
A pre-payment model for
**Internationally Transferred
Mitigation Outcomes** under
article 6 of the Paris agreement

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Introduction

Since the establishment of the first global agreement to limit greenhouse gas emissions – the Kyoto Protocol – the idea of trading in emissions units, or emissions reduction, has been an essential part of the architecture, motivated by calculations showing that costs of emissions mitigation vary widely among countries. So why not exploit the more cost-efficient mitigation options first if the intended effect on the atmosphere is the same?

With the idea of emissions trading under the Kyoto Protocol came a Pandora's Box of complexities that has attracted so much attention and debate that it is tempting to believe that the global response to climate change is first and foremost about the trading. But in terms of GHG emissions reduction, trading is essentially a zero-sum game as long as it does not lead to a strengthening of emissions targets. It ensures 'where-flexibility' of emissions reduction actions, leaving the trading parties relatively better off economically, but is not designed to reduce a single ton of carbon emissions, unless a level of compulsory retirement without crediting is stipulated. Therefore, the negotiators of international carbon markets under Article 6 of the Paris Agreement specified that Article 6 should lead to an increase in global mitigation ambition. In practice, however, such causality may be hard to prove.

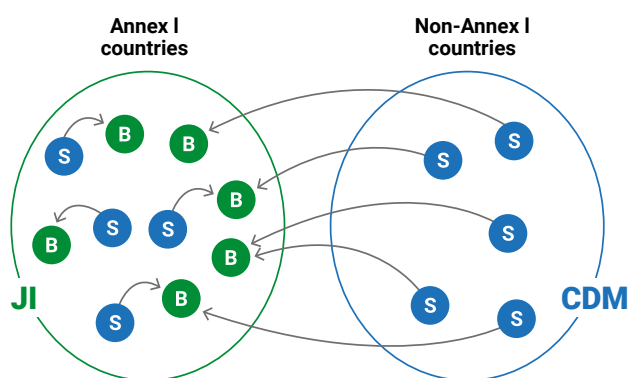
This paper presents a possible solution to one of the most crucial, but surprisingly less recognized, challenges to project-based emissions trading. Emissions reductions are achieved through operation of installations or assets with lower emissions than their baseline or business as usual alternative. Thus, revenues from emission credits are a future cash flow contingent upon project owners' ability to finance the investment – which has been a persistent challenge ever since international emission credit markets were set up in the late 1990s. It has been baptised 'results-based financing', but unless there are mechanisms to transform future cash-flows into present capital, results-based financing is a contradiction in terms. A catch-22 stating, 'I will finance the project if you can show me the results of it.'

That said, results-based financing does exist in other contexts, called project finance which is based on the securitization of future cash flows, typically a Power Purchase Agreement (PPA) in the power sector. The purpose of this paper is to present a model that will allow the development of greenhouse gas mitigation projects based on the securitization of future cash flows from the sale of emissions credits. It is called an ITMO Issuance Guarantee – a guarantee for the issuance of Internationally Transferable Mitigation Outcomes under the Paris Agreement's Article 6.2. Thus, it is in essence facilitated by the implementation modalities stipulated by the Paris Agreement, but with a few tweaks and conditions attached.

Observations presented in this paper are to some extent experience based, but supporting theoretical fundamentals are found in Lütken & Michaelowa 'Corporate strategies and the Clean Development Mechanism' (Edward Elgar 2008) and a succession of working papers building on the book, including the working paper 'The Clean Development Mechanism Reengineered' (Lütken, 2016). A thorough evaluation of the CDM experience undertaken for the European Commission by Öko Institut, SEI, Infrac and Carbon Limits, 'How additional is the Clean Development Mechanism?' in 2016 outlines the challenges that the CDM faced in terms of additionality precisely because of the above financing conundrum. The UNFCCC Secretariat's own evaluation of the mechanism and suggestions for revisions in 2013 is equally illustrative of recorded shortcomings in the concurrent emissions trading practices. Proposals for remediation have emerged over time and are a plethora of mostly institutional and systemic reform ideas, including the Secretariat's own, but also summarized by AEA, SEI, CEPS and CO2logic in 'Study on the Integrity of the Clean Development Mechanism (CDM)' in 2011. None of these, however, concern the financial structuring of the underlying asset investments.

A Brief History of Emissions Trading

Trading in emissions units and credits was adopted by the Kyoto Protocol, introducing Joint Implementation (JI) for emissions credits from countries with a national emissions reduction target and the Clean Development Mechanism (CDM) for emissions credits from countries without such targets. An international body under the UNFCCC, the CDM Executive Board, was established to approve emissions reduction/removal calculations and to authorize the issuance of Certified Emission Reductions (CERs) from CDM projects – or Emissions Reduction Units (ERUs) from JI projects.



B = Buyers, S = Sellers

NB: The figure may give the impression that JI activity was as much or more than CDM. In reality, the volume of issued CDM credits exceeded that of JI credits by a factor of three

Designated National Authorities authorized projects for their sustainable development benefits, but in the case of the CDM (unlike JI) there was no national emissions budget from which to deduct the export of CERs. In principle, exports were therefore unrestricted. Trades were arranged between buyers and sellers by private sector carbon traders, and national approval was seen as more or less a rubberstamp. Countries buying the CERs could use them to meet their national emission reduction commitments. And so could private entities in those countries to stay within the limitations of an allocated emission quota. It was largely a private sector driven market.

A major challenge in carbon trading, and thus also for the CDM, is the requirement for additionality, intended to ensure the environmental integrity of the reduction activities by preventing projects that would be implemented anyway from generating credits to substitute for reduction obligations or commitments in buyer countries. But additionality was hard to prove and text surrounding it was generally imprecise (see e.g. Michaelowa 2009 'Interpreting the additionality of CDM projects: Changes in additionality definitions and regulatory practices over time'

or Gillenwater 2012 'What is additionality?', GHG Management Institute). Additionality tools were developed, the most widely used of which was financial additionality requiring project developers to demonstrate that carbon revenues were critical to enable the project investment decision.

The market learnt, however, that financiers were unwilling to accept prospective carbon market revenues as collateral. The securitization of future cash-flows from the carbon market was elusive, even if Emissions Reduction Purchase Agreements (ERPAs), all formulated on a payment-on-delivery basis, were signed with reputable buyers such as developed country governments. The results-based finance could not be brought forward to play a role in the financial structuring of the project investment. Project proponents were therefore left with two options: presenting a project to the financier, typically a commercial bank, with a below-par Internal Rate of Return (IRR) – which in most of the cases would leave the project without financing – or presenting an above-par IRR project including the expected carbon revenues, which the Bank would also not finance. The third and only viable option was, therefore, to present an above-par IRR project without emission credit revenues, which the Bank would finance, but which the Kyoto system would not approve because the project would not be additional.

The reluctance of banks to use ERPAs as collateral was assumed to stem from lack of understanding of the carbon market, but mostly it was motivated by the system risk originating in the combined authority of the CDM Executive Board, the Methodology Panel and the accredited Validators and Verifiers to approve project activities and CER issuance. A glance at the CDM Pipeline (hosted at www.unepccc.org) can easily justify that seemingly similar hydro or wind projects could be either accepted or rejected, underscoring that banks would require much more than cursory understanding of the proceedings to be comfortable with the differing outcomes. The stalemate in the financial structuring of projects led to a general perception that large swathes of CDM project activity were non-additional. Projects were generally financed without considering the revenues from the carbon market, which instead were popularly labelled 'the icing on the cake'.

Despite these challenges, the CDM thrived, generating more than 10,000 project registrations in the short 10 years it was practically operational. But from 2012 onwards, the largest market for CERs, the European Union Emissions Trading System (ETS), closed its doors on emission credits as a compliance option.

The Burden of Inheritance – and a solution on the horizon

Many of the active stakeholders in the development of the Article 6 framework are practitioners from the CDM era and it is easy to get the impression that efforts are focused on navigating the layer of additional complexity imposed by the Paris Agreement in order to create something as similar as possible to the CDM. Of course, this effort entails the risk of replicating also some of the flaws that characterised the CDM, including the inability of the CDM to activate the prospective cash flows from carbon credits in investment financing plans, with the implicit consequence that the financial additionality argument is undermined. As buyers in the nascent Article 6 market are still only offering ERPAs, now replaced by Mitigation Outcome Purchase Agreements (MOPAs), based on payment-on-delivery of ITMOs, the situation of the Article 6 seller remains the same as it was in the CDM-world and thus Article 6 activity could be looking at a largely non-additional future.

With the CDM precedent in mind, the preoccupation with additionality and environmental integrity in the Article 6 regime is understandable, but the new Article 6 framework offers a potential remedy to prevent the past from repeating itself.

The novelty for Article 6 is the requirement for host countries to correspondingly adjust the national emission account with the amount of ITMOs issued and transferred. Under Article 6.2, a bilateral arrangement between a host country and a buying country is a prerequisite for a transaction. However, once such an arrangement is in place, the ITMO issuance capacity rests with the host country.¹ Since countries have the mandate to approve projects and to issue ITMOs from these project activities, they are therefore, in theory, also in a position to guarantee this issuance. The 'guarantee capacity' stems from the host country's full authority over its own emission budget, self-defined in its unchallengeable Nationally Determined Contributions (NDCs).

This is a key difference from the CDM, where project approval and the issuance of CERs depended on the successive approvals of validators, verifiers and the CDM Executive Board, constituting a system risk. By transferring the ITMO issuance capacity under Article 6.2 to the host country, this third-party risk has been removed from the system (validation and verification are still essential procedures for quantification of actual emissions reduction from project activities). It is possibly replaced by a new host country risk, but most projects, including CDM projects, have always required one or more host country approvals, not only for carbon market participation but for construction permits, environmental approvals etc. – the point being that the host country's regulatory environment is already a known quantity of risk.

Host countries, of course, cannot guarantee that they fulfil their NDC target, so the risk of overselling or over-guaranteeing ITMOs cannot be disregarded. As long as the issuance guarantee is linked to a project activity, however, the position of the host country is not different from a traditional trading situation, which also entails the obligation to export ITMOs.

The provision of a guarantee of ITMO issuance can remove the system risk and assure the future carbon revenues for mitigation measures, enabling the implementation of exactly those projects the investment into which depends on the additional carbon revenues. By creating confidence in the future cash flow from the carbon market, the elimination of systemic risks will be helpful in demonstrating the financial additionality that all additionality conditionalities and tools are designed to ensure. Implicitly, therefore, an ITMO issuance guarantee may help demonstrate additionality in itself.

¹ Formally, host countries are to 'authorize' Mitigation Outcomes for transfer. The timing of authorization and what type of early acknowledgement host parties may provide for activities, is still under discussion. Some countries (e.g., Ghana and Switzerland) have already publicly announced ex ante authorizations, although this term does not appear in the Article 6.2 guidance. An ITMO issuance guarantee takes a small step further as it pre-authorizes a specific amount of ITMOs, authorizing both the 'MO' part and the 'IT' part in one and the same agreement. The IT – international transfer – part affirms the corresponding adjustment of the nation emissions account as part of the transaction.

An ITMO Issuance Guarantee

The difference between a traditional ERPA and an ITMO issuance guarantee is that the former guarantees that the buyer will offtake and pay for the product – the emissions credit – *if* there is a product. The ITMO issuance guarantee removes an order of uncertainty by stating that there *is* an emissions credit, the only condition being that the facility that is to achieve the reduction of emissions or removals is actually built – or replaced by another if required (see below).

The guarantee is intended as collateral representing the addition of emission credit revenue over and above revenues from the future operation of the facility. A traditional financing transaction is based on the financiers' belief in the market targeted by the project and the collateral that the developer is able to present. The ITMO issuance guarantee adds to the latter and only requires the financier's trust in the government that the financier and project developer are already doing business with. Substantiating the claim of additional revenues on this basis may well be sufficient to convince the financier to lend to a project with an IRR below par without carbon revenues – but above par if the guaranteed issuance of ITMOs is built into the business plan. For this, the ITMO issuance guarantee must be supplemented by a Mitigation Outcome Purchase Agreement (MOPA), preferably with a fixed or predictable carbon price, a duration covering the entire crediting period and with a reputable buyer.

An ITMO issuance guarantee can be used in different ways in the context of project finance and carbon transactions, the fundamental assumption being that based on the ITMO issuance guarantee, investment capital can be raised.

The following is a distillation of models into a few distinct applications, all designed for an international carbon market. For host countries, it may also be worth considering if the ITMO issuance guarantee model can be combined with a national carbon market as there would be clear advantages of integration. That, however, is not considered in this context, where only Article 6.2 transactions are in focus.

As host countries are in essence issuing carbon currency from its pool of emissions encompassed by its de facto emission budget, there is no immediate financial cost of issuing an ITMO issuance guarantee. Clearly, however, there is a consequence later both in terms of project finance and of necessary emissions reduction to stay within the emission budget in the future, but issuance of ITMOs as such is not subject to potential financial shortcomings at the time of issuance. Risks associated with the issuance guarantee from the perspective of different stakeholders are discussed later.

Deal Structures with an ITMO Issuance Guarantee under Article 6.2

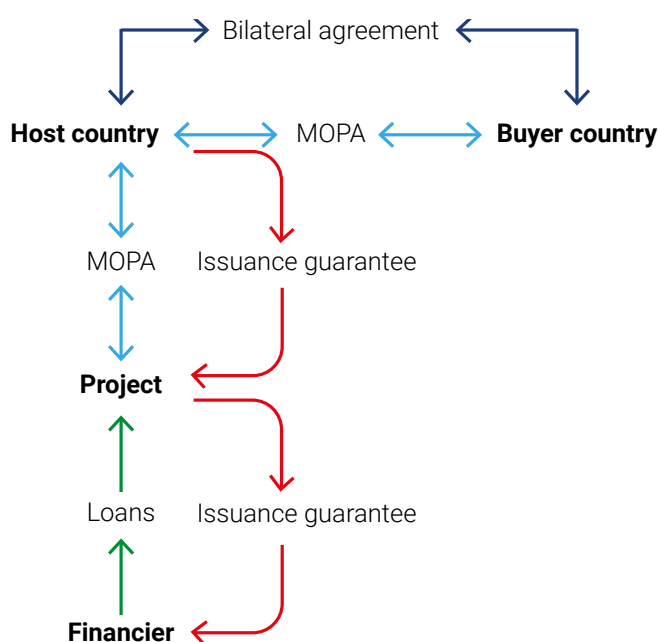
The starting point for any Article 6.2 transaction is a bilateral agreement between a host country for the project activity and a buyer country that intends to offtake ITMOs. These bilateral agreements are typically overarching agreement stipulating fundamental conditions for collaboration and oftentimes identifying the type of project activities that are eligible for transactions under the agreement. Project specific MOPAs are added successively, and it is for these project activities, be it single projects or programmes of project activities, that ITMO issuance guarantees are relevant. The ITMO issuance guarantee must be provided by the host government at an early stage of project planning for it to have the intended

value as foundation for the provision of additional investment capital, possibly already at the Project Identification Note stage or at an initial feasibility study completion level. In practice, however, the ITMO issuance guarantee will only become active, if the project progresses to actual development based on a structured finance package of which finance provided against the ITMO issuance guarantee is a part.

In the following, four models are presented in which the ITMO issuance guarantee plays a central role in raising investment finance for emissions reduction assets.

Model 1: Ensuring the bankability of the MOPA

In Model 1, the issuance guarantee is offered to the project developer with the purpose of raising additional finance based on the future cash flow from the carbon market. This model directly addresses the recorded shortcoming of the CDM era, where ERPAs were generally not considered bona fide collateral for bank lending. The proposition here is that the addition of an issuance guarantee resolves this stalemate by removing the system risk. For this to work, the MOPA entered between the host government and the bilateral buyer must be mirrored into the collateral offered to the bank by the project developer.



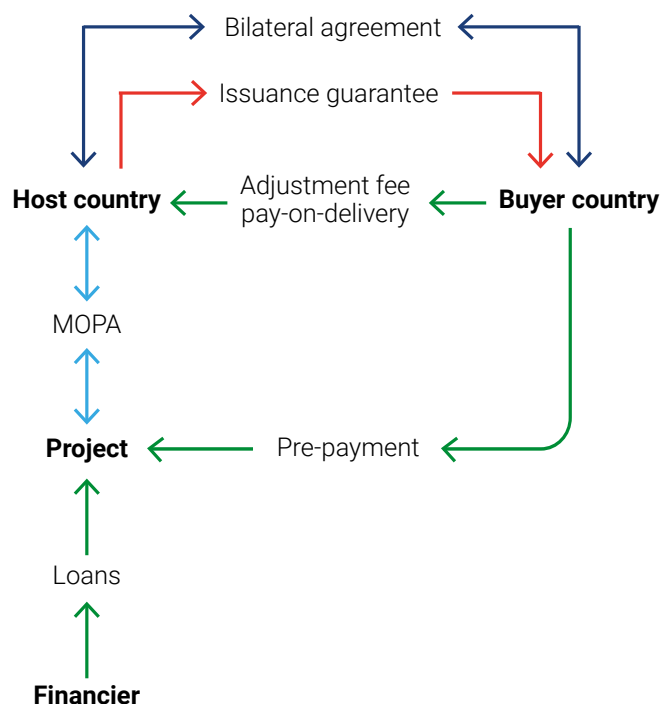
The causality of events is now that the government guarantees the ITMO issuance for which the bilateral agreement guarantees the payment. Thus, the root of the chain is if the bank trusts a guarantee issued to the project developer, secondarily if the bank trusts that the government buyer will pay for the ITMO. The risk that one government will not honour its payment obligation to another government is small, not least in a market that so far is made up by AAA-rated buyer countries.

That leaves the risk that the host government may renege on its guarantee, or on its payment obligation, to a national project developer, which always will depend on national circumstances. It may help that the guarantee does not come with an immediate cost, in fact rather an immediate cash flow from the buying country, although there is other, longer-term considerations for the host country to make, see later. In any case, this is for the bank to evaluate on a case-by-case

basis. In that context, some understanding within the bank is probably required regarding the nature of the issuance guarantee, its backing in the national emission budget and how the host government intends to back-up the issuance guarantee with replacement ITMOs should the project fail. See further on replacement ITMOs later.

Model 2: A pre-payment vehicle for ITMO-buyers

In model 2, the ITMO issuance guarantee is addressed to the buying government. The purpose in this case would be to convince the buyer to depart from the payment-on-delivery principle and join in the financial structuring of the asset investment. It would be a financing role in parallel or in partnership with other financiers engaged in materializing the project. Such pre-payment for CERs models were used at the very first experimental stages of the CDM with the World Bank's Prototype Carbon Fund (1999-2000) but were found to be too risky. Some pre-payments were again made in the later phases of the CDM market, e.g. by the German Foundation Future of the Carbon Markets.



Pre-payments are now sometimes made by some Article 6.2 ITMO buyers, e.g. by the Swiss KliK Foundation, but not in a generalized manner. The question is if an ITMO issuance guarantee would change the perception of risk in such transactions.

Fundamentally, financing is more about risk avoidance, cover and management than it is about capital. If the ITMO buyer joins in the financial structuring, including the transactions that ultimately make construction finance available to the project developer, the buying government would face the same risks as other financiers. And the financiers, assuming there is at least one (in addition to the ITMO buyer), but oftentimes more, would require the ITMO buyer to participate on the same terms as they do. That means first of all that the capital - the pre-payment for ITMOs - goes directly to the project owner and not to the host government, although the issuance guarantee is issued by the government, as this would entail precisely the risk that killed the pre-payment principle in its infancy in 2000 when project developers seemed to disappear after the transaction. Conversely, however, it avoids the risk that a pre-payment going through the government could eventually be led astray and ultimately not be available for the financial structuring of the investment.

Construction and completion risks are the most critical in any project finance process and banks are obviously used to manage them. These are the risks that the 'payment-on-delivery' buyer avoids altogether and leaves to the project owner and host country, but which a pre-paying ITMO buyer takes financial responsibility for at par with other financiers.

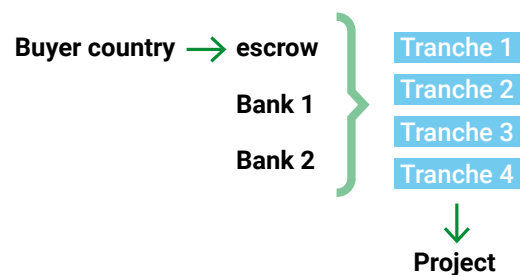
The usual way to manage construction risks is to pay in tranches according to milestones. The financiers will among themselves have agreed conditions on the release of funds, not only pro rata payment on milestones according to their respective shares of the finance, but also rules on voting if opinions on meeting payout terms diverge. In order for the ITMO buyer to participate on equal terms, an escrow account may be useful. It is an account that neither the project owner can access, nor the ITMO buyer withdraw from, but from which tranches of payment can happen together with payments from the banks to finance the next stage of construction if agreed conditions are met.

It is an effective structure to manage the most critical risk in project development. It requires full financial commitment up front. The ITMO buyer must therefore pay into the escrow account the full amount for the ITMOs that have been guaranteed by the government. But the funds are only

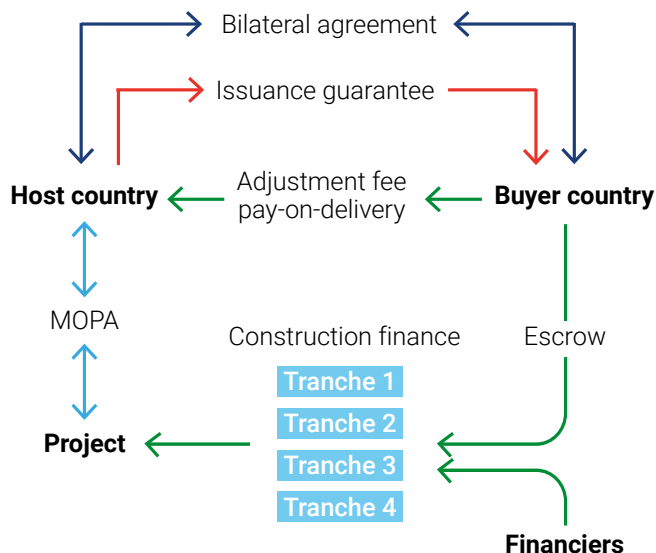
released gradually. If project implementation stops and further development terminated, whatever remains in the escrow account is returned to the ITMO buyer.

The ITMO buyer may protest that this is still too risky, but the counterquestion must be why the ITMO buyer should have better conditions than all other project participants. And yet, the ITMO buyer is still better off as the ITMO issuance guarantee would now enter into force, issuing ITMOs pro rata for the amount that is effectively paid from the escrow account to the incomplete project.

It is debatable, however, if this is necessary. Not only will it put the ITMO buyer in a 'preferred creditor' position; it will also be in violation of the Article 6 condition that ITMOs must reflect emissions reduction that are real, verifiable and additional (see later). At this stage of project development, or project failure, a financial risk insurance applicable to other financiers should also suffice for the ITMO buyer, for instance a Contractors All Risk insurance or a bond model using either a performance or an advance payment bond.



In the model, an 'adjustment fee' is added separately. This refers to the common differentiation in host countries between payments for ITMOs which go to the project owner and payments for the corresponding adjustment of the national emission budget. Of interest here is the payment going to close the gap in project finance. As the latter has no consequence for the financial structuring of the project investment, the adjustment fee can succeed on payment-on-delivery terms without affecting the model. The larger the proportion of the total ITMO price that is paid on delivery, the lower the financial risk on the entire transaction.



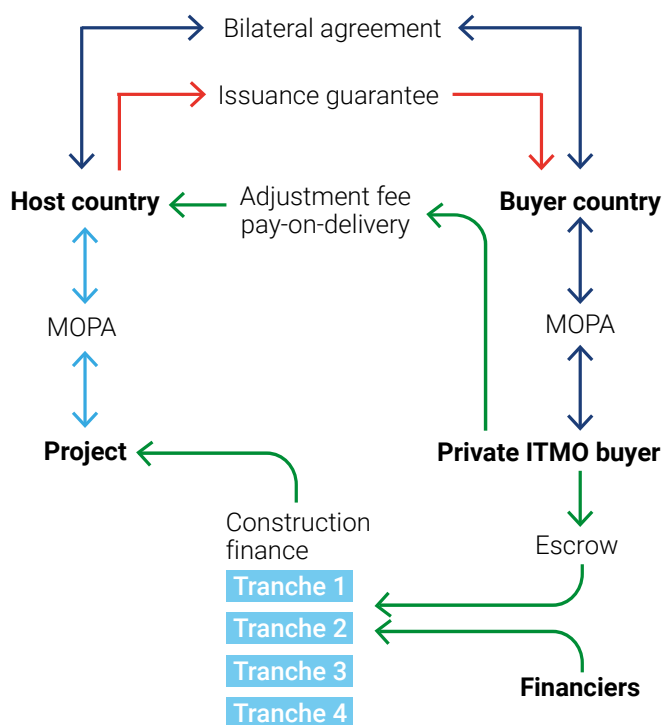
The advantage of this model is that there is no government involvement in the implementation of the project, nor in its financial structuring, which is likely to constitute a significant comfort for the ITMO-buying government. It would purely be engaged in the ITMO transaction and the ITMO issuance guarantee. However, it does adopt a particular risk as the mediator between a private sector entity having paid upfront to the escrow account for the project construction anticipating ITMOs in return. Even if the project materializes and operates, the completion of the deal requires the issuance of ITMOs according to the guarantee provided by the host government to the ITMO buying government. It is conceivable, albeit not likely, that the host government ultimately does not issue the ITMO or requires additional payment, for instance if market prices have gone up considerably, even if the agreement does not allow for such renegotiation. But it would be a sovereign default that could come with severe penalties.

In by far the most cases, things go according to plan. The full project finance is paid out, the project installation is commissioned, and it operates satisfactorily after phasing in. It will therefore also generate income to pay back loans and ITMOs for the host government to issue, after proper third-party verification, and transfer to the ITMO buyer, reducing the balance on the ITMO issuance guarantee accordingly, and correspondingly adjusting its national emission balance.

A Variation of Model 2

ITMO buyers operating under Article 6.2 are governments, but they may be acting on behalf of private sector entities that may buy either for self-adopted net-zero commitments or for compliance depending on the country they reside in. If so, the ITMO buying country may operate either a fund structure or just a legal structure, where finances originate in private sector capital. If the latter, the private sector would be the ultimate buyer of the ITMOs, injecting capital into an escrow account to finance project construction in parallel with other financiers and thus taking over this role from the ITMO-buying government. The issuance guarantee remains a bilateral agreement between the host country and the ITMO buying country in order to preserve its sovereign character. It is mirrored in a MOPA between the ITMO buying country and the private sector entity undertaking the project investment through the escrow account.

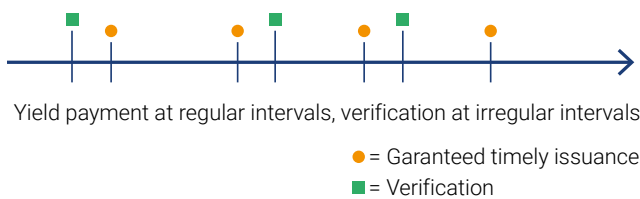
Alternatively, a private sector entity could consider the provision of equity in a joint venture with the project developer. Such structures were seen on a few occasions under CDM where parent companies were investing together with subsidiaries in host countries. These would be the rare cases, however, so the illustration reflects the more generic option above.



In such a scenario, the buying country must consider to what extent it wants to see itself as guarantor, financially compensating the private ITMO buyer for the default on the sovereign ITMO guarantee. If so, this becomes a different role compared to purchase of ITMOs for its own usage as it undertakes to compensate for a third party's loss rather than its own. It may consider self-insurance, or it may seek third-party insurance against a financial risk. In both cases, however, it originates in a sovereign default where both parties should consider themselves in the best possible position to seek regress.

Model 3: Timely yield on results-based bonds

The World Bank and others have experimented with a bond structure, where the coupon is payable as ITMOs (or other varieties of emissions reduction units). The bonds are sold in the market, raising capital which may be deployed for financing the assets from which they promise the emissions reduction yield. The bond model encounters the same risks as the upfront payment in general that the asset for which it raises finance must be built and therefore, for all means and purposes, functions as illustrated in the figure above, where capital is released in tranches against construction milestones.



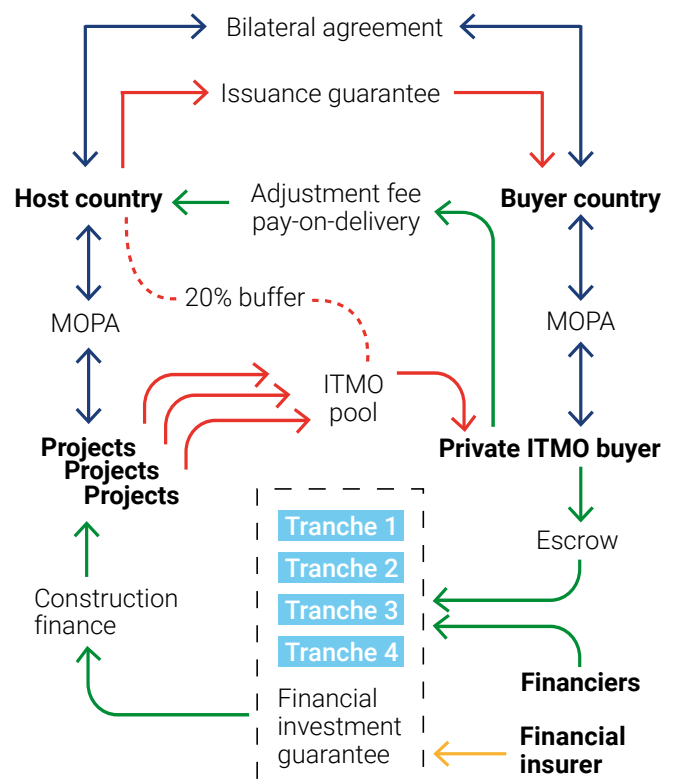
But the bond faces an additional problem. Not only is the yield delayed due to the construction time of the asset. Once the asset is operational, the yield is also due on time. However, the timing of the issuance of carbon credits from whichever system is per definition unpredictable. Third party verifiers need to schedule verification visits and reports have to be written and possibly revised according to the verifier’s requirements. The bond issuer is at risk of defaulting on his obligation to pay out the yield, in practice to deliver the ITMOs, on time.

In this scenario, the issuance guarantee can fill the gap. The host country may issue the ITMOs, while verification is still pending (ordered, on-going, under revision or otherwise not finalized). In practice, the guaranteed amount of ITMOs may function as an ITMO account with regular, timed payouts, but with irregular deposits in the form of verified ITMOs whenever the verifier has done his job. Discrepancies may be made up for during the operation of the project, also after MOPA expiry. Depending on the host country’s appetite for risk, it may even decide to partly fill in during the construction period, potentially in time with the financiers’ payment of tranches of the construction finance. The latter option has no consequence for the financing of the project, except it may help the bond find buyers who are more likely to have no direct interest in the assets that the bond may be used to (co-)finance.

Model 4: an ITMO pool from a group of projects

One central reservation raised against the model is the risk that a host government might ultimately be put in a situation where it would have to issue an ITMO without project backing. In such a situation, the environmental integrity of the transaction may be at risk. A way to limit this risk is not to enter agreements for a single project, but for a programme of similar activities. This would be in accordance with current ITMO buyers’ approach. If a project falls within the programmatic focus, it is eligible for correspondingly adjusted ITMO issuance and revenues.

A pool of similar projects would also be able to cover for each other, both in terms of amounts of emissions reduction achieved and on the timing of verification. They would feed into a pool of ITMOs transacted by the host government. For the ITMOs any given project delivers to the pool, it would write down its ‘ITMO debt’ relative to the construction finance provided by the ITMO buyer, while the buyer would accept flexibility as to which project exactly has generated the emissions reduction. Projects will therefore reach full ITMO debt repayment at different times.



The host country can operate the ITMO pool in two different ways. It can introduce an ITMO retainer, keeping a nominal share, e.g. 20% of project ITMO issuance, for own consumption. The host government could consider its retainment flexible and draw less in case the pool underperforms overall. This is illustrated in Model 4. Or it may consider the issuance of ITMOs on the basis of its own emission balance backed by projects having joined the pool which justifiably are contributing to national emissions reduction targets both during and after the MOPA-based crediting period. In this way, the host country is offering the less well performing project the flexibility of repaying its ITMO debt over a period of time longer than the MOPA.

The insertion of a financial insurer in the model is also intended to lower the risk of potentially issuing ITMOs with insufficient environmental integrity. ITMO buyers participating in construction finance will experience a gradual materialization of their ITMO purchase in the form of the asset that eventually is to generate the ITMOs. As with all project development, the main project risks are affiliated with construction – for which reason construction finance is relatively expensive and calls for refinancing once the project is operating steadily. A prudent ITMO buyer will consider this initial phase a financial risk for which a financial risk insurance would suffice, should the project shipwreck in the construction phase. In such case, the ITMO issuance guarantee would be revoked once a financial compensation by an insurer has been paid out. Hence, the ITMO issuance guarantee would only take effect once the asset is ready for commissioning. Should commissioning not happen, for any reason, including lack of permits, public protest or indeed developer bankruptcy, the ITMO issuance guarantee stands with the motivation that the potentially ITMO-generating asset exists. Because the asset exists, it is almost 100% certain that eventually it will become operational.

Risks and advantages

The ITMO issuance guarantee is fundamentally designed to address the central risk that in the CDM regime prevented buyers of carbon credits from participating in asset financing, directly or indirectly. But it is not a magic wand that eliminates all risk. There will still be risks to be addressed by stakeholders engaging in the use of the ITMO issuance guarantee. Those risks are extracted in the following for host and buyer countries, financiers and project owners, including private buyers of ITMOs. The overview of risks is not assuming to be exhaustive.

Host Country Risks

When considering transactions with corresponding adjustments under Article 6.2, it is not entirely clear whether the identity of the seller has shifted from the project developer to the host government. While the host government does not own the asset that is to generate the emissions reduction, it does own the national emissions budget – at least in the sense that it is responsible for managing it. So, what exactly is being sold – and by whom?

Since the project developer must trade through a bilateral agreement that stipulates that any transaction must include a downward adjustment to the national emissions budget of the selling country, it is obvious that the selling country is giving up an asset that it previously owned. This asset is defined in its NDC as an emissions trajectory, internationally agreed by implicit acceptance through its submission to the UNFCCC Secretariat.

The change of the position of the host country is solely related to guaranteeing the ITMO issuance, not the issuance per se. The guarantee, as described above, can relate to both timing and amount of ITMOs to be issued. If formulated as fixed amounts rather than minimum amounts, and fixed timing, the issuance guarantee lends predictability to the host country in terms of exact amount of ITMOs to be correspondingly adjusted. If, at the same time, the transacted amount of ITMOs is set conservatively, e.g. 80% of projected emissions reduction, the host country may develop a buffer to back up issuance over time.

To further ensure a project backing of guaranteed ITMO issuance, host countries may agree with buyer countries not to transact single projects, but rather programmes of similar activities that can back each other with ‘replacement credits’ that accumulate in a pool. Indeed, if ITMOs are sold from the pool and not single projects, the term ‘replacement credits’ loses its meaning as any given MOPA should deem eligible any ITMO entering the pool from the programme.

These measures do not fully eliminate the risk that a host country may find itself in a position of having to issue an ITMO without immediate project backing. In that situation, it may depend on future emissions reduction from projects that are initiated under and covered by the programme that generates ITMOs to a dedicated pool. It is also worth noting that the nature of the risk changes over time according to the following table:

| Phase in project materialization | Status of the ITMO issuance guarantee | Nature of issuance risk |
|---|--|---|
| Project idea, pre-feasibility, MADD-development | The ITMO issuance guarantee can be 'intentional' at the PIN level and conditional at the MADD-stage. | No issuance risk |
| Financial close of project investment | The ITMO issuance guarantee must be legally binding during financial structuring of the investment, but revocable if financial close is not reached or the investment for other reasons does not go ahead. | No issuance risk |
| Project construction | The issuance guarantee is active in this most risk-prone phase of any project. If the project is not completed, the asset cannot perform any of its intended purposes, including ITMO generation, while a proportion of allocated project finance is used. | Pro rata issuance risk with no project backing, possibly mitigated through financial risk cover |
| Project operation | The issuance guarantee now has full project backing and is therefore irrevocable. Few completed and functional assets are abandoned. They may go through bankruptcies and be restructured, but always aiming to achieve their operational objective, including emissions reduction | No or very limited issuance risk |

According to the table, the host country can avoid the issuance risk in the early stages of project development simply by making the issuance guarantee conditional upon financial close. Only at the point in time when the project is under construction, but not yet finished, is there a risk of having to honour an issuance guarantee that has been material in reaching financial close on the structuring of the investment.

There is a way out of this risk, however, depending on the position of the buyer. If the buyer is able and willing to take out a financial guarantee during the construction phase, which will return his investment if the project does not reach commissioning, the host country is 'off the hook' on projects that do not reach completion. This would require that the buyer does not book the guaranteed ITMOs before the underlying asset is commissioned. See further under 'buyer country risk'.

The main risk faced by a host country is probably not to be sufficiently organized to efficiently operate Article 6 projects in the first place. Clear distinctions of which projects would be eligible for an ITMO issuance guarantee; when the guarantee can be issued in the project development phase, and how, if the ultimate risk materializes, replacement ITMOs may be sourced and how replacement projects may be financed possibly from a reserve of adjustment fee payments are just a few of the procedures that countries would need to have in place. The risk of overselling seems more real with an ITMO issuance guarantee model as it is immediately convertible to finance, but conversely it also creates transparency up front as to how much exactly is guaranteed compared to successive issuance over the years.

The ITMO Buyer's Risks

As presented in the table above, the ITMO issuance guarantee will change profile during project development, from intentional to irrevocable. The moment of truth is when the pre-payment for ITMOs is paid into the escrow account. From that point, the ITMO investor has a financial stake in the project's construction at par with parallel financiers.

At this point there are two options. If the investor accepts a financial guarantee such as Contractors All Risk (CAR) insurance or a bond model using either a performance or an advance payment bond, the compensation for a failed project is financial. The ITMO issuance guarantee is null-and-void, but then again it was never paid for. The CAR is paid for by all financing partners and thus the ITMO buyer is in exactly the same position as other financiers.

This position may be transposed to bond issuers, where new bonds would need to provide a *financial* return on investment until such time as the asset(s) financed by the bond is operational – at which time the yield will be a timely issuance of ITMOs.

If the CAR-model is not accepted by the buyer, the issuance risk is transferred back to the host country to be backed by the remedies suggested above to underpin ITMO issuance from non-performing projects.

The ultimate risk – that the host country refuses to issue guaranteed ITMOs to the buyer, for which the buyer has already paid – can only be addressed by the fact that the ITMO issuance guarantee transforms this risk to a sovereign risk and thus reduces it to the lowest risk possible from a given host country.

In all likelihood, the host governments will charge separately for the corresponding adjustment. These prices may increase and could well rise to levels at least at par with the carbon prices paid upfront for project establishment. Undertaking these payments on payment-on-delivery terms would constitute a relative risk reduction for the ITMO buyer, the higher the relative price for the 'adjustment fee', the lower the financial risk of the entire transaction.

Still, the ITMO buyer, with the upfront payment to the escrow account, would have ensured the financial closure of the investment and thus equally the financial additionality of the project and from that perspective may have reduced the most significant risk – a reputational risk of buying ITMOs from projects that may comply with the financial additionality tool, but which market stakeholders and observers now or later may still consider as not having the desired environmental integrity. Also, should the project investment fail at some point and require replacement ITMOs, the fungibility of ITMOs is crucial, at least for some buyers. That points to Model 4 as the most robust approach, where programmes of similar projects are structured specifically to mitigate risks of non-fungibility.

Financiers' Risks

Traditionally, it has been thought that if project financiers are trained sufficiently, they would understand the emissions credit market and readily accept future cash flows from the carbon market as collateral. There is no empirical evidence to underpin that assumption, in fact rather to the contrary.

But financiers assume different roles in project finance and carbon market transactions and there is no one-size fits all. Banks are already structuring deals based on prepayment of carbon credits in the voluntary carbon market, where the common way to address risk is to lower the price on futures and only accept a smaller proportion of the expected generation, taking a diminished financial risk in the transaction, but a financial risk nonetheless. Insurance companies obviously see a market in this.

Financiers may also arrange results-based bonds, as described in Model 3, as another example of how financiers are trying to develop financial products that help addressing the same recognized financing challenge that the ITMO issuance guarantee is addressing. If the issuance guarantee can ensure predictability of yield payment, bond financing could become more widespread, although current government buyers in the market seem to consider bonds relatively slow and expensive (compared to using own funds).

The bond, like the escrow-based construction finance, is of course subject to the same ultimate default – that the host country does not honour the ITMO issuance guarantee underpinning the yield payment. Bond investors would need to accept a financial compensation for what seems parallel to a default on a government bond, as it is ultimately the host government that does not pay out the yield according to a sovereign agreement. It is an open question if this is a risk that needs to be covered, e.g. by a financial insurance.

For compliance buyers, however, buying results-based bonds promising ITMO-yields under a bilateral agreement between the buyer's home country and the ITMO issuance guarantor country in order to fulfil its national emissions reduction obligation, the government of that home country could consider to offer respite to the compliance buyer with regard to his delivery of the ITMO for compliance, simply because the planned retirement of the ITMO has been prevented by the default on the sovereign agreement between the home country and the ITMO issuance guarantor country.

For the project financiers, the picture is simpler. They are not engaged in the carbon market, nor do they have any exposure to any carbon market risk. They accept a co-financier in the ITMO-buyer who will not take any financial returns out of the project, leaving the project with relatively higher profitability and thus increasing the project developer's ability to service the debt. This essentially conforms to the traditional financial additionality principle. The fact that the ITMO buyer may have additional collateral in the ITMO issuance guarantee does not need to enter the financiers' considerations as long as the resulting payment into the escrow account succeeds – which in practice means that the future carbon market cash flows have been transformed into project finance. With that it becomes a purely financial transaction with traditional project risk assessment.

The Project Owner's Risks

First and foremost, the pre-payment by the ITMO-buyer through an escrow account facilitates financial closure of a project that otherwise would not materialize. The project developer would now raise further project finance for the activity on normal terms with financiers that do not need to get involved in the emissions reduction aspects of the project. The project owner would sign over the ITMOs to the ITMO buyer practically as dividends. It is not a financial transaction as the financing has already been used for project implementation. The ITMO buyer's financial position is in all likelihood to be considered a loan, but it does not require

repayment or financial dividends. Instead, it requires the right to the ITMOs issued. In practice, the transaction succeeds through the host government and buying government based on verification of the emissions reduction outcome.

It is conceivable that an ITMO-buyer would seek regress directly with the project owner if the project owner's government fails to honour its ITMO issuance guarantee. The project owner may be able to financially insure itself against this situation. In any case, it should, and probably can, only be a financial guarantee. The ITMO issuance is in the hands of the host government and thus beyond the control of the project owner, regardless of the performance of the emissions reduction project.

Challenges and Outstanding Issues

ITMO issuance guarantees do not eliminate all challenges in developing carbon assets with environmental integrity. The risk of overselling has oftentimes been mentioned as a risk in carbon trading under finite budgets and may be even more relevant in a guaranteed-issuance model than in the market as it is currently evolving. An important argument for introducing the ITMO issuance guarantee is that it does not require any capital investment by the host country, but this may also be a double-edged sword: The ability to issue carbon credits and more or less immediately exchange it for hard currency for project investment through an issuance guarantee may feel like printing money. Even if this may ultimately be the kind of financing that 'G77 plus China' have been calling for in the climate negotiations from the outset but have never achieved, it would succeed within an emission budget that is exhaustible. Countries may simply need to set a ceiling for ITMO issuance and once that ceiling is reached, there can be no more ITMO issuance guaranteed despite temptations, not least in capital constrained countries. Caution is needed on both sides of a bilateral agreement to avoid host governments being tempted to take away the emission space of their future generations.

This, of course, is mainly a risk in countries that budget their future emissions prudently, which is where the issue of additionality and environmental integrity originates. Ideally, the environmental integrity of ITMO transactions should be ensured not by the additionality of the single project, but by the corresponding adjustment of emissions accounts in host and buyer countries. If these accounts are balanced out, the trade is a zero-sum game as it is conceptionally intended. Project additionality is fundamentally an extra layer of proofing against emission budgets that are inflated and under which a corresponding adjustment hence would be made in budgeted emissions that would never occur. This is equivalent to 'hot air' – a term coined under the Kyoto

regime to describe reduction in emissions erroneously projected due to the decline of Eastern European economies in the beginning of the 1990s (see Michaelowa et al. 2019: 'Additionality revisited: guarding the integrity of market mechanisms under the Paris Agreement'). In the absence of environmental integrity of a national emission budget, project additionality is a good, and only possible, replacement (although it does not resolve the emission budget inflation), and it is indeed the project additionality that the ITMO issuance guarantee is fundamentally designed to address by ensuring that the carbon market provides investment capital for projects that would otherwise not materialize.

The more Agreement-based challenges to the ITMO issuance guarantee concern the project-basis for ITMO issuance as well as ITMO fungibility. The Glasgow rulebook for Article 6.2 stipulates that emissions reductions must be 'real, verifiable and additional' to what would have happened in the absence of the Article. This brings the wording closer to what is specifically adopted under Article 6.4, and thus also closer to a recreation of the CDM regime. In that case, issuance of ITMOs without a project basis may be in violation of all three principles. For the same reason, replacement ITMOs have been introduced earlier in this document, requiring host countries to identify other project activities that could be considered a source of ITMO issuance in cases of project failure. In Model 4, a pool of projects for ITMO generation has been introduced to broaden the base for ITMO issuance backing.

It is underscored, that this working paper specifically refers to Article 6.2 precisely because the dynamics of ITMO issuance are different from what is stipulated in Article 6.4. It would therefore seem contradictory, if Article 6.4 principles are transposed 1:1. Article 6.2 is oftentimes referred to as an accounting mechanism, possibly at par with Article 17 of the Kyoto Protocol on emissions trading, due to its reliance on corresponding adjustments. Nevertheless, early movers in the market have adopted a project-based practice under Article 6.2 (in the absence of a functional Article 6.4.) to substantiate 'real, verifiable and additional' ITMOs. But arguably, countries using Article 6.2 may adopt other approaches, including a flexible timing of issuance or a flexible interpretation of the project basis upon which a particular ITMO rests. In such an understanding, the ITMO issuance guarantee and pursuant issuance of ITMOs in a manner that does not strictly follow the rules of Article 6.4, is not a violation of the Article as long as it is in accordance with bilaterally agreed conditions for collaboration.

This does not mean that the ITMO issuance guarantee rests solely on an accounting platform. On the contrary, it is indeed specifically focused on raising investment capital for project implementation. Where it deviates from

Article 6.4 principles in terms of issuance – in situations of untimely issuance or project failure – it may ultimately rest on the accounting principle underpinning Article 6.2. If this remains a central cause for concern, buyers with a concern for environmental integrity might want to refrain from accepting not only ITMO issuance guarantees, but ITMOs altogether from countries with questionable emission budgeting. This would constitute a de facto market rating of national emission budgets and, through actual capital flows for project investment based on ITMO issuance guarantees, maybe implicitly induce prudent emission budgeting.

Another question concerns the fungibility of ITMOs, which again may be a challenge to the provision of ‘replacement credits’ for projects that do not produce the ITMOs agreed. Fungibility – a consensus that a ton is a ton – is an essential precondition in emissions trading and in trading regimes such as the EU ETS. However, even if all tons are equal, some are still considered more equal than others. The Gold Standard emerged, for instance, to underpin auxiliary benefits and Gold Standard is still standard setting for ‘high quality credits’, implicitly jeopardizing the fungibility of ITMOs but also serving a market demand.

For those oftentimes non-compliance buyers that are in the market for specific auxiliary project benefits in addition to emissions reduction, such as specific sustainability benefits or specific country support, an ITMO is obviously not just an ITMO. For this segment, a financial guarantee may be more attractive than any replacement ITMO, not only because a replacement ITMO may not have the same auxiliary benefits, but also because there may be no obvious penalty of not delivering the ton on time. Such financial risk insurance products are evolving in the market and are also included in Model 4 as part of the construction risk cover. The proposed pool approach to ITMO generation from programmes rather than single projects may be the best way to address such individual concerns.

Concluding remarks

Article 6 runs the risk of developing non-additional activities unless the sources and reasons for former non-additionality of CDM projects are addressed directly. As Article 6.2 allows relative freedom for countries to bilaterally agree their own approach, it may be possible to address these sources and reasons in these agreements.

One of the main sources of non-additionality of CDM projects was systemic risk, which discouraged financiers from accepting

emissions reduction contracts and associated future cash-flows as collateral for project finance. Since the host country has the ITMO issuance capacity under Article 6.2, the system risk is shifted to the bilateral partner with whom the buyer is already doing business. It is a natural next step to consider the inclusion of upfront payment for ITMOs against the issuance of an ITMO issuance guarantee in bilateral agreements. This will allow the ITMO buyer to participate in the financial structuring of the asset investment and implicitly ensure project additionality.

Obviously, ITMO-buyers can source ITMOs from projects that comply with the formalized additionality tools inherited from the CDM-era, but those are the same tools that failed to guard against the pursuant claims that the majority of credits issued under CDM were not additional. By ensuring that project financing is secured from the carbon market, the ITMO issuance guarantee ensures *actual* additionality. It is the postulate that while the ITMO Issuance Guarantee is not foolproof, it is ahead of its CDM precedent in terms of additionality proof, and thus also in terms of ensuring environmental integrity. The upfront payment essentially provides the fundamental financial additionality argument. The revenue from the carbon transaction goes directly into the financial structuring of the investment. The prepayment model ensures that no materialized project needs to raise the suspicion of non-additionality. If the future carbon revenue is transformed into a component in the financial structure of the project, it is undeniable that the financial contribution plays a role in the establishment of the project. In principle, no further proof of additionality should be required.

By charging separately for the corresponding adjustment in the form of an ‘adjustment fee’ paid-on-delivery, the ITMO issuance guarantee model delivers to the project what the project needs in terms of financial structuring and delivers to the host country the certainty that a financial basis for any ITMO issuance replacement investment can be supported if ultimately required. The government can exercise price control and establish floor prices both for the carbon market and for the corresponding adjustment by making its ITMO issuance guarantee conditional on a set of terms. If developing countries take the time to consider the value of their corresponding adjustments, they may also find it opportune to organize themselves.

Ultimately, it will help to demonstrate what a carbon market can achieve in terms of actual and additional project development in host countries in the way it was originally thought more than twenty-five years ago. Article 6 holds the potential to finally realize those original prospects.

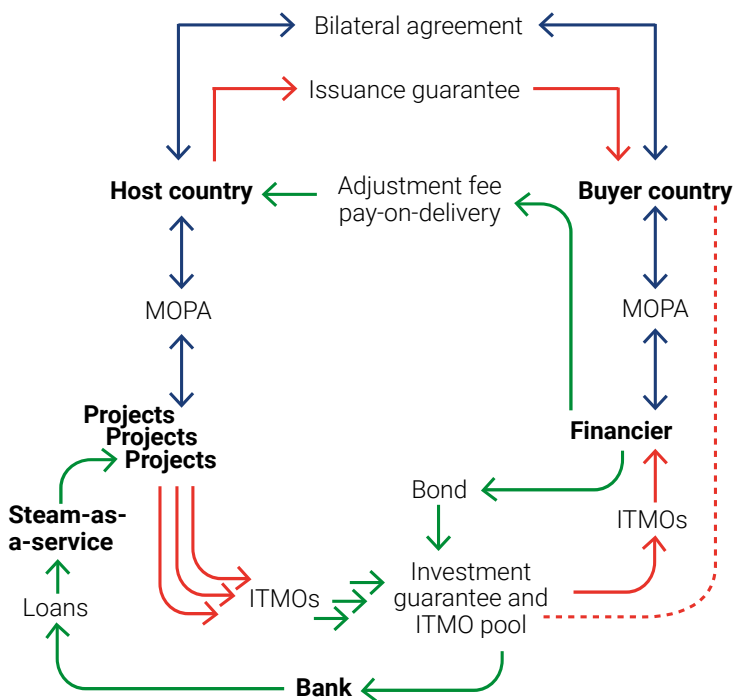
Annex 1: Model 4a - an ITMO pool with a twist

Just to illustrate the flexibility of applying the ITMO issuance guarantee in financial structuring, the model 4a below combines a number of the principles discussed above. Consider a situation where an entire sector in a host country, for instance the textile sector with dozens if not hundreds of factories, enters a national programme for energy efficiency to be implemented through the employment of third party investors, Energy Service Companies or ‘Steam-as-a-Service’ companies.

In the case presented, a financier issues a bond with the benefit of a government-backed ‘timely ITMO issuance’ guarantee. The bond proceeds are injected into an investment guarantee for the third party investors (ESCOs or SaaS companies), which they use to raise bank finance for the energy efficiency investments they undertake on behalf of their textile clients and from which they earn their revenues. As part of the deal, the client transfers the rights to resulting ITMOs to the SaaS company. As the textile companies verifiably reduce their carbon footprint, the Government transfers ITMOs to the guarantee fund as payment, on behalf of the SaaS companies, to cover the fee for the investment guarantee. The ITMOs are channelled through the guarantee fund to the bond issuer as yield on the bond.

In a complex model like this, the agreement structure between the parties could become a risk in itself. It is imaginable that the Energy Performance Contract between the SaaS company and a textile factory, for instance, must include a clause allocating a certain minimum of ITMOs to the guarantee fund as payment for facilitating project financing. It is also imaginable that a government programme to induce energy efficiency investments should be established to drive demand for the guarantees.

Note, however, that the MOPA is with the host government and the issuance guarantee is designed as a ‘timely issuance’ guarantee to the buyer government with the effect that ‘preliminary ITMOs’ (for the lack of a better term) are deposited by the buyer government against this issuance guarantee on the investment guarantee fund’s account.



When ITMOs are verified, they are issued by the host government, transferred to the buyer government, which makes a deposit of ITMOs to the guarantee fund, against which the ‘preliminary ITMOs’ pool is reduced. The host government issues the ITMOs in a timely manner to facilitate a timely yield payment to the bond investor.

Apart from addressing a financing challenge for third party investors in energy efficiency², the main quality of the model is the support of a multitude of similar projects that generate ITMOs of a similar quality and on a similar basis that are all collected as a pool of ITMOs by the investment guarantee fund (in the same host country). Estimating the ITMO generation capacity of each energy efficiency project conservatively would allow the pool to cover project specific shortfalls as well as to recover ITMOs issued ‘prematurely’ (e.g. without final verification).

² The bond-investment guarantee model has its own investment rationale from the insurance market

