

The mobilisation of refugee labour for carbon credits as maladaptive practice

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Abstract: The Refugee Environmental Protection (REP) Fund is a programme designed to turn refugees and their labour into a source of carbon credits for global carbon markets. Established by the UN High Commissioner for Refugees, the Fund invests in clean cookstove and reforestation projects in and around refugee camps, with the resulting (imputed) reduction in CO₂ (and CO₂ equivalent) emissions and sequestration of CO₂ converted into saleable carbon credits, which, in turn, make the camps more financially sustainable.

We take issue with the REP Fund. First, we argue that there are multiple and very fundamental problems with carbon credits, offsets and carbon accounting. Second, the REP Fund is reliant upon and complicit in producing refugees as hyper-exploitable and precarious labour. Third, as an instrument of so-called social finance, the REP Fund has the potential to integrate into the web of planetary financial discipline the several million people confined to UN refugee

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camps. Fourth, the REP Fund, whose advocates claim as an additional benefit a reduction in gender-based violence, risks reproducing assumptions that naturalise the primary threat of such violence as coming from outside the home, rather than inside it. In conclusion, we argue that we can understand the REP Fund as part of a maladaptive labour cycle, which works both directly and indirectly to use the labour of those displaced to maintain their own displacement while worsening environmental and climate outcomes.

Key Words: carbon markets, clean cooking programmes, climate adaption, gender based violence, Refugee Environmental Protection Fund, refugee labour, social impact bonds

1. Introduction

In 2024 the number of forcibly displaced people reached a record high of 122.6 million – around 1.5 per cent of the global population. This includes 72.1 million internally displaced people (IDP), 32 million refugees under the UNHCR’s mandate, an additional 6 million Palestinian refugees under the UNRWA’s mandate, 8 million asylum seekers, and a further 5.8 million people in need of international protection.¹

These figures have grown sharply in recent years: the overall number of forcibly displaced people has almost doubled since 2015 and has increased by one-fifth in just the last two years.² This rise is driven by ongoing and new conflicts in regions such as Sudan, Ukraine, Afghanistan, Syria, and Venezuela, not to mention Palestine, with nearly 90 per cent of IDPs displaced by violence and conflict. The trend is projected to continue, especially in West Africa, East Africa and Asia, due to limited solutions for resettlement or return and the persistence of major crises.³ Disasters also play a part, and recent global

monitoring data indicate that environmental factors are an increasingly significant driver of displacement worldwide. According to the Internal Displacement Monitoring Centre, 32.6 million new displacements were triggered by weather-related hazards in 2022, representing a substantial increase compared to previous years and comprising a large proportion of all new displacements globally.⁴

Around a fifth of refugees end up in refugee camps, with the average length of stay being 10–15 years; of the 6.6 million refugees in camps, 4.5 million are in formally organised settlements.⁵ But while the overall number of displaced people increases, and will likely continue to do so due to environmental crises, the international body responsible for refugees, the United Nations High Commissioner for Refugees (UNHCR), is in deep financial trouble. For instance, while its funding target for 2025 – the sum it needs to effectively run its refugee camps and other programmes – is US\$10.6 billion, it is likely to have only US\$3.5 billion available, putting millions at risk of harm.⁶ In fact, the UNHCR has rarely, if ever, had sufficient funds to support its annual budget; persistent funding gaps mean that many needs, including those for the running and maintenance of refugee camps, remain unmet.⁷ These already-large funding gaps will only widen as the US, the UK and other overdeveloped states slash aid budgets.

In the face of this crisis, the UNHCR is trying to resolve its own financial problems, as well as carrying out its mission (and addressing gender-based violence to boot), by harnessing refugees and their labour in order to produce financial assets. Enter the Refugee Environmental Protection (REP) Fund, a project that allows the UNHCR's corporate partners 'to invest in impactful reforestation and clean cooking programs in climate-vulnerable refugee situations'.⁸ Launched in 2021, the fund isn't merely another pot of money to fund refugee camps, but a scheme to make camps more financially self-

sustainable, using residents' own activity to generate carbon credits, which can be sold on global carbon markets.

Across the history of the UN's refugee work, relief and support has rarely been adequately funded. Finance is not only often heavily politicised and enmeshed within the income streams of host countries (overwhelmingly located in the Global South), but also almost always inadequate. One consequence is that refugees being 'put to work' is common.⁹ The REP Fund differs from this model, however, insofar as refugees' labour is not directed primarily towards settlement maintenance and functionality, nor towards waged work within host communities, but rather towards the generation of financial assets – specifically carbon credits. We contend that this constitutes a novel development: it both introduces potentially risky financial assets into the governance and reproduction of critical refugee infrastructure; and it produces a particular kind of maladaptation. (A maladaptation is an adaptation that worsens existing or future conditions and/or produces environmental harms – and thus is often categorised as a failed adaptation.) This maladaptation mobilises the labour of displaced peoples to fund their own containment via the generation of carbon credits that facilitate on-going carbon pollution, thus in effect worsening the currently unfolding climate-displacement crisis.

More broadly, the REP Fund has been established in the context of two on-going developments: first, the continuing securitisation of migration; and second, efforts to render containment or security architecture sustainable in a weak sense. The intensification of the securitisation of migration is a widely recognised phenomenon. In recent decades, not only have borders become more fortified, but entire migratory 'zones' – including transit and departure points – have been subjected to heightened security measures. This includes the establishment of paramilitary forces, increased policing of migrants, and the concurrent restriction of refugee and asylum rights.¹⁰ Central to this process is

the diffusion and externalisation of border control, whereby migration management is outsourced to countries of origin and transit, particularly in the Global South.¹¹

This externalisation of border control has had significant humanitarian consequences. By restricting access to the Global North, these policies have contributed to an increase in the size and number of camps, and to the length of the average stay within them. As most camps are in the Global South, those displaced are increasingly contained within transit countries, often under precarious and protracted conditions, as opportunities for onward movement or legal resettlement diminish.¹²

The second development has been the ‘greening’ of refugee camps. From around 2010, innovative greening initiatives began to emerge, emphasising not only reforestation but also urban agriculture and community-led environmental restoration. These projects have been shown to improve food security and enable some degree of financial independence amongst those displaced. More recently, large-scale integrated projects, such as the greening of Cameroon’s Minawao camp, have demonstrated the potential for comprehensive approaches that combine sustainable shelter, reforestation, alternative energy, and capacity-building for both refugees and host communities. As the impacts of climate change intensify, the greening of refugee camps has become an increasingly important aspect of formal humanitarian response programmes, blending ecological restoration with social cohesion and self-reliance for displaced populations as key objectives.¹³

While sustainably managing displacement events and processes is, in itself, laudable, we contend that the combination of the two developments – securitisation of migration and the ‘greening’ of refugee camps – mirrors other violent forms of sustainable development and conservation, where ‘excess life’

in the Global South is set out as a problem to be managed vis-a-vis environmental destruction. Moreover, we argue that rather than seeing these two developments as in contradistinction or conflict, we should instead understand the ‘the environment’ both as rationale for securitisation and as medium through which securitisation takes place. While we do not argue that the REP Fund enacts a ‘hard’ form of securitisation, such as is found in Israel’s weaponisation of ecological destruction in Palestine or in the mobilisation of an exhausted landscape for refugee detention as in Nauru, we do contend that it exists within the same broad logic.¹⁴ While explicitly designed with escalating climate impacts in mind, the REP Fund is also part of the securitisation of migratory flows. Neither high-tech surveillance nor armed guards feature in the REP Fund programmes; instead, they produce a softer form of securitisation, where a process of laborious maladaptation is mobilised to produce self-sustaining camp architectures.

We develop our argument as follows. In the paper’s next section (section 2) we summarise the genesis of the REP Fund and provide an overview of its current state, including the political and economic context of the project. We then critically examine the processes through which carbon credits are generated (section 3), including exploring the labour of carbon credit generation in both its waged and unwaged forms (section 4). Next, we turn to the relationship between the REP Fund and other ‘social and environmental’ financial vehicles (section 5), as well as the specific claims as to women and girl’s empowerment and safety generated through the Fund’s activities (section 6). We conclude (section 7) by setting out what we identify as a maladaptive labour cycle, one that works both directly and indirectly to use the labour of those displaced to maintain their own displacement while worsening environmental and climate outcomes.

2. Refugees and the REP Fund

Launched in 2021, the Refugee Environmental Protection (REP) Fund is being developed as part of the UNHCR's Climate Action Strategy, aligning with that body's Strategic Framework for Climate Action and with the UN's Global Compact on Refugees, established in 2018. It targets US\$30 million in capitalisation to generate an additional US\$200 million through carbon credit financing, with initial pledges of US\$7 million from Innovation Norway, the Government of Denmark, UNO-Flüchtlingshilfe (the German partner of the UNHCR), global law firm DLA Piper, and management consultants Oliver Wyman. The Fund aims to support UNHCR's flagship climate initiative by planting tens of millions of trees while simultaneously providing employment and funding for refugees, improving refugee camp infrastructure, addressing gender-based violence in camp areas, and implementing climate change mitigation measures through voluntary carbon credits and carbon market mechanisms.

The Fund works thus. Initial donors provide the money to enable investment in both tree-planting and clean cooking stove programmes in and around refugee camps and their host communities. The positive carbon impacts of both programmes are verified and registered to produce carbon credits. These will, in turn, be sold on carbon markets, generating income that replenishes the Fund, allowing it to re-invest in more reforestation and clean cooking programmes. Eventually the Fund and the programmes it supports become more financially and operationally sustainable.

In addition to the environmental benefits associated with reduced net carbon emissions and reforestation, the Fund's proponents claim several other positive impacts. First, women and girls will be better protected against both the health risks associated with inhaling cooking smoke and the risks of experiencing gender-based violence when collecting firewood. Second, the existence of clean cooking solutions for both refugee and host community families will lead to

greater peace and security, by alleviating potential conflict over firewood and other factors arising from environmental degradation. Third, ‘green jobs’ will be created in reforestation and clean cooking supply chains in under-developed areas in developing countries.

The REP Fund remains at a relatively early stage of development. As of March 2025, feasibility studies had been completed across eleven sites in Uganda, Rwanda, Sudan, and South Sudan, to assess legal, commercial, and financial viability, as well as potential measurable environmental and social benefits. Three initial pilot sites, in Uganda and Rwanda, have been selected from these eleven. Concurrently the Fund’s managers are planning further feasibility studies in Brazil and Bangladesh (scheduled for 2025) and Kenya, Mozambique, Cameroon and Chad.¹⁵ The programme is currently in the pilot project procurement phase, with the UNHCR launching the first Request for Expressions of Interest (REOI) in January 2025 to identify qualified project developers to implement large-scale reforestation and clean cooking interventions across the three sites: Bidibidi and Kyangwali Settlements in Uganda and Kigeme Camp in Rwanda. This pilot phase will cover roughly 20,000 hectares of land across the three sites, with reforestation efforts including agroforestry, community woodlots, and ecosystem restoration projects; 90,000 households will be provided with clean cookstoves (eco-stoves) and alternative fuels.

The three pilot camps are all within a broad ‘crisis belt’ that stretches from the Democratic Republic of Congo (DRC) to the Horn of Africa and Yemen.¹⁶ At the end of 2023, more than one-third of all the people in the world in need of humanitarian relief – around 136 million people – were located within this ‘belt’. At the risk of over-simplifying its diversity, it is useful to ‘think of this giant region as an interconnected whole’.¹⁷ Multiple conflicts are ranged across

it and the area has also been subject to persistent drought and, *pace* climate whiplash, devastating flooding.

Uganda, whose population is around 50 million, hosts approximately 1.77 million refugees, 80 per cent of whom are from either South Sudan or DRC. Bidibidi, located in northern Uganda's Yumbe district, which borders South Sudan, is the country's largest settlement. Established in 2016, it covers an area of 250 square kilometres and hosts around 236,700 refugees, mainly South Sudanese. Kyangwali is situated in the mid-western region, on the eastern shore of Lake Albert, which forms the border with DRC. Somewhat smaller than Bidibidi, Kyangwali hosts a diverse population, including many refugees from the DRC.¹⁸ Uganda's refugee policy allows refugees in both Bidibidi and Kyangwali to cultivate land and access basic services, promoting self-reliance and integration with host communities. However, humanitarian assistance, including general food aid, remains a primary source of livelihood for most people in these rural settlements, as opportunities for employment and self-sufficiency remain limited. Despite the policy framework, both Bidibidi and Kyangwali continue to experience resource constraints – current UN funding for its refugee programme is less than half the required amount – with gaps in nutrition, education, and health infrastructure impacting the well-being of their populations.

Almost all refugees in Rwanda are from either DRC or Burundi. Kigeme Refugee Camp, established in 2012, is in the Nyamagabe District in the country's Southern Province. The camp hosts approximately 14,400 refugees, all of whom are Congolese, and occupies 34 hectares of land. It is administered by the Ministry in Charge of Emergency Management, in partnership with UNHCR, which together oversee security, protection and the provision of basic services. The camp provides access to essential services such as education, health care and water, though resource constraints and environmental challenges

persist; current UN funding for refugee support in Rwanda is at 44 per cent of the required amount.¹⁹

3. Reforestation, markets and the problems with carbon accounting

What is innovative about the REP Fund is that it aims for financial sustainability by exploiting carbon markets. There are two main types of carbon markets: compliance markets and voluntary markets. Compliance markets, established by governments, are mandatory for certain industries, operate on a cap-and-trade system, and account for the majority of carbon trading value. Under a cap-and-trade system, a government sets an upper limit on emissions (the ‘cap’) from a group of companies (usually by sector). Each company must submit ‘allowances’ or permits to government for every unit of greenhouse gases it emits. Companies can trade these allowances, however, creating a market in carbon pollution. The cap is ideally meant to decline over time, ultimately resulting in a reduction of carbon allowances and thus emissions. Voluntary markets, on the other hand, allow businesses and individuals to buy and sell carbon credits without government mandates, often driven by corporate sustainability goals. Both types aim to reduce greenhouse gas emissions by creating financial incentives that enable emissions in one place to be ‘off-set’ by carbon sequestration in another. The REP Fund is oriented towards voluntary markets.

Voluntary markets are largely populated with verified carbon credits (VCCs), which are issued by self-regulated, standard setting organisations (SSOs). Each SSO has distinct eligibility standards and methodology for offset projects to attain VCCs and rely on third-party agencies to audit projects and ensure the criteria and methodologies are met. Generally, there is a lack of regulation and no consistent, common standard, both of which factors compound the risk of corruption inherent to this market – indeed to any market. Since they are self-

regulating, the SSOs are incentivised to create as many credits as possible, which may impede their quality.²⁰ Both project developers and SSOs profit per credit generated, while economies of scale incentivise validation agents to perform more validations less thoroughly.²¹ As the project developer also monitors the project there is clear conflict of interest: there is an incentive for the developer to overstate impacts and understate failures. Government agencies too may be inclined to overstate the impacts to both international agencies and to local publics. There are currently no safeguards or assurances to mitigate against these issues.

After the signing of the 2015 Paris Agreement, and a surge in corporate ‘net zero pledges’, demand for VCCs significantly increased. While the market contracted in 2023, the global market is forecast to grow by more than one-third each year between 2024 to 2030, reaching a possible value of between US\$10 billion US\$40 billion.²² This volatility, and the clearly politicised nature of the market in ‘sustainability’ and net zero outcomes, only adds to the risk of corruption and poor self-regulation.

Computing the number of credits produced by any given project involves three steps. The first is to establish a carbon baseline: the expected emissions and carbon sequestration that would occur in a ‘business-as-usual’ scenario, i.e., if the project did not take place. This is notoriously difficult, as it involves not only generating a value for natural forest regeneration and calculating the difference with a hypothetical reforestation rate but, in the instance of REP Fund projects, taking into account the issue of the camp itself and its negative impact. The UNHCR estimates, for example, that 20–25 million trees are cut down each year in the vicinity of its camps and settlements.²³ For the REP Fund, then, setting the baseline value necessitates combining the expected negative impact of refugees and the natural rate of reforestation.

The second step involves measuring the actual emissions in the presence of the project. Though involving fewer hypotheticals than the first step, this is nevertheless tricky, due to methodological inconsistencies, data limitations, natural variability, technological limitations and challenges in distinguishing ‘anthropogenic’ from naturally occurring emissions. Specifically, precise measurement requires real-time, site-specific monitoring, which is often unavailable or otherwise challenging, especially over large or remote land areas. The technology for such monitoring is expensive and can be logistically difficult to implement, undermining the timely and accurate data collection needed for carbon credit validation. Despite methodological advancements, double-counting and attribution errors are common, especially when multiple parties or land uses overlap, complicating credit calculation. Finally disentangling natural carbon emissions (from wildfires, changes to local soil sequestration, etc.) and those directly caused by human activities (deforestation, agriculture, land use change) requires sophisticated models and ground data rarely available at local scales.

The final step is to compare the two figures to produce a figure that expresses the net reduction in carbon emissions on account of the project or intervention – this is called additionality. It is this figure upon which the actual carbon credits are based. Once a project has been audited, certified and accredited its credits can be exchanged.

Additionality is, in itself, questionable as a scientific concept. At a fundamental level, offsetting as a practice substantiated through the concept of additionality can never be established as ‘scientific fact’, as it is always established through counterfactual and hypothetical reasoning. Thus, the carbon accounting that the VCC relies on is opened up to negotiation and subjective judgement by partisan auditors and stakeholders.²⁴

The REP Fund will use the currently highest global standard for VCCs: Gold Standard certification and methodologies aligned with the Integrity Council for the Voluntary Carbon Market (ICVCM).²⁵ Gold Standard certification is regarded as a global benchmark for carbon credits; it excludes a number of programmes and carbon credit generation activities from certification, including REDD+, geoengineering and many renewable energy projects, primarily due to doubts around verification. ICVCM-aligned methodologies refer to carbon credit project protocols that adhere to the Core Carbon Principles established by ICVCM. These are intended to ensure that carbon credits generated are high-integrity, verifiable, and contribute meaningfully to global climate goals and sustainable development. But despite the narrower focus of Gold Standard certification, and the adherence to ICVCM-aligned methodologies, the matters of financially incentivised over-validation and inaccurate audits, as well as the inherent problems with calculating additionality (as well as its scientifically questionable status), all mitigate against the expectation of generating clear, calculable carbon outcomes.

The issues with carbon credits and accounting extend beyond manipulation. Deeper problems include the facts that: first, every ecosystem is unique, having differing carbon dynamics, which makes standardisation difficult; second, the science of reforestation, especially in terms of carbon sequestration, is still poorly understood; and third, climate change, as well as land use change, is changing the carbon cycle and how well forests and soil sequester carbon. All this is to say that, even if standards and methodologies were standard, and even if these were implemented in a 'fair' and disinterested way, the idea that it is possible to accurately measure the impact of any intervention is itself deeply problematic, if not fantastical.

Beyond these numerous financial, technological and ecological issues that make accurate measurement and monitoring difficult and often inaccurate, one further

problem for reforestation projects is the high rate of reforestation failure. Gold Standard certification requires verification, within two years, to account for the high rate of failure amongst saplings – often as high as 45%. Further verification assessments are undertaken within five-year cycles to record further additionality. There are several interrelated issues here. The first is the multiple points of measurement compound the possibility of miscalculation and error. Secondly, changes to biodiversity and soil dynamics may not only undermine but reverse carbon sequestration, ‘reversing’ carbon gains previously ‘banked’ in carbon credits. As climate change intensifies, so to do fire risks, making further reversal increasingly probable.²⁶ Finally, reforestation projects may create further environmental problems, especially if not done to the highest standard. High failure rates, as are common, may damage soil and create water shortages. Reforestation may also contribute to biodiversity loss, particularly when biodiversity is a contested metric, creating poor biodiversity outcomes with potential multiplier effects on surrounding areas.²⁷ Reforestation may also contribute to a short-term increase in carbon emissions due to the impact on soil sequestration.²⁸

These issues make even the most stringent of VCC accreditation schemes questionable, leading many to declare them false climate solutions that enable polluting companies to continue to create carbon emissions without any counter-veiling carbon reductions.²⁹ Indeed, much research has established that large numbers of VCCs are in fact worthless.³⁰ In one of the largest exposes of the industry, in January 2023, the *Guardian* newspaper, together with *Die Zeit* and SourceMaterial, reported that 94% of the carbon credits from rainforest protection projects certified by the largest registry in the voluntary carbon market, Verra, were ‘worthless’.³¹ According to a recent study published in *Science*, only 6 per cent of forest conservation projects resulted in additional carbon reductions.³²

Besides the large body of research on carbon credits generated through reforestation, there is a growing body of work focused on the relationship between VCCs and ‘clean’ or solar cooking – the mass distribution of clean cookstoves being, of course, the second major intervention supported by the REP Fund. Recent work here that suggests that, as with VCC-oriented reforestation projects, promised emissions reductions are exaggerated, possibly by as much as a factor of ten.³³

In summary, then, the effect of VCC projects on carbon emissions is likely neutral or, worse, negative, in that they cause an *increase* in emissions.³⁴ Additionally, civil society actors and NGOs have heavily criticised voluntary carbon credits and markets, emphasising both their environmental and social inadequacies or harms.³⁵ The unnuanced point here is that **the** REP Fund in a very real sense risks contributing to climate change, thereby exacerbating some if not many of the dynamics that produce displaced populations in the first place. While the REP Fund may not contribute to an increase in numbers of people in refugee camps in the region – although this is a possibility – it is very unlikely to contribute to a reduction in global carbon emissions. And, if reforestation failure rates are high, exposure to impacts and conflict generated via deforestation may, in fact, worsen. Such failure rates might be mitigated, but a principal way of doing this is via an intensification of refugee labour in monitoring and maintaining reforestation projects, raising the spectre of a never-ending labour anchoring the camp in a forest always at risk.

4. The labour of creating carbon credits via reforestation and clean cookstoves

It is envisioned that the work of reforestation around the camps will be undertaken by the camps’ inhabitants. This is well within established practice and the long history of putting displaced persons ‘to work’: refugees and

displaced peoples have long been pushed to not only undertake the labour necessary for their own survival, but have additionally been exploited as cheap labour for various host industries and within imperial developments.³⁶ While this is sometimes obscured, the body of research establishing the core concerns and complexities at play is extensive. Much of the debate has focused on the degree to which refugees are integrated into local labour markets, and under what conditions³⁷ as well as on the persistent gaps between local working conditions and wages, on the one hand, and those for refugee labourers, on the other – the so-called refugee gap.³⁸

The refugee gap, subjectively experienced, constitutes a particular form of labour precarity within a broader social precarity constituted by the long-lasting or permanent nature of many refugees' experiences of 'temporary displacement'. While there is no single average duration of stay within the 170 refugee camps and settlements across the African continent, generally the length of stay in Ugandan camps ranges from nine to twenty-one years (so far), against a global median duration of five years, and a global mean of ten to fifteen years. In Rwanda, due to the on-going conflicts and persistent instability in DRC, the principal departure country, the average duration is significantly longer. Many Congolese refugees have been in camps since the 1990s, with some families experiencing upwards of twenty to thirty years in exile.

The manner in which services are provided within the camp as a space of confinement also contributes to the production of refugees as hyper-exploitable labour and the creation of cheap labour regimes. Since much camp infrastructure, as well as food, is funded by outside agencies, wages paid to labouring camp residents do not have to cover the costs of reproduction. Moreover, the precarious nature of refugees' status also creates opportunities for illegal labour, multiplying the avenues for refugee labour exploitation. Indeed, studies specifically looking at the impacts of Uganda's refugee

settlements on host communities suggest that those host communities benefit economically from refugees, with the main beneficiaries being those host households able to shift to commercial farming, thus benefiting from the supply of cheap (refugee) labour.³⁹

Reforestation work is similar to agricultural day labour, which comprises the vast majority of waged labour undertaken by refugees in settlements and camps in Uganda and Rwanda. (Approximately 39 percent of refugees in Uganda are employed either formally or informally.⁴⁰ Exact figures for refugees in Rwanda are hard to obtain, with some reports suggest 24 per cent have access to some form of employment.⁴¹) While some reforestation work in and around the settlement-camps is unwaged, the REP Fund programmes will be undertaken by waged workers. Specifically, programme managers describe how reforestation efforts will provide employment in tree nurseries, where both refugees and residents of host communities will grow and plant seedlings, maintain newly restored forests and contribute to land conservation efforts. There is no standard pay rates for reforestation work in either country, but pay for a similar project in Uganda was around US\$1.30 per day.⁴² Most accounts set out pay rates of US\$2–5 per day for formal work contracts, but actual pay can be much lower. In contrast, Gold Standard-certified carbon credits from reforestation projects typically are valued at between US\$20–27 per tonne of CO₂e (2025 prices), with higher-quality credits (BBB+ ratings) fetching premiums close to \$27 per tonne in primary markets. Some specific project examples on the Gold Standard marketplace list prices above \$50 per tonne, reflecting added social and environmental benefits. If we take the lower bound of the current Gold Standard price, and a mid-range for carbon sequestration of 8 tonnes CO₂e per hectare per year, the value per year for the planned 20,000ha for the REP Fund programme is US\$3.2 million, generating US\$64 million over a presumed twenty-year period. It is important to note here that the UNHCR estimates the

cost of providing adequate camp services per refugee to be US\$16/month, although current funding means only US\$5/month is available.⁴³ For the approximately 388,000 people housed across the three pilot sites, this means the Fund's credits would only contribute roughly 14 per cent of the current funding, and less than 5 per cent of the adequate funding requirement.

The clean cooking initiatives will also generate employment through the production, distribution and maintenance of eco-stoves. But it is important to remember here that another crucial element of the production of VCCs is the use of these stoves, which is unwaged domestic labour. (Of course, we might also note that using an eco-stove involves less unwaged labour than collecting firewood and building and maintaining wood fires.) We return to the question of unwaged reproduction labour in section 6.

In summary then, the work of producing VCCs involves both waged and unwaged work. The labour of refugees is also underpinned both by the services provided by government departments and NGOs in the settlements and by the provision of food produced on the agricultural plots given to the refugees as a part of a programme of refugee self-reliance.

5. Bonded labour and the universal equivalent

In the previous two sections we have interrogated carbon credits and the carbon market (section 3) and examined the way that a project such as the REP Fund will mobilise refugee labour, both waged and unwaged (section 4). Pervading both are the matters of measure and commensurability – and their relationship to work. For the REP Fund to 'work', the following question must be answered, however problematic the answers: how many tonnes of CO₂e released or sequestered?; how many dollars for a tonne of CO₂e sequestered/not released?; how many dollars for a day's labour?

We gain new insight into the REP Fund once we recognise that it is similar to other initiatives most frequently described as social finance, such as the social impact bond (SIB) and the development impact bond. Pioneered in the UK and a few other overdeveloped nations from around 2010, the social investment market was a government-led attempt to exploit private capital, financial markets and financial discipline, in order to respond to social problems, such as recidivism, truancy and homelessness – manifestations of a broader crisis of social reproduction. The financial instrument at the heart of the social investment market was the social impact bond and is designed to mediate the relationship between three actors: first, the state as commissioner of a social service, which sets the parameters of the intervention, determines the beneficial outcomes it would like to see achieved and makes payments should these outcomes be achieved; second, a service provider or delivery agency, which works on ground to achieve these target outcomes; and finally, a set of financial investors, who fund the intervention and receive outcome payments if the target beneficial outcomes are achieved. The SIB is supposed to work by ‘incentivising’ – or disciplining, depending on one’s perspective – providers to deliver innovative and effective services. The overall cost to the state of social service-provision is thereby reduced; investors, who receive financial returns linked to socially-beneficial outcomes, are able to boast that they are *doing well by doing good*.⁴⁴

The SIB has spawned a variety of other social finance innovations, designed to respond to other global social and environmental challenges and crises. One such is the development impact bond (DIB), which is, in the words of *New York Times* journalist Tina Rosenberg, ‘almost exactly the same as the Social Impact Bond, the hottest idea in social-service provision (an oxymoron if ever there was one) of the last few years’.⁴⁵ As with SIBs, development impact bonds can be understood as both response to and ideological product of neoliberalism and

structural adjustment. DIBs, since the early 2010s, have been used in order to enable various development programmes in the global South, including to support girls' education, reduce infant mortality, improve sanitation, and so on. And as with the SIB, the development impact bond mediates the relationship between a commissioning agent, financial investors and a service provider. Unlike the SIB, typically commissioned by the state, in the case of the DIB the commissioning agent is usually a donor agency – both the United Nations and USAID are keen – which also makes any outcomes payments.⁴⁶

We can understand the REP Fund as a type of green bond – and as sitting within a tendency that critics have variously described as the financialisation of nature or green capitalism. Like other instruments of social finance (such as the social and development impact bonds), the REP Fund aims to 'harness the power of finance' and financial mechanisms in order to achieve socially-beneficial outcomes. In the case of the REP Fund, the commissioning agent, which sets the parameters of the intervention and determines the outcomes it would like to see achieved, is the UNHCR. What makes the REP somewhat distinct from many other green bonds is that the UNHCR also appears to be the delivery agency, working in collaboration with local organisations. Finally, the financial investors, who fund the intervention and receive outcome payments if the target beneficial outcomes are achieved, are the Northern donor agencies (Innovation Norway, etc.) mentioned above. As with social finance more generally, at the REP Fund's heart is an outcomes- or performance-based contract. The desired outcome is a reduction in deforestation – a preservation of forests – in the vicinity of refugee camps and the associated maintenance of these forests' capacity to act as carbon sinks. More forest preservation counts as better performance – a better outcome; via the associated carbon credits awarded, this better performance is realised in monetary terms.

We have already discussed (in section 3), the heroic assumptions required to equate some likely reduction in deforestation to a sum of money. Here we make the more general point that all social finance necessitates a set of similarly problematic assumptions. (In fact, financial and monetary relations *tout court* involve problematic and heroic assumptions – this is commodity fetishism.) Moreover, money is the universal equivalent, the commodity that permits all social processes that have been subordinated to its logic to be made commensurable with one another. Thus, although we doubt this was the intention of its creators and its backers, the REP Fund allows the forest-restoration and preservation labours of refugees in one camp to be made commensurable with those of refugees in another. And for such labours to be made commensurable with those labouring to increase girls’ school enrolment under the auspices of a development impact bond. And with those labouring to reduce recidivism (funded by a social impact bond). And indeed, with those performing wage-labour in offices, factories, mines and schools across the planet.

Innovation Norway, the Danish government and the REP Fund’s other backers may care little about maximising their financial returns. But that is emphatically not the case for the vast majority of financial investors, many of whom the REP Fund will need to attract if it is to achieve its own targets – selling itself as ‘a humanitarian way to invest’, as a piece in *Forbes Australia* was headlined.⁴⁷ Nor is it the case for a great many venture philanthropists or philanthrocapitalists for whom the ‘efficiency’ of their philanthropy is best measured against money-like metrics. Where commensurability leads, discipline is rarely far behind.⁴⁸ An initiative like the REP Fund therefore has the potential to integrate into the web of planetary financial discipline the several million people confined to UN refugee camps.

6. Greening women’s empowerment

Above we've focused on the REP Fund's aim of reducing deforestation around refugee camps. But the clean cookstove projects that form a central part of the Fund also contain a promise to protect and empower women by reducing dependence on firewood and charcoal, both sparing them the well-documented, harmful health effects of polluting cooking methods and helping reduce rates of gender-based violence (GBV). Indeed, one of the Fund's headline 'areas of impact' is 'Protection: health improvements from reduced cooking smoke inhalation, primarily by women and girls, and reduced risk of gender-based violence when collecting firewood'.⁴⁹

The clean cooking component of the REP Fund is structured around three key interventions. First, the distribution of improved cookstoves (eco-stoves) to refugee and host community households to both reduce their dependence on wood and charcoal as fuel sources and cut wood consumption by 'at least 50–60%'.⁵⁰ Second, the cookstoves are to be piloted using a 'pay-as-you-cook' model of payment, to ensure that sustainable access to fuel is maintained. (It is to note here that the 'eco-stoves' will be fuelled by LPG [liquefied petroleum gas], a source of carbon dioxide emissions – the narrative that LPG is a 'clean transition fuel' is a false one.⁵¹) Third, the networks of cookstove production and distribution, which are to be kept local, are to be integrated to ensure provision of opportunities for sustainable employment in refugee and host communities (especially for women and youth) as well as supporting market-driven clean energy solutions.⁵² As with the deforestation component, the clean cookstoves are intended to generate high-integrity carbon credits under Gold Standard certification and ICVCM accredited methodologies.

As we noted above, the pilot-stage procurement process is currently (mid-2025) open to select project developers, so we do not yet know who the partners in supplying cookstove parts, expertise, training and fuel will be. But scalability has been a key consideration throughout the process: since capital at the

requisite scale and predictability for long-term clean cooking investments is a rarity in the humanitarian funding space, clean cooking is at the heart of UNHCR's attempts, through the REP Fund, to leverage innovative financing solutions and to diversify its donor base by attracting private finance. However, we have not so far seen evidence that the UNHCR is committed to working with dedicated specialists in clean or improved cooking solutions, or in GBV prevention. Moreover, the existing research does not support the assertion that firewood or cookstove provision reduce gender-based violence in humanitarian settings, making the UNHCR's repetition of this assertion dubious at best.⁵³ As one gender and energy scholar puts it, such a framing is problematic 'without consideration of the broader context of violence against women and girls in emergency settings'.⁵⁴

We fear that the REP Fund risks reproducing assumptions, contrary to best practice from the GBV sector, that naturalise the primary threat of GBV as coming from outside the home, rather than inside it. As Samer Abdelnour and Akbar Saeed show in their work on the 'rape-stove panacea', the idea that a simple technological object can protect and empower women has held great appeal for international development and humanitarian organisations.⁵⁵ More broadly since the 1970s, women have become prominent in international development narratives as 'solutions' to global poverty, from the liberal 'Women in Development' framework, which called for the integration of women into existing development policy frameworks, through to 'Gender and Development' which refocused on unequal gendered power relations.⁵⁶ In the 2000s, this increasingly took the form of public-private partnerships such as Goldman Sachs' 'Womonomics' theme and Nike's 'Girl Effect' initiative. A thread common to these 'neoliberal' initiatives is a vision of women, and especially the most vulnerable girls, as untapped investment opportunities.

Michelle Murphy, in her analysis of ‘Invest in a Girl’ discourses, describes these as part of the increasing financialisation of “‘underdeveloped’ life”.⁵⁷

Rather than add to ongoing debates on the complicated legacy of the feminisation of development, we return to the argument we advanced in the previous section – concerning social investment, commensurability and the universal equivalent – which complements Murphy’s focus on biopolitics from the perspective of science and technology studies. In other work, for example, one of us has examined how the rise of social finance, a purported response to the crisis of social reproduction precipitated by neoliberalism, becomes an investment opportunity that promises a solution to neoliberalism’s crisis of profitability.⁵⁸ In the case of the REP Fund, we contend that the clean cookstove functions as an instrument for financialising social reproduction. Most clean cookstove projects – known as ‘charismatic’ offsets – are funded by the voluntary carbon market, which is considered crucial to achieving universal access to clean and improved cooking by 2030.⁵⁹ According to the ‘Social Impact’ section of the Oliver Wyman website, one of the core corporate partners for the REP Fund, the turn to innovative carbon financing is a way of reducing the UNHCR’s reliance on humanitarian funding, which is scarce, unpredictable and short-term, and avoiding dipping into ‘precious’ development budgets.⁶⁰ This resembles so-called social impact investment, discussed in the previous section. Just as the neoliberal state withdrew from the sphere of social reproduction under austerity and instead turned to private capital and the nascent social investment market, so the UNHCR is seeking to resolve its budget shortfall by harnessing financial markets.

As Murphy writes of ‘girlled’ development campaigns, ‘[f]rom the perspective of the financial sector, girls are part of the planet’s great “unbanked”, the people who might yet be brought into the fold of institutional financial relations’.⁶¹

There are two resonances to note here. First, there is an affinity with the

argument that the social investment market represents a response to the crisis of social reproduction. Second, it recalls the framing of the REP Fund as a means to ‘empower’ refugees to play a part in the (financialised) fight against climate change mitigation by bringing them directly into circuits of capital accumulation, which, *pace* the previous section, is governed by a disciplinary logic. Coupling these arguments, we can see how the ‘investable’ figure (what Murphy calls ‘underdeveloped life’) that populates the social impact investment imaginary appears heavily feminised, which is most often what social reproductive labour looks like. Taking Cindi Katz’s definition of social reproduction as encompassing ‘daily and long-term reproduction, both of the means of production and the labour power to make them work’, cooking, and nourishing oneself and family, is a central plank of social reproductive labour.⁶² Therefore, these cookstove offsets are a way of both appropriating this unwaged labour (as well as the ancillary labour that might include, for example, learning to use and maintaining the new stoves, and learning how foods cook differently on the new stoves) for capital *and* subjecting the people who use them, mainly poor women in the ‘global South’, to the disciplinary logic of finance described above.

Finally, it is not only gendered discipline at stake in carbon credit generation, but dispossession. Participants in cookstove carbon offset schemes generate carbon savings through their unpaid labour but often must sign away their descendants’ rights to carbon credits.⁶³ Meanwhile, a 2024 report from the Clean Cooking Alliance admits that many individuals and households participating in clean and improved cooking carbon projects do not have a full understanding of what they are agreeing to when they agree to transfer carbon rights to project developers.⁶⁴ It seems to be a sector rife with not only missing integrity, but also with unethical conduct: the same Clean Cooking Alliance report as cited above saw fit to remind would-be initiators of schemes of the

importance of gaining informed consent from their participants.⁶⁵ However, this integrity deficit is also important because, since cookstove carbon projects are built on shaky foundations, the women themselves can make them unworkable, for example by not using the stoves ‘properly’ or consistently. Indeed, this move to harness social reproductive labour in the service of capital is beset by a contradiction. While capital, via processes of financialisation and marketisation, might turn the unwaged labour of reproducing life into a value- and surplus-value producing activity, it must, at the same time in this act of appropriation, also shoulder the inefficiencies, inconsistencies and foibles that characterise human social reproduction. For instance, as the cookstove experts Samer Abdelnour and Crispin Pemberton-Piggott point out, many cookstove users do not use their stoves according to the conditions envisaged by the scheme developers, which leads them to argue that cookstoves must be certified in their actual – rather than imagined – contexts of use.⁶⁶

7. Conclusion: the maladaptive labour cycle

Bringing the various threads together, what the REP Fund mobilises to extract value through voluntary carbon credits is a particular kind of maladaptive labour.

Maladaptation exists along a continuum, where any process of adaptation can succeed or fail to varying degrees and in varying parts.⁶⁷ Politicised maladaptation occurs when technical expertise becomes politicised, as with research supposedly informing the British government’s approach to climate adaptation policy, some of which has been made to conform with the political and economic values of the government in power.⁶⁸ Yet maladaptation can also be produced ‘unintentionally’, as either a product of neglect and lack of effective adaptation policy or as a consequence of bureaucratic dysfunction or even functional stupidity.⁶⁹

In the case of refugees and the REP Fund, the maladaptive cycle starts with those displaced, either by both conflict (including conflicts where critical minerals used for electronics and renewable energy infrastructure play a core economic role) and/or by environmental pressures, in areas particularly vulnerable to climate impacts. A significant number of internationally displaced people subsequently become economically and materially bound to settlements. To function as a complex, the settlement – the refugee camp – is dependent upon both aid, which is always insufficient and now increasingly at risk, and upon the land in its immediate environs, which supplies food (via inadequate agricultural plots and bushmeat) and fuel (other bought sources being expensive). Such dependency on the surrounding land contributes to deforestation and local conflicts.

The REP Fund mobilises initial funds to create the infrastructure for two forms of low-waged labour – reforestation and clean-stove assembly work – and one form of unwaged reproductive labour – using the clean stoves to cook – drawing on refugee camps’ inhabitants to perform these labours. This mobilisation of funds and labour generates voluntary carbon credits. VCCs are, in turn, sold to companies to enable them to continue to pollute for a price that far outstrips the wages paid to the waged workers. **The direct and indirect economic value of VCCs is captured by several actors: first, the agents within the process (direct capture); second, the administrating agencies, government and non-governmental, of the camp which require lower operating budgets because of the sale of VCCs (direct capture); and third, those companies that purchase VCCs to ensure they can continue to pollute (direct capture, insofar as VCCs lower operating and capital investment costs, and indirect capture, insofar as negative externalities associated with climate change continue to be underpaid, despite the cost of ‘offsetting’).** Only a small proportion of the direct payments go to the refugees engaged in the waged and unwaged labour that

actually generates the VCCs. Given the inadequate nature of the agricultural plots and the high failure rates of reforestation, the indirect benefits are also potentially low in many instances. Thus, the bulk of the value goes into maintaining the settlement as a form of containment and generating economic value for VCC agents and polluting companies.

One promise of the REP Fund (in line with other ‘greening’ initiatives) is that the confinement becomes ecologically sustainable. But, because of reforestation projects’ high failure rates, there is a significant risk that REP Funded programmes in fact damage rather than restore local biodiversity and worsen climate outcomes and soil integrity. Moreover, climate impacts are already worsening deforestation and creating ecological stress, further putting reforestation as a successful project in doubt. In terms of VCCs, they do not ultimately reduce emissions at a global level. The evidence suggests instead that they either have little impact on emissions at a company level or enable an increase in emissions, generating more climate change, creating stronger impacts, thus generating more displacement creating a negative cycle of destruction and displacement.

Ultimately at the end of the cycle, what we find is a situation in which refugees labour in order to barely maintain the settlement, and in all likelihood are unable to fully do so, while their labour generates profit for intermediators, funding for the settlement itself and enables the continuation of climate changing emissions by polluting industries mostly located in and/or serving the Global North. The conditions are thereby generated for the continuation and escalation of environmental displacement and deforestation, renewing the cycle. One of the maddening implications of the REP Fund is that, rather than offering a viable solution to ecological concerns and the climate crisis, it instead facilitates the creation of a green Sisyphean labour, and thus ultimately a form of

maladaptation that more closely resembles the treadmills of Victorian poor houses.

Maladaptation is more than a process of misaligned resilience or the result of failure, however. Rather, it must be understood as a productive activity, much in the way that punitive welfare regimes or the illegalisation of human migration are productive *for both capital and governmental regimes*. While tree planting and clean stoves may mitigate the immediate impacts of deforestation and the environmental impact of the settlement, such activities also turn displacement into a means of ensuring the continual production of displacement through the labour of transforming refugee labour into carbon credits. That is, as VCCs functionally work to enable continued greenhouse gas emissions, and as climate change both produces displacement and intensifies conflicts producing displacement, the labour of reforestation here functionally contributes to the danger of deforestation and ever-increasing displacement.

Thus, maladaptation forms an invisible and unarticulated terrain of struggle and contestation for both migrant and climate justice. Alongside the proliferation of other spaces of abandonment-in-place – from the mundane (housing developments in flood zones) to the exceptional (refugee camps in socio-ecological wastelands as in Nauru) – the maladaptation of the REP Fund thus risks becoming a means of governing surplus populations.

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