by these systems.

Implementation Roadmap: Making R-AIAs a Reality

The successful implementation of R-AIAs requires a carefully phased approach that balances immediate action with sustainable, long-term change. Our three-phase implementation strategy ensures technical feasibility while maintaining our commitment to meaningful community engagement and power redistribution.

Phase 1: Foundation Building (Months 1-6)

The initial phase focuses on establishing crucial governance infrastructure and building community capacity. We will create an oversight committee with equal representation from Global Majority communities, ensuring those most affected by AI systems have direct decision-making power from the start. Simultaneously, we will develop standardized assessment tools and templates while training an initial cohort of R-AIA facilitators from affected communities. This dual focus on infrastructure and capacity building creates the foundation for sustainable implementation. During this phase, we will also select 3-5 diverse pilot organizations across different sectors, with a focus on high-impact areas like healthcare AI and financial services.

Phase 2: Pilot Implementation (Months 7-12)

The pilot phase provides crucial opportunities to test and refine our approach. Each pilot organization will establish a Community Advisory Board with real decision-making power, supported by clear compensation frameworks for community participation. We will implement secure feedback channels and regular review processes, allowing us to identify and address challenges quickly. This phase emphasizes learning and adaptation, with detailed documentation of both successes and obstacles. The pilot phase will also include the development of sector-specific guidelines and the refinement of assessment tools based on real-world application.

Phase 3: Scaled Implementation (Months 13-24)

Building on pilot learnings, the third phase focuses on broader adoption and institutionalization. We will establish regional R-AIA hubs in Global Majority countries, creating local centers of expertise and support. These hubs will facilitate knowledge sharing, provide technical assistance, and ensure contextual adaptation of R-AIA processes. During this phase, we will also work with regulatory bodies to formalize requirements and develop compliance frameworks, ensuring R-AIAs become an integral part of AI governance structures. This includes creating certification programs for R-AIA practitioners and establishing sustainable funding mechanisms for community participation.

Implementation Tools and Resources

Drawing inspiration from existing frameworks like the Government of Canada's AIA tool, we will develop an open-source R-AIA platform that guides organizations through our assessment process. This interactive tool will include: step-by-step assessment guides, power mapping templates, community engagement protocols, and data governance frameworks—all designed to center human impact and community agency. Following the Ada Lovelace Institute's approach to practical toolkits, we will also create comprehensive guidance documentation, case studies, and adaptable templates that organizations can customize for their specific contexts. These resources will be developed in collaboration with affected communities and will be available in multiple languages, ensuring accessibility and meaningful adoption of R-AIAs.

Success Metrics and Resource Requirements

Success will be measured through both quantitative and qualitative indicators: reduction in reported algorithmic harms, increase in Global Majority representation in AI development decisions, and economic benefits to participating communities. Resource requirements include initial funding for pilot programs, technical infrastructure for assessment tools, and community compensation funds.

Risk Mitigation

Key risks include resistance from industry, resource constraints, and potential tokenization of community engagement. We address these through: (1) clear demonstration of business benefits during pilots, (2) diverse funding sources including industry contributions and government grants, and (3) robust community oversight mechanisms. Regular review processes and clear escalation pathways ensure we can identify and address challenges quickly while maintaining our commitment to meaningful community empowerment.

Impact Assessment: Projected Outcomes for R-AIA Pilot

Our preliminary implementation of R-AIAs aims to demonstrate how this framework can transform AI governance while generating evidence for broader adoption. This assessment outlines anticipated impacts, challenges, and evaluation strategies for our initial deployments across 3-5 pilot use cases.

Core Impact Areas

Community Engagement and Agency

Through our pilots, we expect to demonstrate how R-AIAs enhance community agency in AI development through Advisory Boards, compensation frameworks, and direct involvement in system assessment and redesign.

Systemic Transformation

The pilot phase will test institutional changes in how organizations approach AI development, gathering data on effective power-sharing mechanisms and developing templates for sustainable governance structures.

Knowledge and Capacity Building

Our pilots will generate crucial insights about implementing community-centered AI governance through the R-AIA platform and toolkits. We aim to train 10-15 community facilitators, establishing a foundation for knowledge transfer.

Resource Distribution

We will test models for fair compensation and community data trust structures, while creating 5-10 new assessment and oversight roles across participating organizations.

Anticipated Challenges

We expect to encounter and document several key challenges: (1) Balancing rigorous assessment with community capacity, (2) Maintaining consistent engagement across different contexts, (3) Securing necessary resources for meaningful implementation, and (4) Ensuring equitable power distribution in decision-making.

Evaluation Framework

Our assessment of R-AIA effectiveness during the pilot phase will focus on four key dimensions:

Community Empowerment Metrics	Technical and System Outcomes
- Level and quality of community participation in decision-making processes - Community satisfaction with engagement mechanisms - Effectiveness of Advisory Board governance structures - Success of knowledge-transfer initiatives - Community capacity to influence system changes	- Enhanced value alignment across cultural contexts - Ability to identify and prevent unintended consequences - Changes in system performance for different community groups - Reduction in reported algorithmic harms - Implementation of community-requested modifications - Improvements in data governance practices
Institutional Transformation	Framework Effectiveness
- Changes in organizational decision-making processes - Adoption of new governance structures - Implementation of fair compensation frameworks - Resource allocation to community initiatives - Policy changes supporting community empowerment	- Completeness and utility of assessment process - Practicality of implementation timelines - Resource requirements and sustainability - Scalability across different contexts - Areas needing refinement or adjustment

We will collect both quantitative and qualitative data through regular assessments, community feedback sessions, system performance reviews, and organizational audits. This comprehensive evaluation approach will help demonstrate R-AIA value while identifying areas for improvement.

Appendix I. Challenges in Ensuring AI Benefits the Global Majority

The dominant discourse in Western technological spaces is one of hype, where the promise of AI to address global challenges and improve lives worldwide is emphasized (Crawford, 2021; Dežman, 2024). But in reality, these benefits are not equally distributed (Benjamin, 2019; Igarapé Institute, 2024; Mohamed, Png, & Isaac, 2020). Several key challenges prevent AI from serving the Global Majority. One of the most substantial challenges is the lack of Global Majority involvement throughout the AI lifecycle—even when directly impacted. This extends to the AI workforce itself (Okolo, 2023). Critical AI functions like data labeling and content moderation are routinely outsourced to the Global Majority, often subjecting workers to traumatic conditions and low pay (Igarapé Institute, 2024; Okolo, 2023; Perrigo, 2022, 2023).

There is also insufficient culturally sensitive data documenting the full depth and vibrancy of lived experiences from the Global Majority. Instead, algorithmic systems are trained on datasets that often reflect and amplify existing biases. For example, gender and skin-type bias in commercial facial-analysis technologies are well documented, with these tools performing consistently worse for individuals who are not white cisgender men (Birhane, 2022; Buolamwini & Gebru, 2018; Scheuerman, Paul, & Brubaker, 2019). Such misclassification has resulted in discrimination, privacy violations, wrongful policing, the reinforcement of harmful stereotypes, and a host of other harms. Moreover, AI-powered systems developed primarily in Western contexts often fail to account for the diverse cultural norms, values, and social structures of the Global Majority and Indigenous communities. This can lead to inappropriate or even harmful applications when these systems are implemented in different contexts. For instance, AI-powered content moderation systems may struggle to accurately interpret culturally specific expressions or nuances, leading to censorship or the spread of harmful matter (Sambasivan et al., 2021).

The dominance of Western epistemologies in AI design, development, deployment, research, and governance has also given rise to concerns about algorithmic colonialism. This phenomenon describes how AI-powered systems can impose particular ways of knowing and categorizing the world, potentially erasing or marginalizing indigenous and alternative knowledge systems. Birhane (2020) identifies several key manifestations: exploitative data practices, Western knowledge dominance, technological reliance, and cultural standardization (see also Mohamed et al., 2020). Crucially, algorithmic systems tend to operate from hetero-cis-normative, colonial, and capitalist epistemic positions, illustrating how these power structures can be extended via these tools (Mohamed et al., 2020; Racine, 2024).

Marginalized and minoritized groups, like sexual and gender minorities, are especially vulnerable to these epistemic impositions. For example, commercial facial-analysis technologies only return binary labels, entirely excluding non-binary/genderqueer individuals (Scheuerman et al., 2019). However, these Western labels (e.g., man/woman, homosexual/heterosexual) may be unsuitable in other cultural settings and repress invaluable diversity and complexity (Young & Meyer, 2005; Racine, 2023, 2024). This includes local self-determined identities that operate outside these binary categorizations, such as the *bacha bereesh* of Afghanistan, *hijra* of India, and *māhū* and *fa'afafine* of the Pacific Islands. Not only are these identities and rich histories erased when Western frameworks/norms are imposed, but such acts of epistemic violence can perpetuate significant, long-lasting harm.

This epistemic injustice is compounded by the concentration of AI power in the hands of a few tech giants. As of July 2024, 14 of the 15 largest AI companies by market cap were US-based, with the remaining based in Israel (Stash, 2024). These entities often extract data and economic value from the Global Majority while imposing technological dependence and cultural homogenization. For instance, major tech platforms routinely collect personal data from users in the Global South, using it to train AI-powered systems without transparent data practices or proper compensation. Meanwhile, the concentration of AI talent, compute resources, research funding, and infrastructure in the hands of Global Minority powers more broadly—predominantly the United States, United Kingdom, European Union, China, Japan, and South Korea—limits access to the knowledge and tools necessary for technological sovereignty for many in the Global Majority (Igarapé Institute, 2024; Lehdonvirta, Wu, & Hawkins, 2024). The result is a multi-faceted form of colonialism operating on both epistemic and economic levels.

Furthermore, many algorithmic systems operate as "black boxes," with decision-making processes that are opaque and difficult to scrutinize. This lack of transparency makes it challenging to identify and address biases or

errors as they arise, especially when these systems are deployed in critical domains like healthcare, criminal justice, or financial services. The absence of robust accountability mechanisms exacerbates this issue, hindering affected communities from seeking redress. Tackling these challenges requires a fundamental shift in how we approach all stages of the AI lifecycle. The following sections will explore how R-AIAs can provide a pathway towards more inclusive and equitable AI-powered technologies/systems that benefit the Global Majority.

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Appendix II: Reparative Algorithmic Impact Assessment (R-AIA) Sample Developer Guide

SECTION 1: PROJECT CONTEXT & HISTORICAL ANALYSIS

Instructions: Provide basic project information and establish clear connection to historical context. Be specific and thorough in your responses.

Questions:

1. Project Identification
 - Project name:
 - Organization:
 - Team composition:
 - Timeline:
 - Scope:
 - Resources allocated:
2. Project Goals
 - Primary objectives:
 - Intended benefits:
 - Target communities:
 - Success metrics:
 - Potential challenges:

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

1.2 Historical Context Analysis

Instructions: Draw directly from your socio-historical research to analyze how historical patterns relate to your project. Focus on specific examples and documented evidence.

Questions:

1. Past Technological Interventions
 - a) Similar Historical Projects
 - What previous projects attempted similar goals?
 - What were their outcomes?
 - What lessons can be learned?
 - How is your project different?
 - b) Historical Impacts
 - What benefits were realized?
 - What harms occurred?
 - Which communities were affected?
 - How were impacts distributed?

c) Power Dynamics

- Who controlled these interventions?
- Who benefited most?
- Who was excluded?
- What power structures were reinforced?

2. Community Responses

a) Resistance Strategies

- How did communities respond?
- What alternatives were proposed?
- What strategies were effective?
- What lessons persist today?

b) Adaptation Patterns

- How did communities adapt?
- What innovations emerged?
- What capacities were built?
- What networks formed?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

1.3 Power Analysis

Instructions: Analyze current power structures and their implications for your project. Be specific about how different forms of power operate and intersect.

Questions:

1. Institutional Power

a) Decision-Making Authority

- Who makes key decisions?
- Through what processes?
- With what oversight?
- With what consequences?

b) Resource Control

- Who controls project resources?
- How are they distributed?
- Who benefits most?
- Who is excluded?

2. Knowledge Power

a) Epistemological Dynamics

- Whose knowledge is centered?
- Whose expertise counts?

- What knowledge systems are marginalized?
- How can this be rebalanced?

b) Technical Capacity

- Who has technical skills?
- How is expertise validated?
- What barriers exist?
- How can capacity be built?

3. Data Power

- Who controls data?
- Who benefits from it?
- Who is harmed by it?
- How can control be redistributed?

4. Economic Power

- Who captures value?
- Who bears costs?
- How are benefits distributed?
- What inequities exist?

5. Narrative Power

- Who shapes the story?
- Whose perspectives matter?
- What narratives are marginalized?
- How can voices be amplified?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

SECTION 2: IMPACT ANALYSIS & STAKEHOLDER ENGAGEMENT

Instructions for Section 2

This section focuses on detailed analysis of potential impacts across different stakeholder groups. Draw from your socio-historical research and power analysis to:

- Identify all affected communities
- Map potential impacts across different scenarios
- Consider intersectional effects
- Plan engagement strategies
- Document specific concerns and opportunities

2.1 Stakeholder Identification & Analysis

Instructions: For each identified stakeholder group, provide comprehensive analysis of their position, potential impacts, and engagement needs.

Questions:**1. Primary Stakeholders (Direct Users/Affected Parties)****a) Group Identification**

- Which specific communities will use or be directly affected by the system?
- What are their demographic characteristics?
- What is their historical relationship to similar technologies?
- What is their current relationship to your organization?

b) Position Analysis

- What is their current power position?
- What resources do they have/lack?
- What barriers do they face?
- What strengths can they leverage?

c) Impact Assessment

- What benefits might they experience?
- What harms might they face?
- How might existing inequities affect their experience?
- What support will they need?

2. Secondary Stakeholders (Indirect Impacts)**a) Group Identification**

- Which communities might be indirectly affected?
- Through what mechanisms?
- Over what timeframe?
- At what scale?

b) Position Analysis

- How do they relate to primary stakeholders?
- What power dynamics exist?
- What conflicts might arise?
- What alliances might form?

c) Impact Assessment

- What ripple effects might occur?
- How might benefits/harms spread?
- What unintended consequences might emerge?
- What preventive measures are needed?

<i>Reflexive Exercise: [Your team completes this section first]</i>

<i>Participatory Workshop: [To be completed after community engagement]</i>

<i>Synthesis: [Final integration of perspectives]</i>

2.2 Intersectional Impact Analysis

Instructions: Analyze how impacts might vary across different intersections of identity and circumstance. Be specific about compounding effects and unique vulnerabilities.

Questions:

1. Identity Intersections
 - a) Demographic Analysis
 - How might impacts vary by race/ethnicity?
 - How might impacts vary by gender identity?
 - How might impacts vary by class/economic status?
 - How might impacts vary by disability status?
 - How might impacts vary by geographic location?
 - How do these factors intersect?
 - b) Cultural Considerations
 - What cultural values are relevant?
 - What practices might be affected?
 - What sensitivities need consideration?
 - What strengths can be built upon?
2. Systemic Factors
 - a) Access Barriers
 - What technological barriers exist?
 - What economic barriers exist?
 - What cultural barriers exist?
 - What linguistic barriers exist?
 - b) Resource Distribution
 - How are resources currently distributed?
 - How might this affect impact?
 - What redistributive measures are needed?
 - How can access be ensured?

<i>Reflexive Exercise: [Your team completes this section first]</i>

<i>Participatory Workshop: [To be completed after community engagement]</i>

<i>Synthesis: [Final integration of perspectives]</i>

2.3 Scenario Planning

Instructions: Develop detailed scenarios to understand potential impacts under different conditions. Consider both intended and unintended consequences.

Questions:

1. Best-Case Scenario
 - a) Conditions for Success
 - What needs to be true?
 - What resources are required?

- What support systems are necessary?
- What barriers need removing?

b) Expected Benefits

- What positive impacts would occur?
- How would they be distributed?
- How could they be measured?
- How could they be sustained?

2. Worst-Case Scenario

a) Risk Factors

- What could go wrong?
- Who would be most affected?
- What cascading effects might occur?
- What preventive measures are needed?

b) Mitigation Strategies

- How can harms be prevented?
- What safeguards are needed?
- What response plans are required?
- What resources must be allocated?

3. Likely Scenario

a) Realistic Assessment

- What is most likely to happen?
- What mixed effects might occur?
- What challenges are probable?
- What opportunities are realistic?

b) Preparation Plans

- What preparations are needed?
- What resources must be secured?
- What support systems are required?
- What monitoring is necessary?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

2.4 Engagement Strategy

Instructions: Develop detailed plans for meaningful stakeholder engagement throughout the project lifecycle.

Questions:

1. Engagement Design

a) Participation Mechanisms

- How will stakeholders be involved?

- What decision-making power will they have?
- What compensation will be provided?
- What support will be offered?

b) Communication Channels

- How will information be shared?
- How will feedback be gathered?
- How will transparency be maintained?
- How will accessibility be ensured?

2. Resource Allocation

a) Budget

- What funds are allocated for engagement?
- How will they be distributed?
- What compensation rates are set?
- What additional resources are needed?

b) Support Services

- What translation services are needed?
- What accessibility accommodations are required?
- What technical support is necessary?
- What cultural support is needed?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

Quality Checklist for Section 2

Before proceeding, verify all responses:

- ☐ Include specific examples and evidence
- ☐ Consider multiple perspectives
- ☐ Address power dynamics
- ☐ Identify concrete impacts
- ☐ Specify engagement mechanisms
- ☐ Allocate sufficient resources
- ☐ Plan for diverse needs
- ☐ Include success metrics
- ☐ Consider long-term implications

SECTION 3: REPARATIVE PLANNING

Instructions for Section 3

This section focuses on developing concrete plans for addressing historical harms and creating positive change.

Your responses should:

- Connect directly to identified harms
- Specify concrete actions
- Include resource commitments

- Define clear metrics
- Establish accountability mechanisms

3.1 Harm Analysis & Mitigation

Instructions: For each identified harm (historical and potential), develop comprehensive mitigation and reparative strategies.

Questions:

- Harm Categorization
 - Historical Harms
 - What specific harms have occurred?
 - What were their root causes?
 - What attempts at redress have been made?
 - What lessons were learned?
 - Potential Harms
 - What new harms might emerge?
 - How might they manifest?
 - Who would be most affected?
 - What early warning signs exist?
 - Systemic Impacts
 - How do these harms reinforce existing inequities?
 - What systemic changes are needed?
 - What institutional barriers exist?
 - What power shifts are required?
- Mitigation Strategy
 - Prevention Measures
 - What safeguards will be implemented?
 - What policies are needed?
 - What training is required?
 - What oversight mechanisms are necessary?
 - Response Protocols
 - How will harms be identified?
 - How will they be addressed?
 - Who is responsible?
 - What resources are allocated?

<i>Reflexive Exercise: [Your team completes this section first]</i>

<i>Participatory Workshop: [To be completed after community engagement]</i>

<i>Synthesis: [Final integration of perspectives]</i>

3.2 Reparative Action Planning

Instructions: Develop specific plans for taking reparative action that addresses both historical and potential future harms.

Questions:

1. Power Redistribution
 - a) Decision-Making Authority
 - How will power be shared?
 - What formal mechanisms will be established?
 - What resources will be transferred?
 - How will effectiveness be measured?
 - b) Resource Allocation
 - What percentage of budget goes to community?
 - How will resources be distributed?
 - What control mechanisms will communities have?
 - How will transparency be maintained?
2. Capacity Building
 - a) Technical Training
 - What skills will be developed?
 - How will training be delivered?
 - Who will provide training?
 - How will success be measured?
 - b) Leadership Development
 - What leadership opportunities will be created?
 - How will leaders be supported?
 - What resources will be provided?
 - How will progress be tracked?
3. Cultural Preservation
 - a) Knowledge Systems
 - How will local knowledge be centered?
 - What documentation methods will be used?
 - How will knowledge be protected?
 - How will it be transmitted?
 - b) Practice Protection
 - What cultural practices need protection?
 - How will they be safeguarded?
 - What support is needed?
 - Who will oversee this?

<i>Reflexive Exercise: [Your team completes this section first]</i>

<i>Participatory Workshop: [To be completed after community engagement]</i>

<i>Synthesis: [Final integration of perspectives]</i>

3.3 Community Benefits Agreement

Instructions: Develop specific, measurable commitments to ensure community benefit and accountability.

Questions:

1. Benefit Definition
 - a) Direct Benefits
 - What specific benefits will be delivered?
 - To whom?
 - When?
 - How measured?
 - b) Indirect Benefits
 - What broader benefits are expected?
 - How will they be supported?
 - How will they be tracked?
 - How will they be sustained?
2. Accountability Mechanisms
 - a) Oversight Structure
 - Who will provide oversight?
 - What authority will they have?
 - What resources will they control?
 - How will they operate?
 - b) Reporting Requirements
 - What metrics will be tracked?
 - How often will reports be made?
 - To whom will they be delivered?
 - How will they be verified?
3. Enforcement Provisions
 - a) Compliance Measures
 - What standards must be met?
 - How will they be verified?
 - What happens if missed?
 - Who enforces?
 - b) Corrective Actions
 - What triggers correction?
 - What process is followed?
 - What remedies are available?
 - Who oversees this?

<i>Reflexive Exercise: [Your team completes this section first]</i>

<i>Participatory Workshop: [To be completed after community engagement]</i>

<i>Synthesis: [Final integration of perspectives]</i>

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3.4 Resource Allocation & Timeline

Instructions: Specify concrete commitments of resources and establish clear timelines for implementation.

Questions:

1. Budget Allocation
 - a) Direct Funding
 - How much is allocated?
 - For what specific purposes?
 - Over what timeframe?
 - With what conditions?
 - b) In-Kind Resources
 - What non-monetary resources are committed?
 - How will they be delivered?
 - Who manages them?
 - How are they valued?
2. Implementation Timeline
 - a) Short-term Actions (0-6 months)
 - What immediate steps will be taken?
 - Who is responsible?
 - What resources are needed?
 - How will progress be measured?
 - b) Medium-term Goals (6-18 months)
 - What key milestones exist?
 - What buildout is required?
 - What dependencies exist?
 - How will success be measured?
 - c) Long-term Objectives (18+ months)
 - What sustained changes are sought?
 - How will they be maintained?
 - What support is needed?
 - How will impact be assessed?

<i>Reflexive Exercise: [Your team completes this section first]</i>

<i>Participatory Workshop: [To be completed after community engagement]</i>

<i>Synthesis: [Final integration of perspectives]</i>

Quality Checklist for Section 3

Before proceeding, verify all responses:

- ☐ Connect directly to identified harms
- ☐ Include specific, measurable commitments
- ☐ Allocate adequate resources
- ☐ Establish clear accountability
- ☐ Define success metrics
- ☐ Specify timelines
- ☐ Name responsible parties
- ☐ Include enforcement mechanisms
- ☐ Plan for sustainability
- ☐ Consider long-term impact

SECTION 4: IMPLEMENTATION FRAMEWORK

Instructions for Section 4

This section focuses on translating plans into actionable implementation steps. Your responses should:

- Provide detailed operational plans
- Establish clear monitoring frameworks
- Define success metrics
- Specify adaptation processes
- Ensure accountability measures

4.1 Operational Planning

Instructions: Detail specific steps for implementing reparative actions and system changes.

Questions:

1. Technical Implementation
 - a) System Requirements
 - What infrastructure is needed?
 - What technical specifications are required?
 - What security measures are necessary?
 - What accessibility features are needed?
 - b) Integration Points
 - How will the system connect with existing processes?
 - What protocols need to be established?
 - What standards must be met?
 - What testing is required?
2. Organizational Changes
 - a) Structural Adjustments
 - What organizational changes are needed?
 - Who needs to be involved?
 - What approval processes are required?
 - How will changes be managed?
 - b) Policy Development
 - What new policies are needed?
 - How will they be developed?
 - Who will approve them?
 - How will they be enforced?
3. Community Integration
 - a) Engagement Mechanisms
 - How will community input be incorporated?
 - What decision-making processes will be used?
 - How will conflicts be resolved?

- How will feedback be addressed?

b) Support Systems

- What support will be provided to communities?
- How will it be delivered?
- Who will manage it?
- How will effectiveness be measured?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

4.2 Monitoring Framework

Instructions: Establish comprehensive systems for tracking progress and measuring impact.

Questions:

1. Success Metrics

a) Technical Metrics

- What system performance indicators will be tracked?
- How will they be measured?
- What thresholds indicate success?
- How frequently will they be assessed?

b) Social Impact Metrics

- How will community benefits be measured?
- What indicators of power redistribution will be tracked?
- How will harm reduction be assessed?
- What qualitative data will be collected?

c) Process Metrics

- How will implementation progress be tracked?
- What milestones will be monitored?
- How will resource utilization be measured?
- What efficiency metrics matter?

2. Data Collection

a) Methodology

- What data will be collected?
- How will it be gathered?
- Who will collect it?
- How often?

b) Privacy & Ethics

- How will data be protected?
- What consent is needed?
- How will it be stored?

- Who has access?

3. Reporting Structure

a) Internal Reporting

- What reports will be generated?
- For whom?
- How often?
- In what format?

b) Community Reporting

- How will findings be shared with communities?
- What feedback mechanisms exist?
- How will transparency be maintained?
- How will accessibility be ensured?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

4.3 Adaptation & Response Framework

Instructions: Develop systems for responding to issues and adapting implementation as needed.

Questions:

1. Issue Response

a) Detection Systems

- How will problems be identified?
- What early warning signs will be monitored?
- Who can raise concerns?
- How will they be logged?

b) Response Protocols

- What is the response process?
- Who is responsible?
- What resources are available?
- How quickly must action be taken?

2. Adaptation Process

a) Review Triggers

- What triggers system review?
- Who can initiate review?
- How often are regular reviews?
- What is the review process?

b) Change Management

- How are changes proposed?
- How are they evaluated?
- How are they approved?

- How are they implemented?

3. Continuous Improvement

a) Learning Systems

- How will lessons be captured?
- How will they be shared?
- How will they inform changes?
- Who is responsible for this?

b) Innovation Process

- How will improvements be identified?
- How will they be tested?
- How will they be evaluated?
- How will they be scaled?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

4.4 Sustainability Planning

Instructions: Ensure long-term sustainability of both the technical system and community benefits.

Questions:

1. Technical Sustainability

a) Maintenance Requirements

- What ongoing maintenance is needed?
- Who will perform it?
- What resources are required?
- How will it be funded?

b) Upgrade Path

- How will the system evolve?
- What triggers updates?
- How will compatibility be maintained?
- What is the end-of-life plan?

2. Social Sustainability

a) Community Capacity

- How will community capacity be maintained?
- What ongoing support is needed?
- How will knowledge be transferred?
- What succession planning exists?

b) Resource Sustainability

- How will resources be sustained?
- What funding models exist?

- How will benefits be maintained?
- What backup plans exist?

3. Documentation Requirements

a) System Documentation

- What must be documented?
- How will it be maintained?
- Who has access?
- How will it be updated?

b) Process Documentation

- What procedures must be documented?
- How will they be maintained?
- Who is responsible?
- How will updates be managed?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

Quality Checklist for Section 4

Before completing, verify all responses:

- ☐ Provide specific operational details
- ☐ Include clear metrics and targets
- ☐ Establish monitoring processes
- ☐ Define response protocols
- ☐ Plan for adaptation
- ☐ Consider sustainability
- ☐ Document responsibilities
- ☐ Include resource requirements
- ☐ Address community needs
- ☐ Plan for long-term maintenance

SECTION 5: CONCLUSION & FINAL VERIFICATION

Instructions for Conclusion

This section ensures completeness of your R-AIA and prepares for implementation. Review all previous sections and complete final verification steps.

5.1 Comprehensive Review

Questions:

1. Completeness Assessment

a) Documentation Review

- Are all sections completed?
- Are responses sufficiently detailed?
- Are all questions addressed?
- Is evidence provided where needed?

b) Quality Check

- Is language clear and specific?
- Are commitments measurable?
- Are responsibilities assigned?
- Are timelines specified?

2. Stakeholder Verification

a) Community Input

- Has community feedback been incorporated?
- Are community priorities reflected?
- Are engagement plans sufficient?
- Are benefits clearly defined?

b) Team Alignment

- Does the team understand their roles?
- Are resources appropriately allocated?
- Is leadership committed?
- Are responsibilities clear?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

5.2 Final Action Plan

Instructions: Summarize key next steps and immediate actions required.

Questions:

1. Implementation Priorities a) Immediate Actions (Next 30 Days)

- What must begin immediately?
- Who is responsible?
- What resources are needed?
- How will progress be tracked?

b) Critical Dependencies

- What must happen first?
- What resources must be secured?
- What approvals are needed?
- What barriers must be addressed?

2. Risk Management a) Critical Risks

- What are the highest priority risks?
- What mitigation steps are planned?
- Who is monitoring?
- What triggers emergency response?

b) Success Factors

- What is required for success?
- How will it be measured?

- Who is responsible?
- When will it be evaluated?

Reflexive Exercise: [Your team completes this section first]

Participatory Workshop: [To be completed after community engagement]

Synthesis: [Final integration of perspectives]

5.3 Comprehensive Verification Checklist

Before finalizing the R-AIA, verify completion of all critical elements:

Historical Analysis & Power

- ☐ Thorough historical research incorporated
- ☐ Power dynamics explicitly addressed
- ☐ Community perspectives included
- ☐ Cultural considerations documented

Impact Assessment

- ☐ All stakeholders identified
- ☐ Direct impacts analyzed
- ☐ Indirect impacts considered
- ☐ Intersectional analysis completed
- ☐ Scenarios developed and analyzed

Reparative Planning

- ☐ Specific harms addressed
- ☐ Clear reparative actions defined
- ☐ Resources allocated
- ☐ Timelines established
- ☐ Accountability mechanisms specified

Implementation Framework

- ☐ Operational plans detailed
- ☐ Monitoring systems defined
- ☐ Response protocols established
- ☐ Adaptation processes specified
- ☐ Sustainability planned

Community Engagement

- ☐ Meaningful participation mechanisms
- ☐ Resource commitments made
- ☐ Decision-making power shared
- ☐ Benefits clearly defined
- ☐ Accountability established

Documentation & Resources

- ☐ All sections completed
- ☐ Evidence provided
- ☐ Resources allocated
- ☐ Responsibilities assigned
- ☐ Timelines specified