

# Advanced REDD+ Finance



Public Private Co-Finance Initiative

January, 2013



Forest Trends' Public Private Co-Finance Initiative works with partners in the public and private sectors to develop innovative financing structures and architecture so the greatest possible amount of capital flows to activities that reduce emissions from deforestation and degradation (REDD+), increase the productivity of agricultural and livestock systems, and improve livelihoods of rural populations.

We used a version of this presentation to guide a plenary session of 140 countries at the REDD+ Partnership meeting in Colombia in July 2012 (including REDD+ negotiators and officials from the countries' Ministries of Finance) through the ways in which public capital might be best structured to attract private capital to REDD+ activities. Since then, we have updated and modified it to be most applicable for a larger audience but have kept the focus on leveraging public finance to attract private sector dollars to REDD+ and related activities.



- Framing the discussion
- Pathway to Finance
  - Identify financing gaps
  - Identify types of finance
  - Choose finance and risk mitigation tools
  - Create financial architecture
  - Attract capital
- Case study

This presentation has three main sections.

To begin, we focus on framing our discussion in light of the current REDD+ context and outline several key messages that will be expanded upon in the presentation.

Then we present a pathway to attract capital to REDD+ activities that includes steps such as identifying the financing gaps and the types of finance (public and private) that may be currently available to address these gaps. We look at tools that may help mitigate risks for potential investors in REDD+ activities and subsequently suggest ways to use these tools and other financial mechanisms to create the financial architecture to attract capital.

Finally, we present an illustrative case study that allows us to put our Pathway to Finance approach into practice as we identify the finance gaps, types of available financing, and questions to address with stakeholders in order to create architectures that may help attract finance.

## Framing the Discussion: Quotes from Public and Private Financers



“We want to leverage more private sector funds.”

*Many public officials focusing on REDD+*

“Once policy makers tell us what the rules of the game are, we will decide if we can play.”

*Large international investment bank, commodities desk (including carbon)*

“We manage nearly 100 billion dollars; we cannot dedicate resources to new investment classes unless we can see investing at least a billion dollars. We don’t have to invest in REDD+ but we would like to.”

*Large pension fund, alternative asset class manager*

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### Advanced REDD+ Finance

Currently, public and private financers each face challenges to investing in REDD+. On one hand, public sector officials have limited financial resources to implement programs and policies that accomplish the goals of conserving forest carbon stocks, sustainably managing forests, and enhancing forest carbon stocks. To achieve REDD+ at scale, they are looking for ways to attract private sector capital to these activities. On the other hand, the private sector is potentially interested in REDD+ but, to date, has not invested much capital due to real and perceived risks of doing so, including an uncertain policy environment.

It is worthwhile to note that both the private and public sectors have a similar objective – greater private sector investment in REDD+ – yet have been unable to achieve this objective at scale. This is due to various factors, not the least of which may be a lack of communication and understanding between them. Thus, it is critical for public officials and private companies and financial institutions to bridge this communication gap and build relationships with each other to better understand the other’s constraints and goals, which will greatly facilitate the use and/or creation of practical financial and risk mitigation tools to achieve the mutual objective of greater private sector investment in REDD+.



- The costs of REDD+ are large but not insurmountable
- Both public and private finance will have a role
- Private investors can be engaged without robust carbon markets
- Public finance can use various financial tools to attract private finance
- Mitigating the real and perceived risk of REDD+ for the private sector is one important goal of public finance
- Carbon assets can be created and may be valued over time

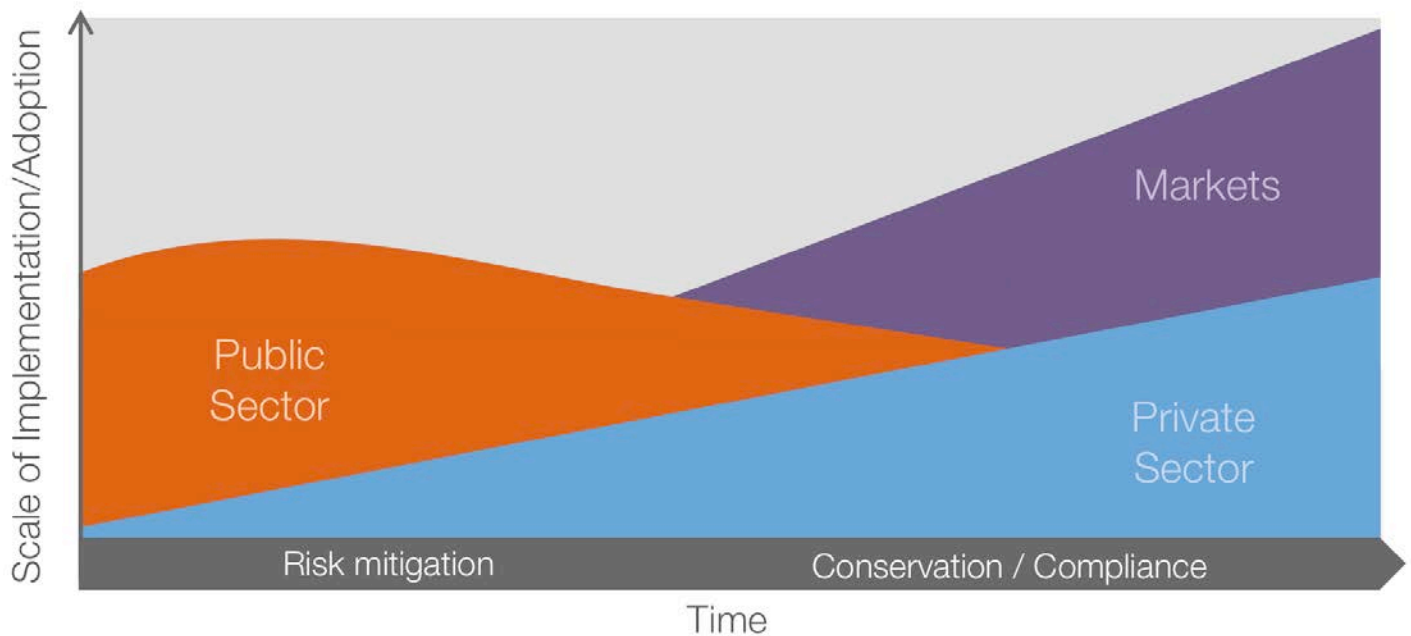
There are great opportunities for attracting finance to REDD+ activities, as outlined above. In particular, we think about carbon finance beyond selling carbon credits but rather that carbon is an asset that may be attractive when linked or bundled to other commodities and may be valued more highly over time (i.e., as there is increased demand for climate smart and/or zero-deforestation commodities, regional and inter-regional carbon markets develop, etc.).

Developing countries and subnational jurisdictions create carbon assets through the monitoring, reporting and verifying (MRV) process, and they can monetize such carbon assets through Overseas Development Assistance (ODA) as payment-for-performance – e.g., the State of Acre, Brazil, signed an agreement with Germany for US\$25 million in exchange for reducing Acre's greenhouse gases (KfW News, February 20, 2013). Other potential ways for developing countries to monetize carbon assets include: using them to negotiate potential REDD/emissions reductions commitments or a trade deal with the EU or US; or providing them in exchange for a 10-year commitment to finance development by a developed country. Although largely theoretical, we include these ideas to inspire creative thinking about how to monetize carbon assets rather than relying on a still-limited voluntary carbon market.

Carbon assets do have political and monetary value, and countries should recognize that creating a valuable asset may support lower-cost funding, spur domestic investment, and support trade and political negotiations. And as REDD+ moves from projects to jurisdictional approaches, thinking of carbon as an asset potentially opens up more financing options.



## Framing the Discussion: Shift to Greater Private Finance over Time



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### Advanced REDD+ Finance

Currently, the REDD+ “industry” is quite nascent, early on the time scale (x-axis). This is largely due to uncertainty about how the policy and regulatory environment will develop going forward, and the lack of an international agreement on REDD+. The risks of investing in REDD+ are substantial, and investment is primarily composed of public sector dollars – e.g., Norway has committed \$1 billion dollars each to Brazil and Indonesia for REDD+, whereas the total value of REDD+ credits traded on the voluntary market in 2011 was around \$60-80million (State of the Forest Carbon Market, 2012. Ecosystem Marketplace, a Forest Trends’ initiative).

At this stage, public sector finance can play the critical role of mitigating the risks of investing in REDD+, including by potentially acting as a buyer for the carbon asset created in REDD+ activities (e.g. – the Acre example). As the REDD+ “industry” matures (risks are mitigated and returns are better understood), other sources of finance can be attracted to the sector.

In the absence of a robust carbon market, a promising way to attract private sector investment in REDD+ is to link forests and the climate benefits of sustainable land use more closely to agriculture. This may stimulate the most private sector investment because such investors are attracted to the underlying land uses (agriculture, forestry and livestock) that generate returns even without potential carbon assets. Additionally, commodity buyers have committed to sustainable sourcing/production and may be willing to pay and/or invest in zero-deforestation commodities (like companies in the Consumer Goods Forum, with sales of over US\$3.3 trillion per year and have committed to “no net deforestation” in their supply chains by 2020).

## Framing the Discussion: Objectives of Financial Architecture



- Reduce the cost of funding REDD+
- Attract, over time, the largest and lowest-cost sources of funding
- Allow the private sector to take the risks it can manage
- Incentivize producers to develop investment-ready projects
- As markets mature, private sector investment expands

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### Advanced REDD+ Finance

We aim to create a financial architecture composed of public and private finance that is able to reduce the cost of funding for REDD+ by attracting the largest and lowest-cost sources of funding over time. In addition, this architecture should be designed to allow the private sector to take the risks it can manage, and – as markets mature and risks decrease – private sector investment is likely to expand.

Good financial architecture will also incentivize producers and project developers to create investment-ready products and projects, since they will have greater certainty that investors will deploy capital to support them.

In particular, public sector capital can be used strategically to lower the risks of investing in REDD+ activities – including climate smart, no deforestation commodities – and thus attract a broader set of investors. Enabling public officials to make the best decisions today around HOW to use public finance to capitalize a long-term sustainable financing model for REDD+ activities is the goal of this presentation.

## Framing the Discussion: Objectives of Financial Architecture



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### Advanced REDD+ Finance

The public and private sector can each invest directly in REDD+; they can do so through mechanisms such as a public private fund; and/or (as shown in the top portion of this slide) the public sector can utilize financial instruments that seek to lower investment risks for the private sector.

Regarding the latter: the public sector may use tools such as tax concessions, guarantees, political risk insurance, or payments for performance to mitigate the risk for the private sector to invest in REDD+ activities. The types or size of the loans, equity, etc. that the private sector might invest in REDD+ without these risk mitigation mechanisms may be quite different (e.g., the private sector might be willing to offer lower-interest rate loans if the public sector offers guarantees for the loan... and as illustrated by the darker grey arrow in the figure above).

(Further discussion of many of these tools is included later in the presentation and also in the Appendix slide. For more information on such tools, please also see the REDD+ Partnership website – [www.reddpluspartnership.org](http://www.reddpluspartnership.org))



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## Advanced REDD+ Finance

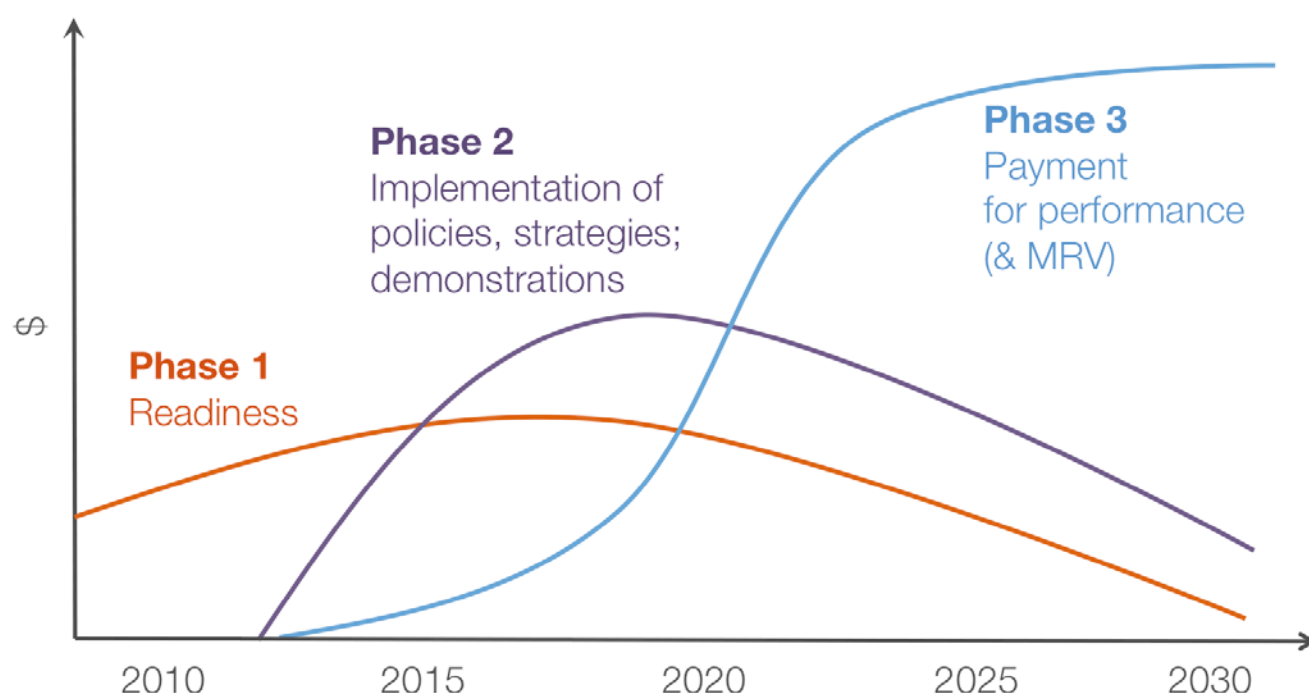
Now that we have framed the discussion, we turn to our Pathway to Finance tool that we have developed as a guide for policy makers, public finance agencies, REDD+ project developers, financial institutions, and those supporting REDD+ development (like NGOs) to attract capital to REDD+ activities. We presuppose that the desired land-use outcome, system, or practice is first defined (such as transforming extensive cattle ranching to intensified silvopastoral systems and restoring degraded land to forests), after which the following steps can be undertaken.

First, it is necessary to calculate the approximate amount of financing needed for the target REDD+ activities – i.e., the financing gap. Next (or simultaneously, these steps do not have to be followed strictly in order), identify current public and private dollars available for the activities. Then, survey the types of finance and risk mitigation tools that may be best applied in the selected context to mitigate risk for investors and choose the most appropriate mechanisms. Finally, use these tools to create a financial architecture that minimizes risk and attracts capital (the ultimate objective of public private financial architecture).

We will now explain these steps in greater detail, and remember, these steps are quite interrelated and do not necessarily map out in such sequential steps, so practitioners should adjust as necessary and most practical.



## Identify Finance Gap: Finance needed for Phases of REDD+



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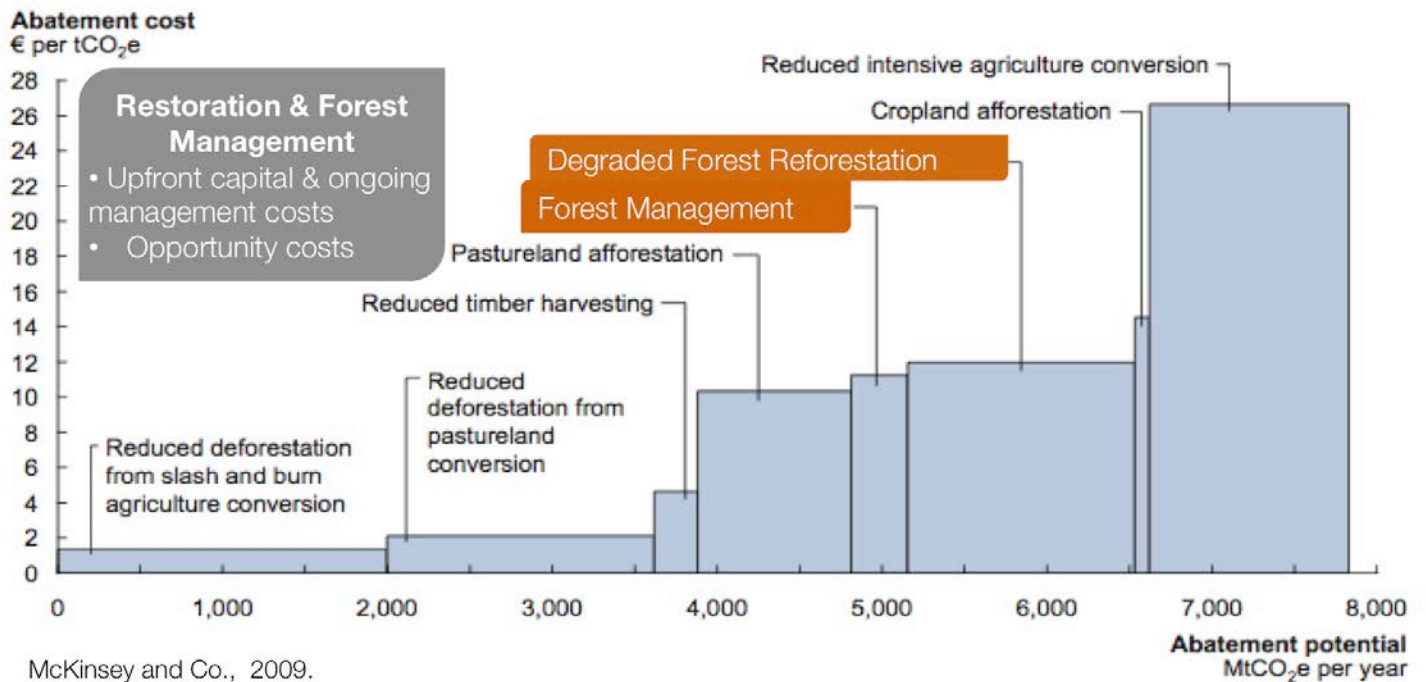
### Advanced REDD+ Finance

The financing gap for REDD+ exists across its three phases (shown above, illustrative only). It is estimated that the amount of financing needed through 2030 to halve deforestation is between US\$17-33B per year (Eliasch Review 2008), yet there has been only \$4.5 billion of public sector financial contributions to REDD+ countries (Voluntary REDD+ Partnership Database).

No one single source of funding will prevail, and sustainable, integrated long term funding is needed. Investment risks must be mitigated so the returns required from investors are also lowered in order to attract capital from all potential sources and through all possible mechanisms. If the REDD+ financing gap is to be addressed, access to new pools of capital and the largest investor base is needed.

Also, we acknowledge that Phases 1 and 2 will be primarily funded by the public sector, and this presentation focuses primarily on Phase 3 financing.

## Identify Finance Gap: Global GHG Abatement Cost Curve for the Forestry Sector

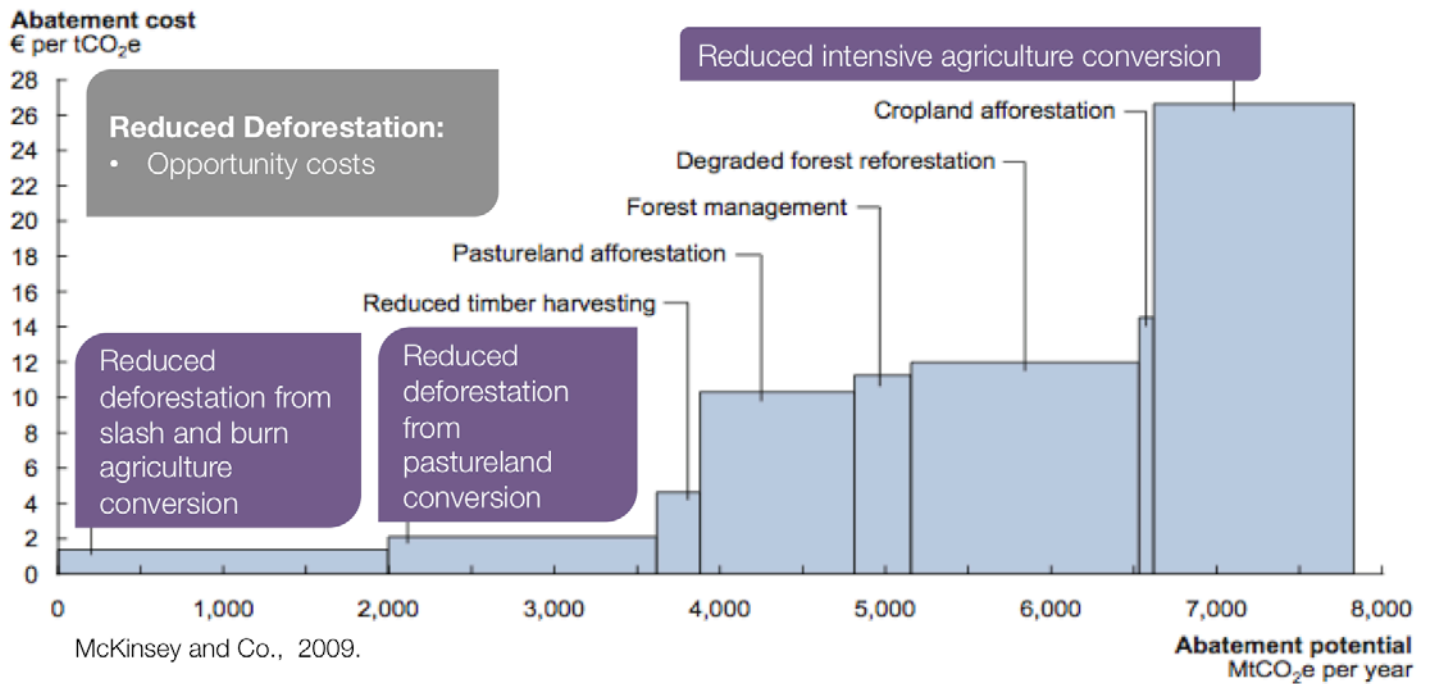


### Forest Trends

### Advanced REDD+ Finance

The financing needed to implement REDD+ activities in the Forestry Sector such as restoring degraded forests and sustainably managing forests are real and include upfront capital costs, ongoing management costs, as well as opportunity costs.

# Identify Finance Gap: Global GHG Abatement Cost Curve for the Forestry Sector

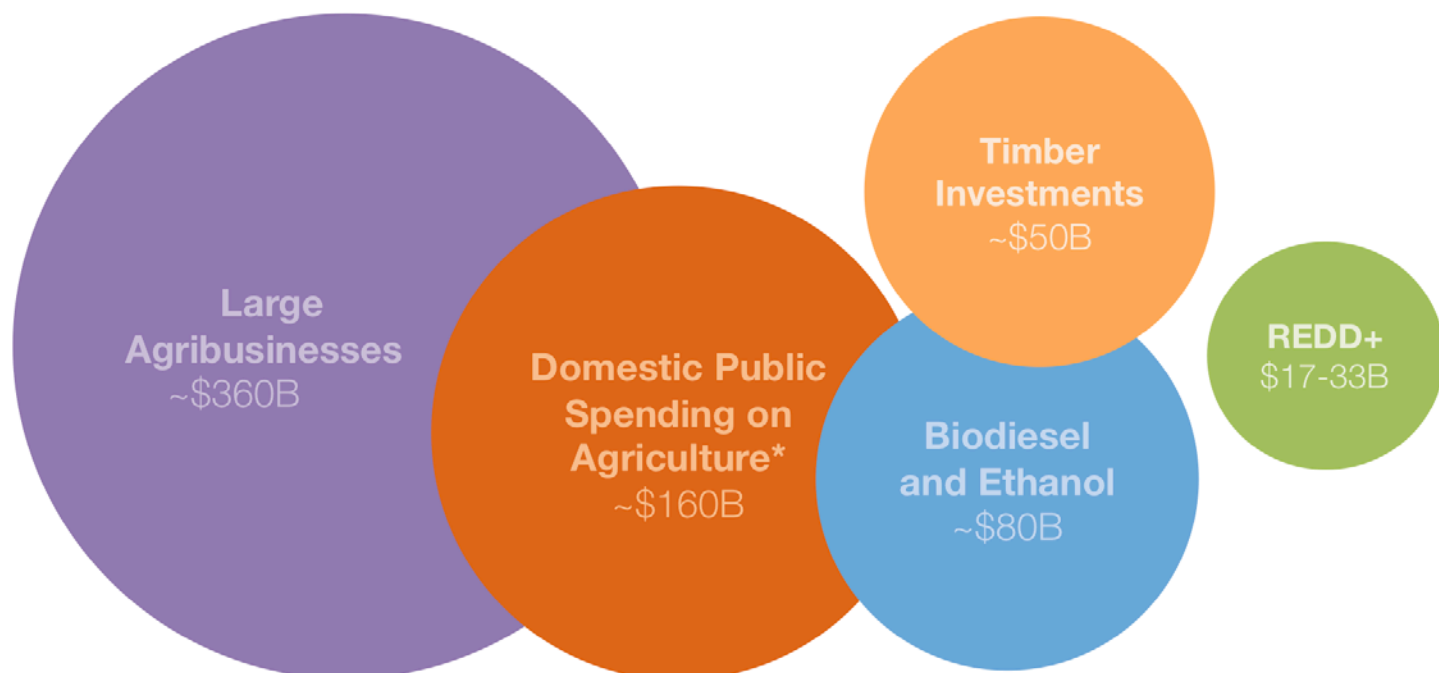


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## Advanced REDD+ Finance

REDD+ activities with direct links to agriculture primarily present opportunity costs.

## Identify Funding Type: REDD+ Finance is Complimentary with Large Sources (US\$)



\*Low and middle income countries. Annual average, 2005-2007. "Financial Resource Flows to Agriculture", Food and Agriculture Organization (Dec 2011).  
Biodiesel and Ethanol – 2010. "Global Biofuels Market to Reach \$247 Billion by 2020 Despite Near-Term Challenges", Pike Research (2009).  
Timber Investments – 2010. New Forests' Timberland Investment Outlook, 2011-2015 (January 2011).  
Large Agribusinesses – 2011. Standard and Poor's Commodity Producers Agribusiness Index, Adjusted Market Capitalization (2012).  
REDD+ – per year. Eliasch Review (2008)

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### Advanced REDD+ Finance

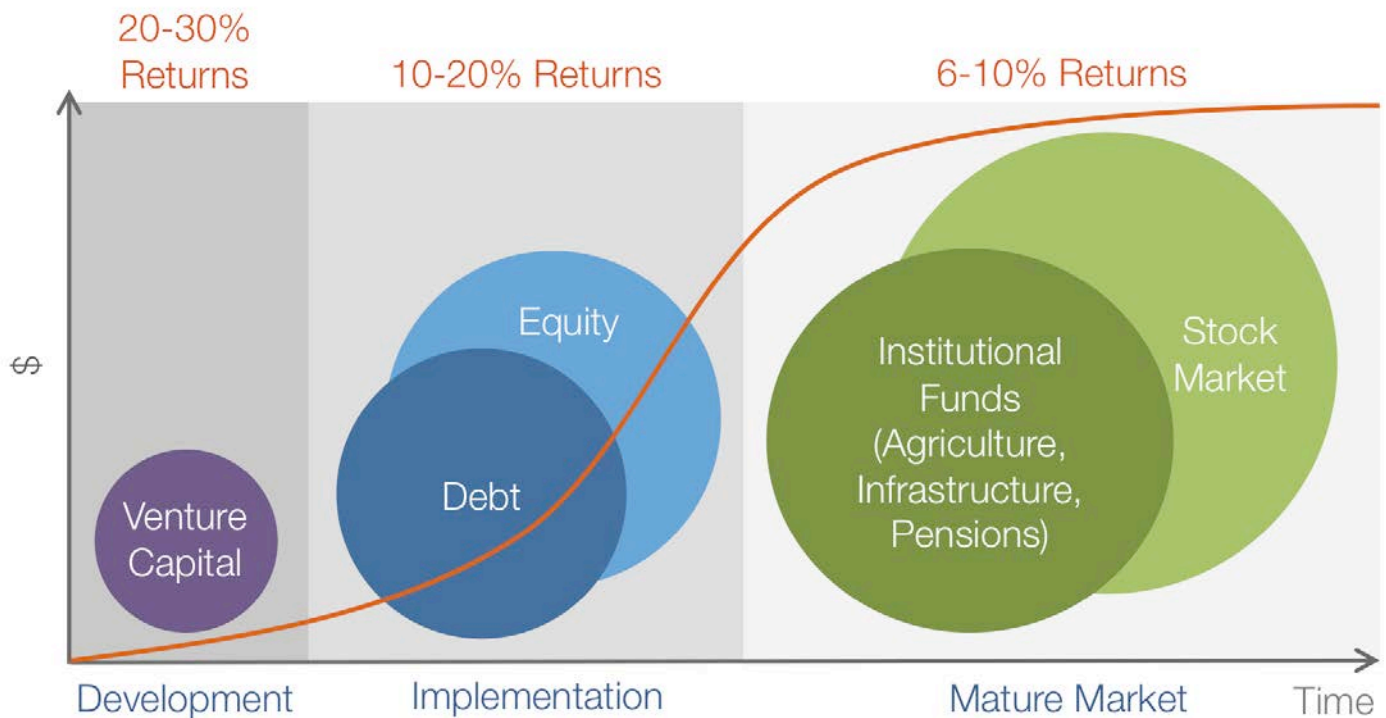
Having identified the financing gaps for REDD+ Phase 3, the next step is to identify potential types of funding for the gaps and to mitigate the risks of investing in REDD+.

As shown in this diagram, the \$17-33B per year of financing estimated to be needed through 2030 to half deforestation is more manageable when compared to other large pool of capital that are being invested in various sectors related to REDD+, such as agriculture, timber and biofuels.

Thus, it is important to ensure that REDD+ and low-emissions rural development (LED-R) that facilitates investment in climate-smart, no deforestation agriculture production systems are closely integrated in order to attract these large pools of capital in addition to specialist carbon and climate finance. This will be critical in order to ensure long term sustainable financing using markets (and remember, our definition of markets is broader than carbon markets and includes markets for sustainable commodities, etc.).



## Identify Funding Type: Private Capital Over the Development Cycle (Illustrative)



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### Advanced REDD+ Finance

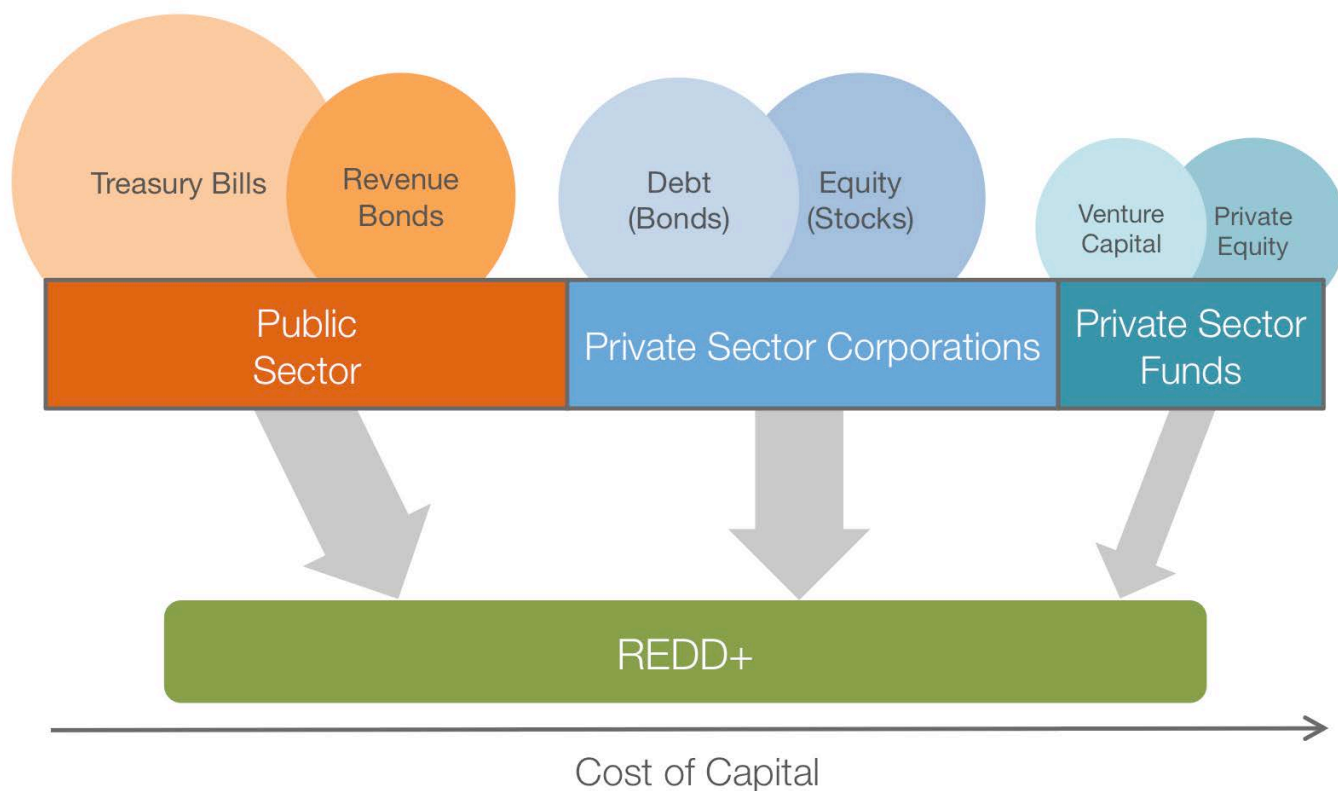
It is important to note that we are in a development cycle for REDD+. It will take significant effort to develop REDD+ such that greater amounts of capital are put into it. We want to put dollars to work in project implementation, but it takes risk capital to implement a project; for example, to acquire a degraded land concession and restore it to a forest for sustainable timber management takes a lot of work, especially to illustrate that this can be profitable. For such a risky project, a private sector investor would expect significant returns that may simply not be obtainable at this time.

In Phases 1 & 2, policy reform, MRV, and rural development plans should be put into place to create an environment where investment is possible, but operational risks may still exist in Phase 3. For instance, is there enough technical capacity to implement the project? Have we tested the best crops for these environments? What is the successful supply chain model?

Our main concept here is that large pools of capital for implementation will not flow until dollars in the development stage flow to build the pipeline of investible opportunities. Public finance can provide support in the early stages of Phase 3 for REDD+ are: (1) grants to support development and (2) risk mitigation to support development. The second option provides the added benefit of sharpening the focus of the private sector on the risks it can manage.

Remember, we expect the public sector to be the main source of financing for Phase 1 and most of Phase 2 for REDD+. However, public sector financing is limited, and the private sector may be attracted to REDD+ if some of the risks can be mitigated.

## Identify Funding Type: Public and Private Finance for REDD+



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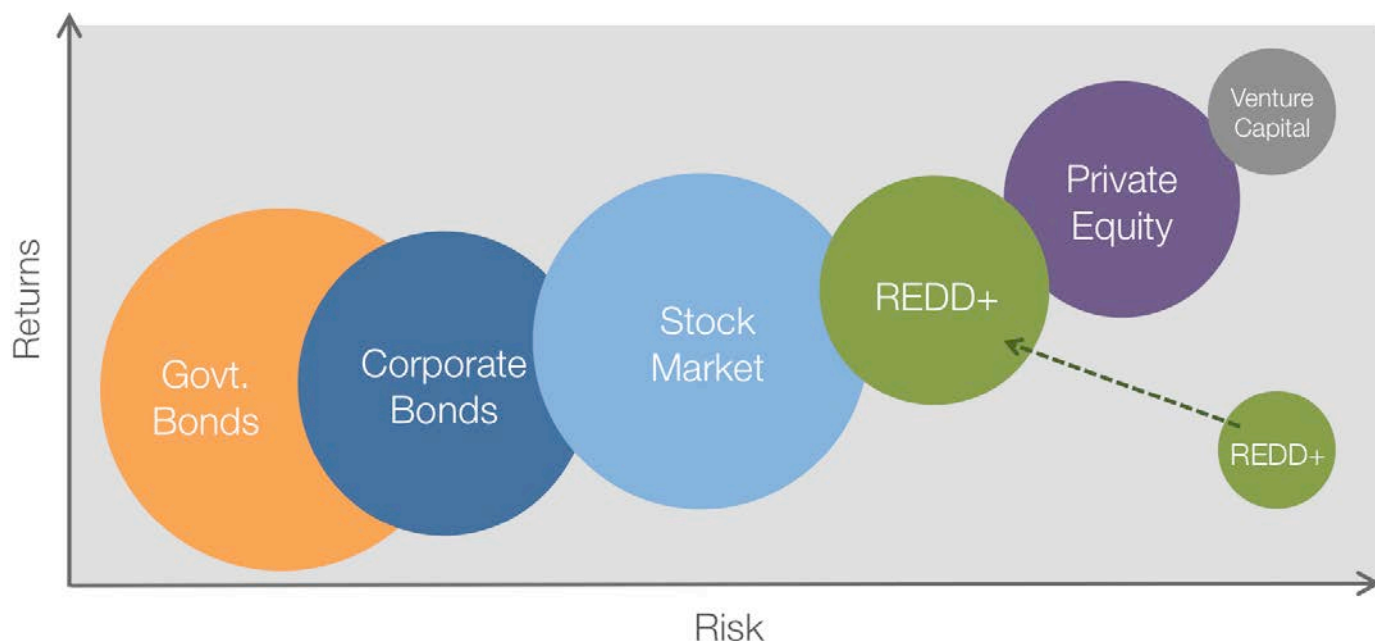
### Advanced REDD+ Finance

Funding for REDD+ may come from the public and private sectors, which have different costs of borrowing capital to make investments. For instance, public sector finance is relatively cheap because governments can raise money through sources such as government bonds, revenue bonds (including convertible bonds), sale of credits, and traditional treasury sources. Bonds are a low-cost form of debt that are also fairly low-risk (can be aggregated by investors, further lowering risks for investors). Many governments have good credit ratings and thus can offer low interest rates on their bonds, etc.

Traditional private sector finance raised by corporations is usually done through issuing debt (bonds) or equity (stocks). Equity is an ownership stake in a venture or company and is usually composed of shares or stocks. Equity investors generally expect a higher return on their investment than do bondholders or other debt investors such as commercial banks, as the risks of directly investing in a company are higher than investing through bonds (bondholders are paid before shareholders). The finance raised by large companies through debt and equity is more expensive than public sector bonds, etc. because businesses are risky by nature but large, stable companies in mature industries still have relatively low costs of capital, as their risks are not very great (e.g., compared to start-ups). In contrast, private sector funds that raise venture capital or private equity to make their investments have the highest cost of capital and are also willing to take risks that other investors will not.

An important goal of public and private finance is to structure it so as to attract to the larger and lower-cost-of-capital private investors (as indicated with the thicker grey arrows above).

## Choose Finance and Risk Mitigation Tools: REDD+ on Investment Landscape



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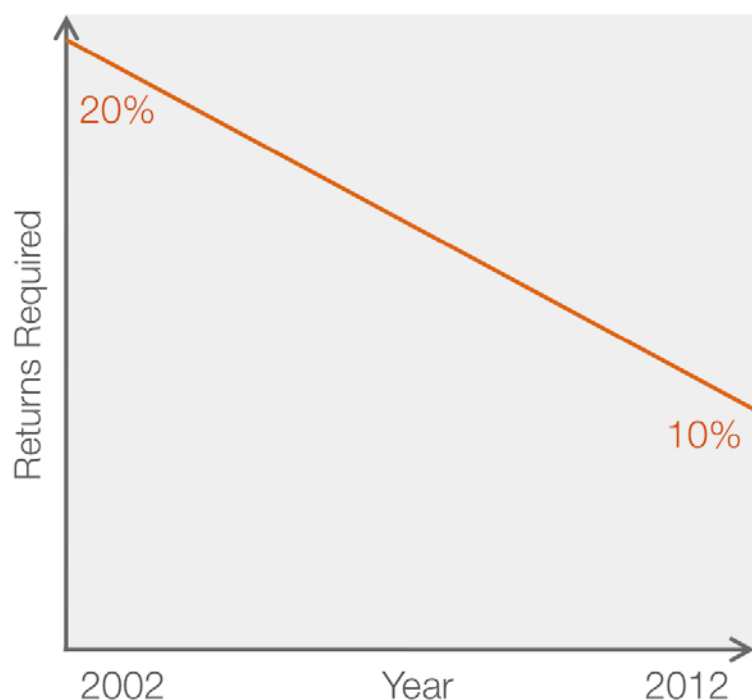
### Advanced REDD+ Finance

As described previously, both the public and private sectors can be attracted to REDD+ investments. However, different investors have different risk and return profiles, as illustrated here. Because people are naturally risk-averse, more investors (and thus dollars) are interested in investments with lower risks and returns. The risks of investing in REDD+ are high but returns are modest (shown by the small green REDD+ bubble to the bottom right of the figure). Correspondingly, there is little private financing for REDD+: total volume and value of REDD+ credits traded through the voluntary carbon markets 2008-2011 has amounted to 36.5MtCO<sub>2</sub>e and less than \$200 million (Ecosystem Marketplace, a Forest Trends' Initiative).

To attract investors into – and compensate them for the substantial risks – in REDD+, the returns should be greater – i.e., the bubble should move further towards the top. Alternatively, if we can lower the risks, the REDD+ bubble should move to the left and also grow (reflecting the greater amounts of capital and new types of investors interested in REDD+ investments).

Investing in REDD+ is like investing in a firm that plans to build a house. They haven't built houses before, they're not sure where they'll build it or where they'll source the materials, they don't have a buyer for the house, and they don't know the housing regulations. In this case, there are all kinds of risks. Alternatively, another firm is planning to build a house, and they DO know where they will build, they have potential buyers, they know the price of the raw materials, and they know how to meet the regulations. The risk for this project is much lower than the former, even though both firms are planning to build similar houses. This latter case is where we need to take REDD+ so private investors are interested in putting capital into it.

## Choose Finance and Risk Mitigation Tools: Reducing Required Returns as Markets Mature



Illustrative example of UK wind sector

- UK mandated renewables target
- Feed-in tariffs for renewable energy projects
- Offshore wind incentives across supply chain
- Small and medium scale wind incentives

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Past experience in other sectors provide examples of how public sector policies, programs and financing mechanisms can be used to decrease the risks of investing in an activity that provides positive environmental benefits such as renewable energy.

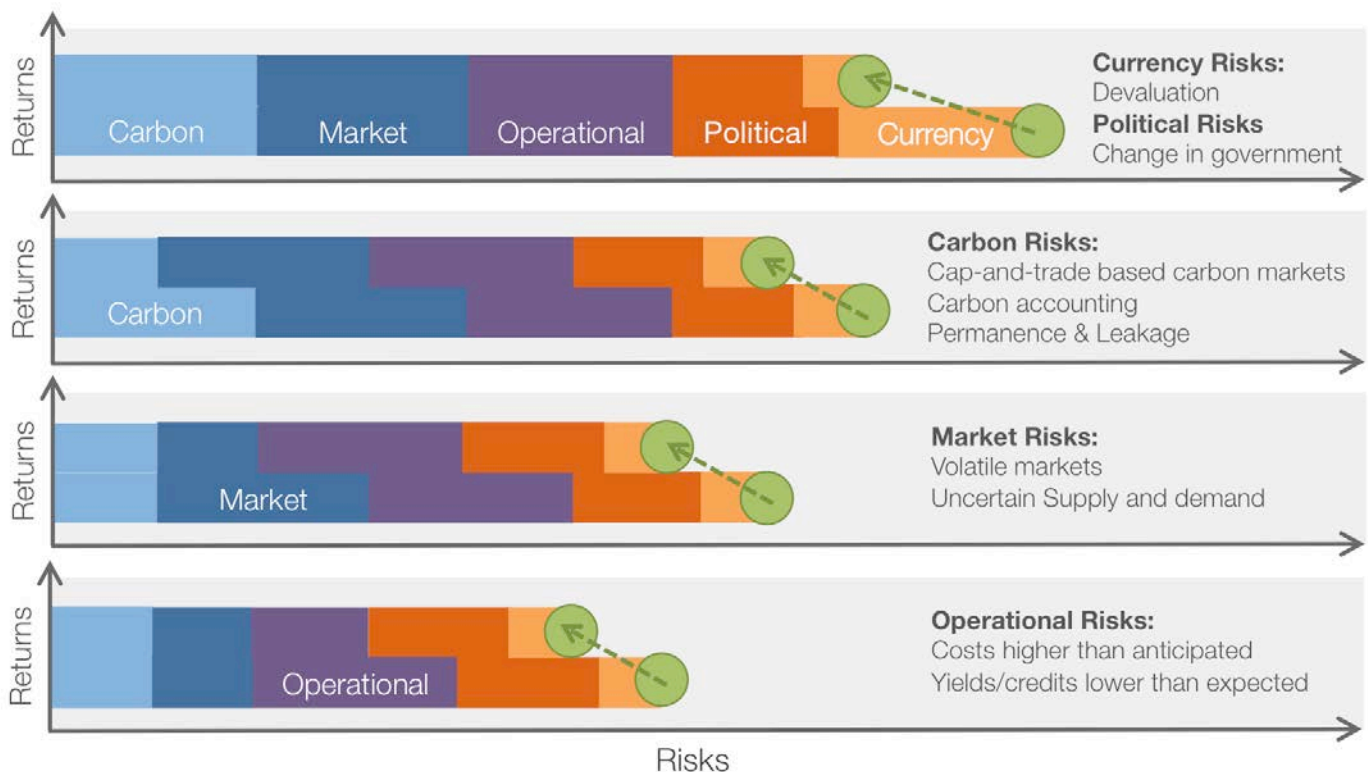
For instance, the United Kingdom has implemented various programs and incentives to develop wind energy over the last 10+ years and has stimulated investment in an otherwise risky sector. It has accomplished this by requiring utilities to buy an increasing proportion of their energy from renewable sources like wind farms. Renewable energy suppliers also receive a premium for the energy they sell into the grid.

Over time, the difference in price per kWh between burning gas and wind has decreased because the cost of financing (cost of capital) has been reduced for wind projects in large part because of this decrease in market risk (wind developers know there will be a 20-30 year market for their output). Thus, returns required to invest in wind energy projects has fallen by about half over time (illustrative example above). This lower risk/return profile is attractive to a broader set of investors and can be used to create a long-term, sustainable market.

(See the UK's Department of Energy and Climate Change's (DECC) website for more information: [http://tools.decc.gov.uk/en/content/cms/meeting\\_energy/renewable\\_ener.](http://tools.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener.))



## Choose Finance and Risk Mitigation Tools: Risk Mitigation Over Time



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It is necessary to reduce the risks for REDD+ activities so they look less like venture capital risks, since land-based cash flows are unlikely to generate correspondingly high returns. Various types of risk for REDD+ exist (expanded upon in subsequent slides):

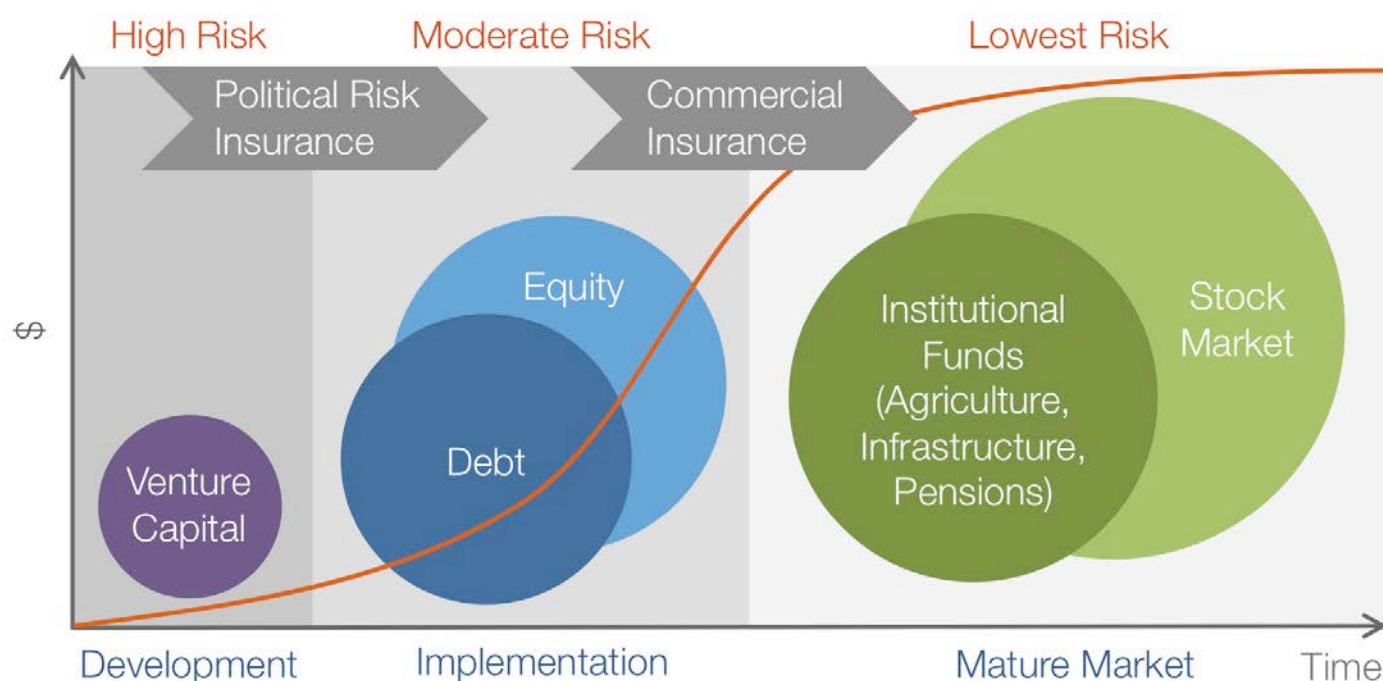
**Carbon risks** include uncertainty regarding: the price of REDD-based offsets; development of effective cap-and-trade programs in the US or countries outside the EU; how emission reductions are counted (within accounting inventories vis-à-vis available for compliance purposes); leakage and lack of permanence, resulting in discounts or adjusted baselines.

**Market risks** are those risks associated with commodities linked to low- or zero-deforestation supply chains and include uncertainty regarding: prices of such commodities (may be volatile at least partially because of climate change); demand or requirement for low-carbon/zero-deforestation certified commodities; scale and rapidity of supply chain investments to ensure cost-competitive commodity; access to markets and/or premium pricing.

**Operational risks** from generating or managing forests as well as cultivating associated commodities include risks such as uncertainty around: yields, costs, new practices/techniques/species, restoration/land preparation work, working on marginal or degraded land, and amount of emissions reductions if activities do not successfully address the drivers of deforestation.

These risks, together with **political and currency risks**, are not inconsequential and show why – currently – very high returns may be required for many REDD+ activities.

## Choose Finance and Risk Mitigation Tools: Mitigating Political and Operational Risk



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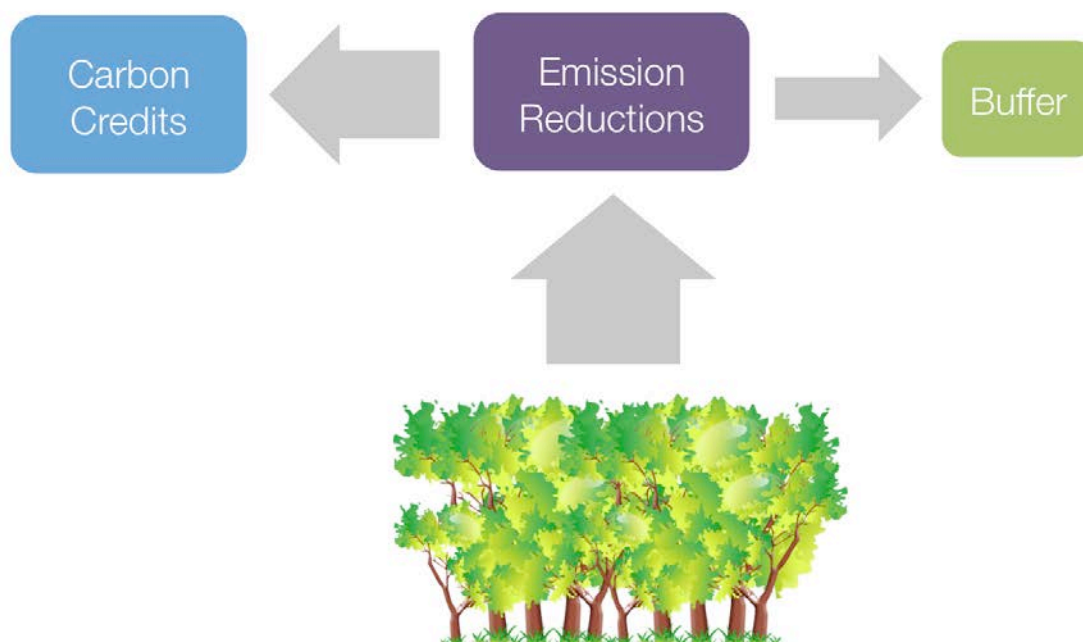
### Advanced REDD+ Finance

In our trajectory towards maturing markets, there may be certain risks that are too great for risk reduction through financial instruments and may need to actually be removed from the risk equation. Political risk can be removed through political risk insurance, for instance, which lowers the risk of investing in an area or sector in which the policy or regulatory environment may change with a new political party in power. For example, political risk insurance may be helpful to attract investment in a REDD+ project in a country with a history of government appropriation of private land or businesses.

Also, certain types of commercial insurance can assuage operational risks related to weather, catastrophic events, etc. in order to attract new investors at scale. Commercial insurance is designed to lower the risks for each actor in undertaking an activity by aggregating the risks across a sector and by demanding premiums from policy holders.

In short, the private sector broadly defined (investors, landowners, developers) should focus on the risks they can understand and manage. Insurance makes a risky or complicated investment easier to understand so investors will deploy their capital into such an investment rather than into competing types of investments. However, insurance and risk-mitigating options also come with a price, and it can become expensive to reduce risk at the expense of precious cash flows. Finally, if risks cannot be mitigated sufficiently, the public sector may need to take these risks (not the private sector).

## Choose Finance and Risk Mitigation Tools: Also Enhancing Environmental Integrity



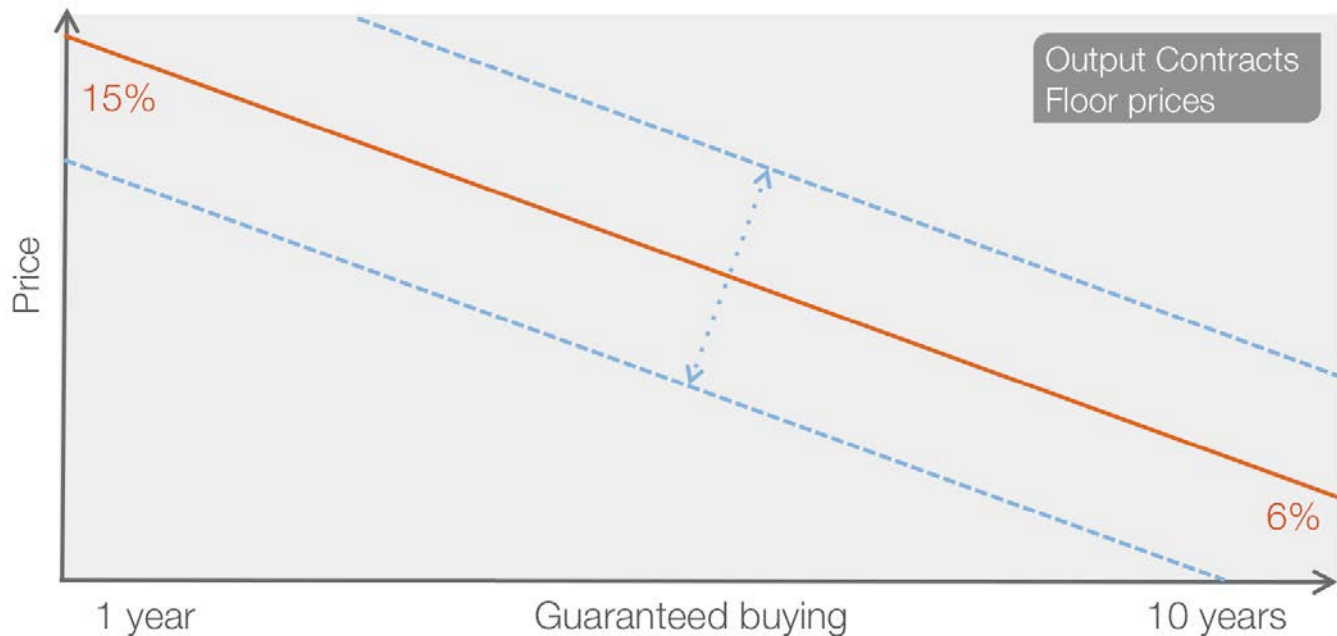
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Ways to mitigate carbon risks associated with permanence and leakage can include buffers and discounts. Developers of REDD+ activities may set aside a portion of emissions reductions in a buffer in case a natural hazard or human act damages the forest (i.e. a reversal occurs), in which case some or all of the emissions reductions in the buffer can be used to compensate for this loss. Buyers of emissions reductions may discount their purchase if they believe that the forest generating the emissions reductions is at a high risk of reversal (e.g., the buyer may assess that of their purchase of 200 credits, only 160 will be realized). Buffers and discounts do reduce risks, although they also result in lower revenues.

In addition, the carbon asset created through REDD+ activities can be bundled with other ecosystem services such as carbon sequestration, water, biodiversity and food production into a single payment. This may increase the value of the carbon asset, as the other ecosystem services are also valuable to certain investors/interested parties.

## Choose Finance and Risk Mitigation Tools: Mitigating Market Risk



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Market risks for carbon and linked commodities are not unsubstantial, and various tools exist to mitigate these risks and pay for performance. For instance, price volatility is a market risk, so price support can mitigate this risk; this increases cash flow consistency and may improve cash flow itself.

Floor prices are often mentioned in discussions about the carbon market, since a minimum – or floor – price for REDD+ or other types of carbon credits would be a method through which to encourage project development, as it would remove the downside price risks for the emissions reductions created through REDD+ activities. Also, long-term output contracts between commodity suppliers and buyers provide price support and can be structured to incentivize climate smart, deforestation-free production and supply chains.

These mechanisms reduce market uncertainty; thus, the credit worthiness of projects increase, volatility decreases and predictability increases, which may allow us to attract cheaper capital and gain access to bigger pools of investors.



## Create Financial Architecture: Objectives of Financial Architecture



- Reduce the cost of funding REDD+
- Attract, over time, the largest and lowest-cost sources of funding
- Allow the private sector to take the risks that they can manage
- Incentivize producers to develop investment-ready projects
- As markets mature, private sector investment expands

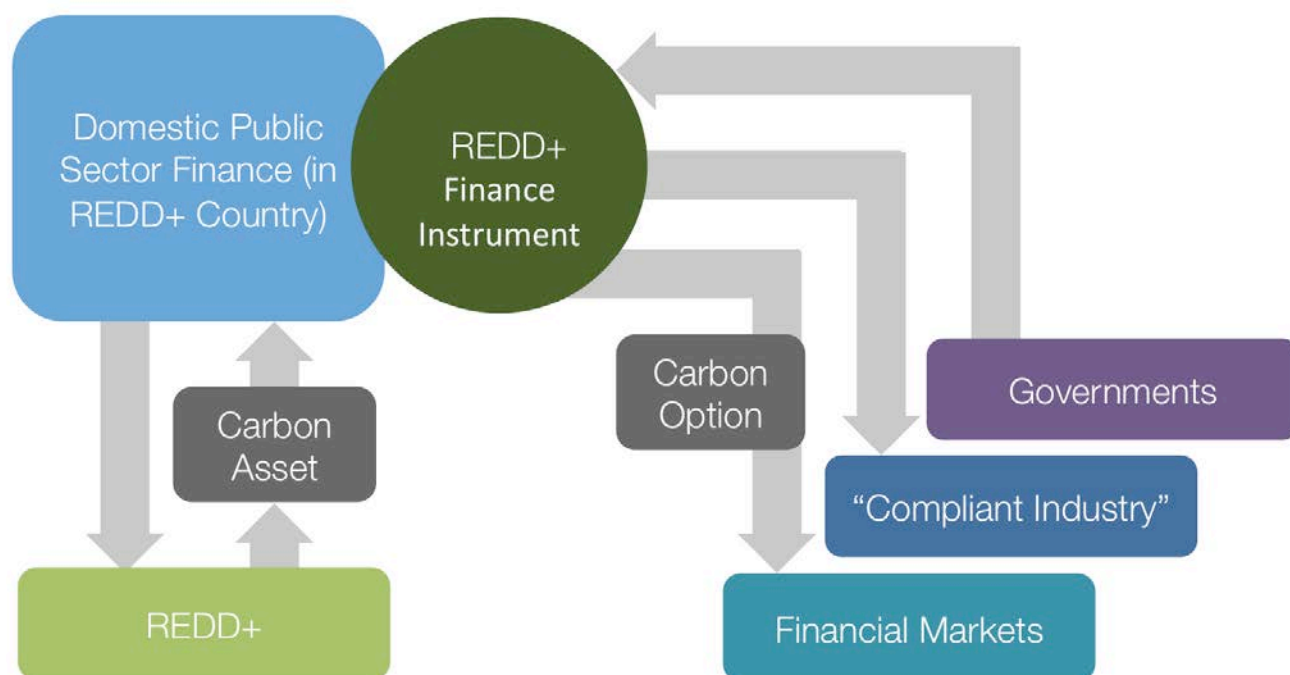
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### Advanced REDD+ Finance

By utilizing the tools just described, as well as others, we can create financial architecture that mitigates risks for the private sector and incentivizes investment.

We want to utilize (relatively) cheap and limited public dollars to provide capital and create/deploy tools and mechanisms to change risks from (large) perceived to (lower) real to (lowest) management risks that the private sector is able and willing to undertake.

## Create Financial Architecture: Public Finance – Reduce Cost and Expand Investor Base



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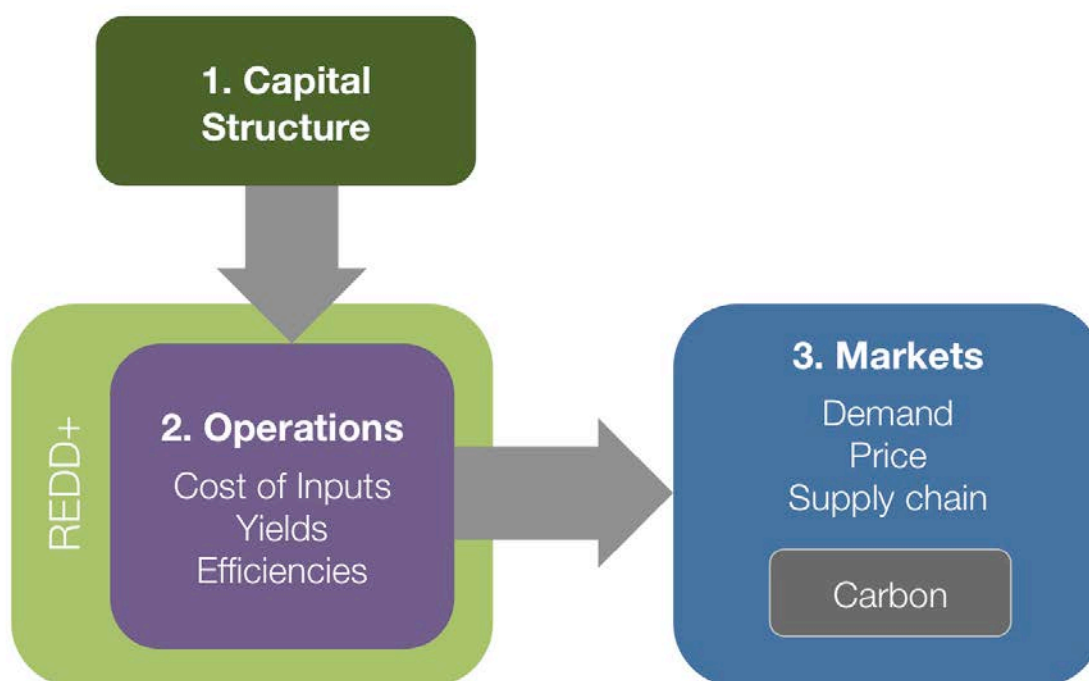
### Advanced REDD+ Finance

An example of a financial mechanism that may reduce the cost of capital for REDD+ and expand the pool of interested investors would be a REDD+ bond.

As discussed previously, the risks facing the private sector to invest directly in REDD+ projects are quite large and often without the associated required returns. However, domestic public funds can be used to support REDD+ activities and projects – including jurisdictional REDD+ programs – and the carbon asset created can be “bundled” as an option into a convertible bond issued by domestic government (national, state, municipal, etc.). This may allow bondholders (other governments, industries within compliance markets that must purchase offsets, and/or funds or investors in traditional financial markets) to accept a lower interest rate in exchange for the option to convert the bond into REDD+ credits, which they can then sell or use as they choose.

The risks facing the private sector of investing in REDD+ in this manner are lower than investing in a traditional REDD+ project, since they can but are not obligated to convert the bond into REDD+ credits, and governments are able to raise lower-cost capital by adding REDD+ benefits into a lower interest rate bond. In this case, the government would likely need credit supply from an entity such as the World Bank or a bilateral to act as buyer of last resort for the REDD+ credits in case a robust market for REDD+ does not develop and bondholders do not wish to convert their bond into REDD+ credits.

## Create Financial Architecture: Three main intervention Points into REDD+ Projects



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We can make REDD+ activities more attractive for the private sector by mitigating perceived and real risks through three main intervention points alluded to earlier and further defined here:

**Capital structure** – Simply put, capital structure describes the type and ratio of financing for a particular activity or project. This is usually comprised of debt and equity finance, the former being cheaper and the latter more expensive. Attracting less expensive capital to REDD+ activities such as grants and other forms of government (or private sector) support, including low-interest rate loans, can make overall financing less expensive and/or allow the equity finance to achieve the returns necessary for the investment to be attractive.

**Operations** – Reducing costs, increasing yields, improving efficiency are all ways to improve operations for REDD+ activities, including sustainably produced commodities. Tools to reduce operations risks include guarantees and insurances.

**Markets** – When we speak of markets, we mean tradable commodities, including private trades (carbon/products) and public trades (trade agreements, carbon purchases), certified commodities (Roundtable-certified beef, sugar, soy, palm oil) and trade finance. We can use price floors, forwards, puts and calls, bundling and stacking, privileged access to markets (EU, US, etc.), and other mechanisms to reduce market risks. In addition, diversifying products and revenue streams through an integrated land use model rather than only relying on potential carbon revenue is a way to reduce risk and also attract various types of finance, including different types of public pools of capital (e.g., agricultural, environmental, development dollars).

## Create Financial Architecture: Enabling More Efficient Capital Structure



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### Advanced REDD+ Finance

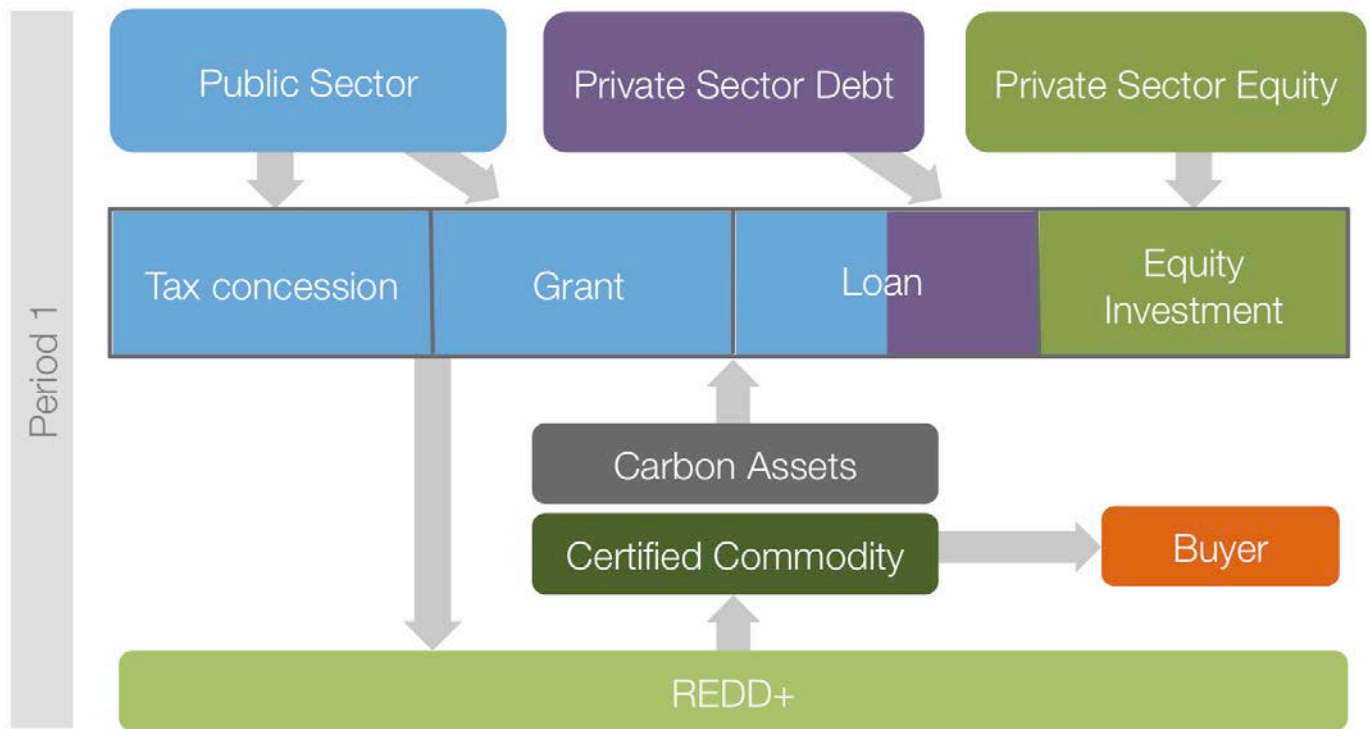
To elaborate further on capital structure – the public sector can reduce the cost of capital by providing grants for a portion of the cost of financing REDD+ activities. For instance, in the illustrative example above, grants can reduce the cost of capital by 20 percent, so less debt and equity are needed for the activities, which are in the early stage of the development cycle.

In addition, the government might provide a loan guarantee that allows the private sector – e.g., a commercial lender – to grant a loan for the activities that might not otherwise be an acceptable risk for the lender. Guarantees are like insurance for institutions providing capital. For instance, commercial banks may be reticent to provide loans to farmers who want to invest in low-till agriculture because the banks are unsure of the default risk or the farmers may not be able to provide sufficient collateral (thus, the banks have high perceived risk of providing loans). In this case, the government may provide a loan guarantee to the banks to lower their risks/costs of providing such capital to farmers, since the government is then responsible for all or part of the debt obligation.

These public sector instruments – grants and loan guarantees – facilitate private sector investment in REDD+ activities early in the development cycle when risks are highest and thus enable REDD+ activities to take place so we can learn from and improve the outcomes of these activities. Over time and through the use of such tools, risks are assuaged and we reach a mature market, in which investment risks are known and managed. Debt financiers may be the majority shareholders in REDD+ activities in this mature market, which decreases the cost of capital since debt is cheaper than equity.



## Attract Capital: Period 1 – Majority Public Finance



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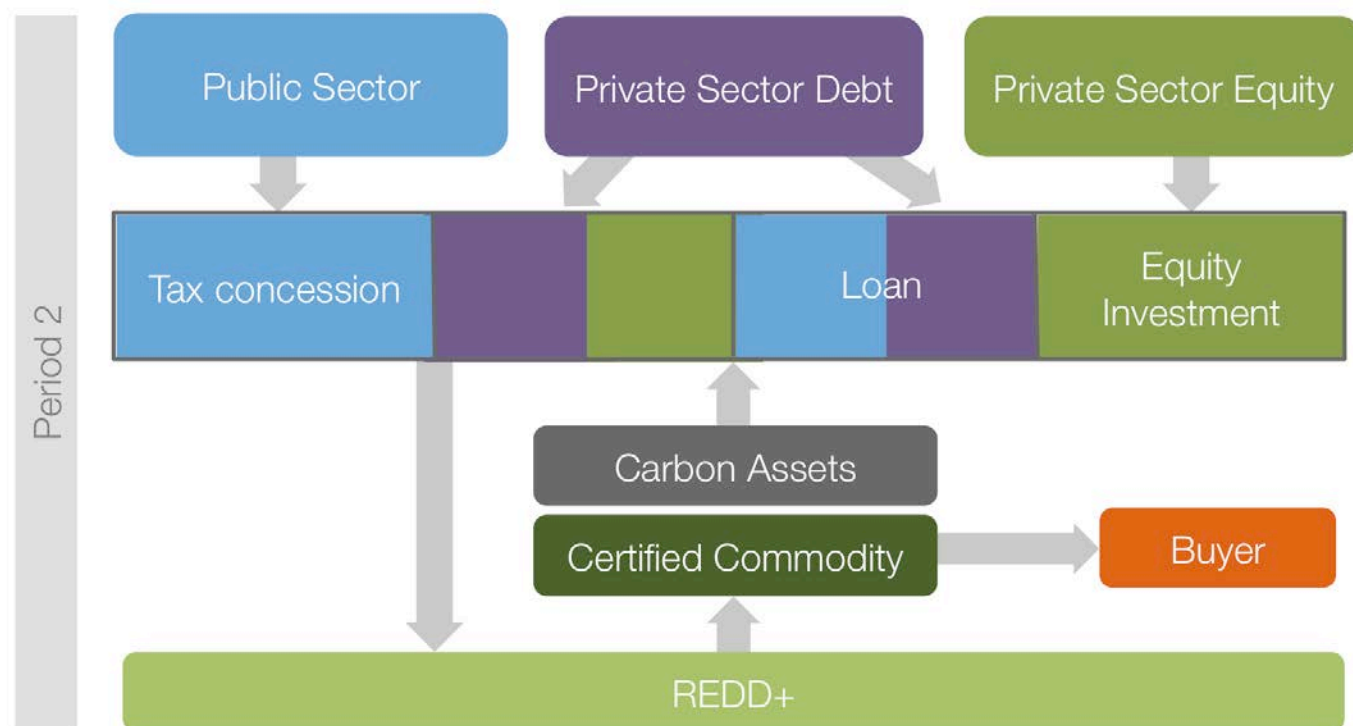
### Advanced REDD+ Finance

We present here a three-slide, illustrative example of public-private architecture for a REDD+ activity that creates a carbon asset and a Roundtable-certified commodity like beef.

Now, in Period 1, the public sector is the largest investor in REDD+, including development agencies (e.g., USAID, DiFD), bilateral agreements (Norway and Indonesia, Brazil), and multilaterals such as the World Bank and UN. Domestic public sector financing also exists, including for low-cost loans for climate smart agriculture (e.g., the ABC program in Brazil). Other forms of public financing could include tax concessions for producers who maintain a certain percentage of their land in forests, or grants to jurisdictions to set up monitoring systems for deforestation and degradation.

On the private sector side, commercial banks often have agriculture finance lines, but there is relatively little smart agriculture lending compared to bank's overall agriculture portfolios. Also, some producers themselves are putting equity finance into changing their practices to be more sustainable, conserve more forests and/or reduce emissions – e.g., practicing no-till agriculture – but this is not substantial yet.

## Attract Capital: Period 2 – Greater Private Sector Investment



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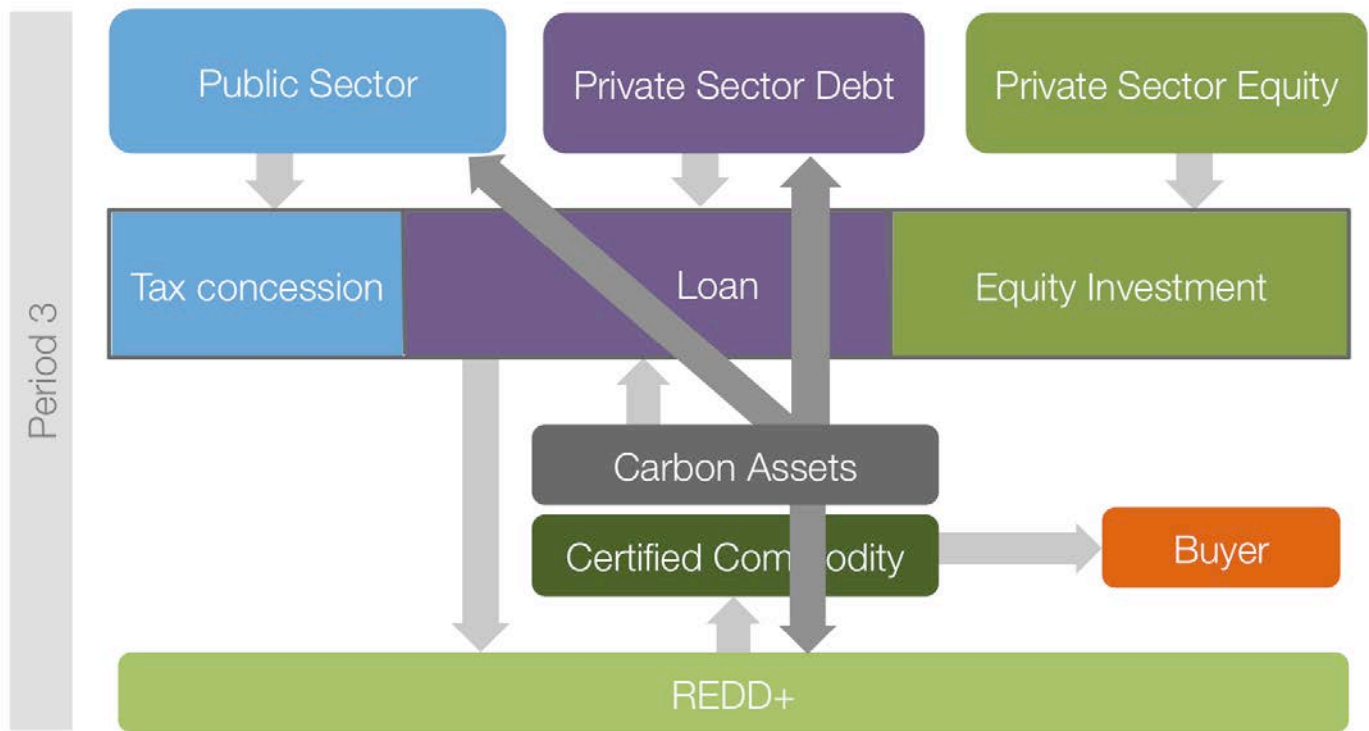
### Advanced REDD+ Finance

Over time, and with the public sector financing described on the previous slide (and other incentives and technical assistance), climate smart no-deforestation agriculture is encouraged to develop. With its development, the risk of investing will decrease because:

- Practices will be tested;
- Yield variations should decrease;
- Costs should be better known and can be planned for; and
- Prices for sustainable commodities should be better known (and hopefully increased).

Thus, in Period 2 (shown here), the private sector – both debt and equity finance shown in purple and green – is likely to be more interested in investing in REDD+ activities such as climate smart agriculture.

## Attract Capital: Period 3 – Majority Private Finance



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### Advanced REDD+ Finance

In Period 3, the private sector will likely provide the majority of financing for REDD+ activities, as this will be a mature market in which the risks are known and manageable through various tools.

Also, payment for carbon from carbon transactions such as carbon markets or country-to-country carbon sales, for example, can help provide additional revenue to the project activity to mitigate any further risks and make these projects competitive on a risk return basis. This outcome is more likely if/as carbon assets become more valuable over time, especially as compliance markets like California and regional carbon markets like Rio de Janeiro or Sao Paulo accept REDD+ credits into their cap-and-trade systems.

## Case Study: Public Finance – Mitigating Risk to Attract Private Finance



- Commodity such as soy, sugar, oil palm, cocoa, coffee, or beef
- Farmers want to come into compliance with zero deforestation certification scheme
- Must meet legal requirements for forest reserves and riparian buffer zones
- Less land with higher productivity means net positive returns BUT...



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### Advanced REDD+ Finance

The objective of creating public-private financial architecture is to attract capital to REDD+ activities, and in the next few slides, we use the Pathway to Finance framework to walk through an illustrative case study of the financing gap and potential types of finance that can be employed in this example.

Our example focuses on commodity producers who want to come into compliance with zero deforestation certification schemes, must meet legal forest reserve and riparian buffer zone requirements, and will achieve higher productivity on land already in production if they implement intensified agriculture and livestock systems.

However, most producers are unable to finance the associated costs with implementing these changes.

## Case Study: Illustrative Costs and Assumptions



Costs	Sources of Funding	Opportunities
Certification & Reserves	Not publicly funded	To ensure security of certified supply, buyers would be willing to: <ul style="list-style-type: none"> <li>• Enter long term contracts</li> <li>• Finance working capital costs at better rates than banks or current traders</li> </ul>
Riparian Zone Restoration	Publicly funded with a 1:1 match by farmer	
Extension / Training	Sufficient funding by supply chain and ODA for 1/3 of farmers	With proven establishment costs and yields: <ul style="list-style-type: none"> <li>• Total return per year on cash is 10% (combination of equity and debt is possible)</li> <li>• Carbon potential is calculated at 4 tons per ha per year (mostly from REDD+)</li> </ul>
Working Capital Loans	Sufficient funding by supply chain and ODA for 1/3 of farmers	
Initial Establishment	No public funding and banks will not lend because of yield (thus cash flow) risk	

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### Advanced REDD+ Finance

Some public funding is available, as illustrated above. For instance, producers can receive public funds for half the costs of riparian zone restoration through domestic environmental programs. Buyers and traders provide some working capital loans and extension/training on new practices, as does some ODA, although there are only enough of these funds to cover about a third of the farmers. Initial establishment costs for the sustainable commodity, auditing costs for certification, and opportunity costs for maintaining forests in reserves are not supported by public funds.

In this example, we assume that buyers want to ensure the supply of the certified commodity and are thus willing to enter into long term contracts and finance working capital loans for their suppliers at better rates than banks or current traders. Additionally, if the estimated establishment costs and yields are proven, returns from the investment are 10% and the carbon potential is 4 tons/ha/year.



## Case Study: Illustrative Financing Gap Analysis



Current Yield (ton/ha)	3
New Yield (no-till) (ton/ha)	4.5
Area to be restored (ha)	50,000
<b>Total Area (ha)</b>	<b>500,000</b>
Total Cost of Certification/Regularization (US\$)	20,000,000
Total Cost of Restoration (US\$)	100,000,000
Total Costs of Intensified Agriculture (US\$)	200,000,000
<b>Total Costs (US\$)</b>	<b>320,000,000</b>
Total current public finance (15 years) (US\$)	20,000,000
10% of farmers expected to self-finance (US\$)	40,000,000
<b>Financing Gap (15 years) (US\$)</b>	<b>260,000,000</b>
<b>Carbon Emissions Reductions (2M/year) (M tons)</b>	<b>30M</b>

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### Advanced REDD+ Finance

In this illustrative example, we assume that yields increase by 50% with the new agricultural practice (e.g., no till). Total area is 500k hectares, of which 10% is along riparian areas and needs to be restored. Costs of certification (auditing) are modest at US\$20M, while the costs of restoration and intensifying the agricultural system are more substantial – \$100M and 200M, respectively. Total financing required is \$320M, although this is reduced to \$260M after current public finance is taken into account.

Our challenge then is to address this financing gap, keeping in mind that the emissions reductions over 15 years for the activity equal 30M tons, which can be used in a bundled or stacked approach to attract finance to this activity.

## Case Study: How can we Address the Financing Gap



- How much to increase public finance?
- How to reduce costs, and increase the amount, of public finance (debt swaps, bonds, bilateral ODA deals)?
- How can public finance better leverage private finance?
- What proportion of total finance should be public versus private over time?
- What roles can markets play and what instruments can be used to attract capital (carbon, certified commodity)?
- How can public money be structured to oblige and support the private sector in becoming more comfortable with operational risks?

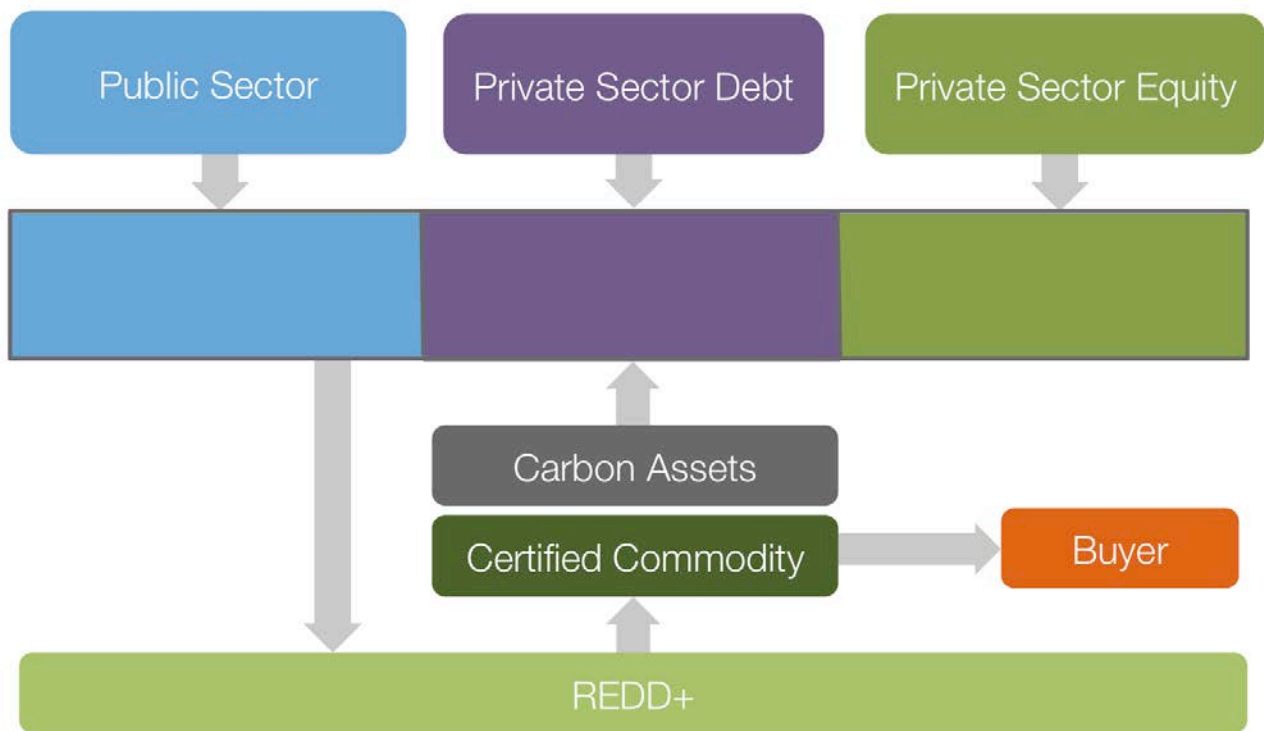
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### Advanced REDD+ Finance

When thinking about how to address the financing gap, the questions above are important to consider. And perhaps most important, one should engage actors in both the public and private sectors to think through these questions and better understand various actors' risks, constraints and concerns related to:

- Producers – implementing changes in agriculture or livestock practices, conserving forests, restoring riparian areas, accessing markets, garnering adequate prices
- Mills/processors – implementing changes in production practices, accessing markets, garnering adequate prices, ensuring supply
- Buyers/traders – ensuring supply, accessing markets, garnering adequate prices
- Commercial lenders and insurance companies – offering financial or insurance products with terms best suited for producers and project developers, achieving low default rates
- Public agriculture, environment, and economic development agencies and ministries – structuring public finance to reduce risks for and attract private capital

Again, communication and relationship-building amongst stakeholders is key to designing the best public private financial architecture and achieving REDD+ goals.



Once these discussions have been undertaken, public and private financiers can work together to create the best architecture to attract the necessary amounts of finance for the identified REDD+ activity.

It is also important to remember that this is an iterative process. Certain finance or risk mitigation tools may be applied with varying degrees of success, so it will be necessary to monitor and adjust the mechanisms as necessary. In fact, a key part of the value in the process of creating financial architecture is to learn which tools work best under which circumstances such that they can be effectively scaled up and/or replicated under similar conditions in other parts of the world, REDD+ activities, etc.

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Advanced REDD+ Finance

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# Thank you

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Thank you, and we welcome comments and questions.

Please feel free to contact David Tepper ([dtepper@forest-trends.org](mailto:dtepper@forest-trends.org)) or Sarah Lowery ([slowery@forest-trends.org](mailto:slowery@forest-trends.org)) about our work under Forest Trends' Public Private Co-Finance Initiative.





Providing capital	Insuring risk	Ensuring environmental integrity
Grants	Guarantees	Buffers and discounts
Debt swaps	Commercial insurance	Bundling and stacking
Bonds	Political risk insurance	
Equity		
Tax concessions		

### Forest Trends

### Advanced REDD+ Finance

Various types of financial tools and mechanisms can be used to provide capital for REDD+, insure risks, and ensure environmental integrity. Many details about – and examples of – these tools can be found on the REDD+ Partnership website ([www.reddpluspartnership.org](http://www.reddpluspartnership.org)). In brief:

#### Providing capital

- Grants are interest-free finance and may be useful in financing an activity that creates a public good but no returns.
- Debt swaps can be utilized when the debtor has difficulty repaying a loan and/or when the financier is interested in the debtor's other assets, such as forests or carbon conserved or created. Some or all of the debt is forgiven in exchange for maintaining a certain amount of land forested, for example.
- Bonds are a low-cost form of debt that corporations or governments issue to fund their activities. Bonds are fairly low-risk and can be aggregated by investors, further lowering risks for investors.
- Equity is an ownership stake in a venture or company and is usually composed of shares or stocks. Equity investors generally expect a higher return on their investment than do bondholders or other debt investors such as commercial banks, as the risks of

directly investing in a company are higher than investing through bonds (bondholders are paid before shareholders).

- Tax concessions are often given by governments to encourage investment in certain activities. For instance, landowners who put a portion of their land into a conservation easement (in the US) receive a break on their taxes.

## Insuring risk

- Guarantees are like insurance for institutions providing capital. For instance, commercial banks may be reticent to provide loans to farmers who want to invest in low-till agriculture because the banks are unsure of the default risk or the farmers may not be able to provide sufficient collateral (banks' high perceived risk of providing loans). In this case, the government may provide a loan guarantee to the banks to lower their risks/costs of providing such capital to farmers, since the government is then responsible for all or part of the debt obligation.
- Commercial insurance is designed to lower the risks for each actor in undertaking an activity by aggregating the risks across a sector and by demanding premiums from policy holders. Examples include crop, flood, car, house, and personal property insurance.
- Political risk insurance lowers the risk of investing in an area or sector in which the policy or regulatory environment may change with a new political party in power. For example, political risk insurance may be helpful to attract investment in a REDD+ project in a country with a history of government appropriation of private land.

## Ensuring environmental integrity

- Carbon buffers and discounts are designed to lower the risk of impermanence for REDD+ projects.
- Bundling is the aggregation of ecosystem services such as carbon sequestration, water, biodiversity and food production into a single payment. This may increase the value of the carbon asset, as the other ecosystem services are also valuable to certain investors/interested parties. Stacking is similar but each service is paid for separately by a different buyer.