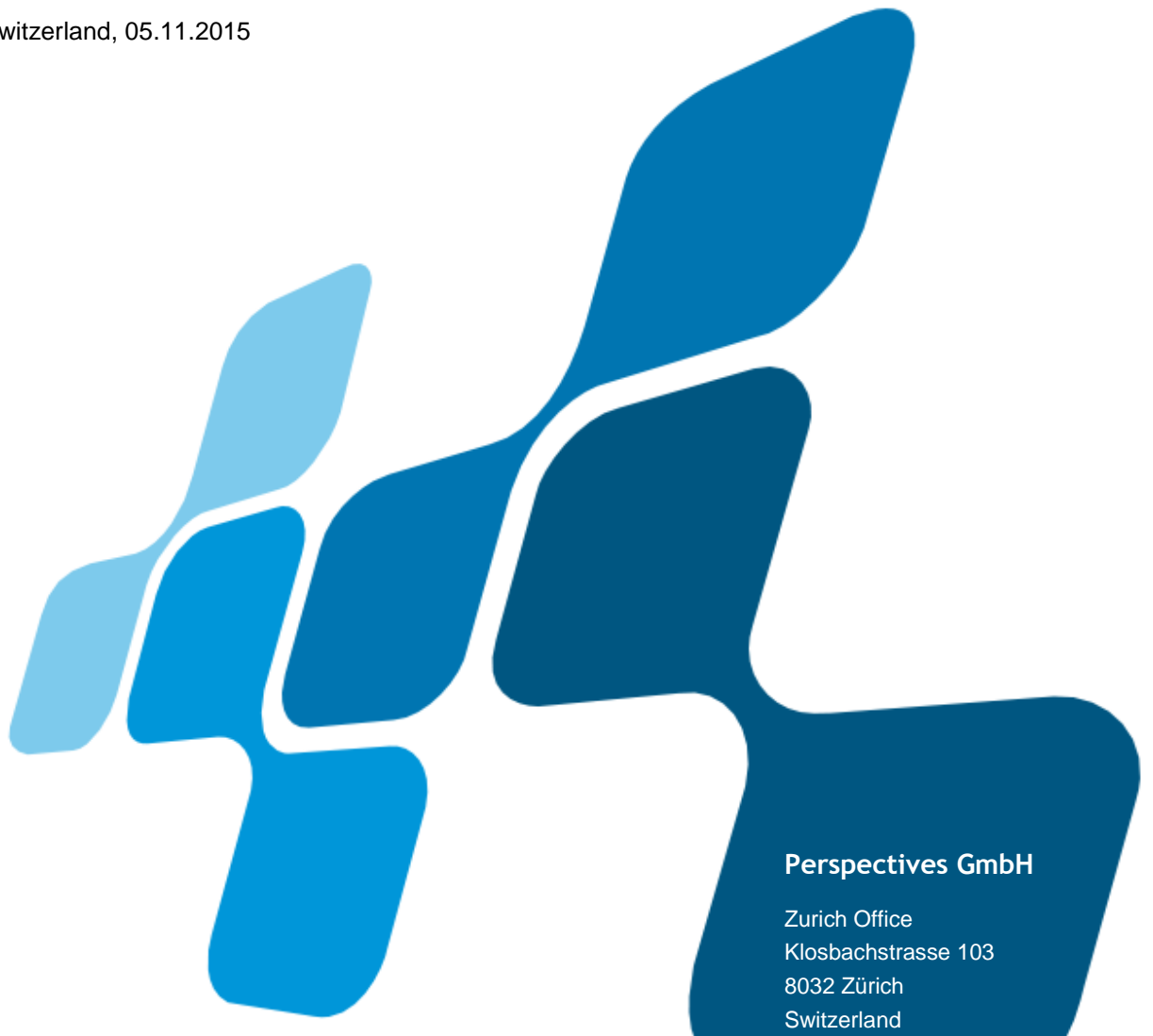


# Can debt for climate swaps be a promising climate finance instrument?

Lessons from the past and recommendations for the future

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## Executive Summary

Debt for climate swaps have been suggested as an instrument of climate finance. The instrument would be built on the concept of debt for nature swaps implemented since the late 1980s. It leverages funds through the acquisition of government debt at discounts to their face value and payout of the debt value to fund mitigation or adaptation projects in the debtor country. This approach becomes the more attractive the higher the discount. Given that discounts are generally inversely proportional to the governance of the debtor country, projects funded by the debt for climate swaps may be negatively impacted by bad governance. Benefits of the debt for climate swap may be eroded through moral hazard that leads to an increase of the debt volume.

Historically, financial volumes of single transactions have been small, while transaction costs were high. Overall, the instrument has promise in specific situations such as highly indebted countries, least developed countries and small island states with recently improved governance and a high level of vulnerability. Developing an assessment approach applying indicators for these four criteria, we find that nine countries with a total debt stock of 22.3 billion USD would be priority candidates for debt for climate swaps. Relaxing the criteria in a way that either high indebtedness or high vulnerability is required beyond good governance, another 19 countries with a debt stock of 97.3 billion USD could be targeted.

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## Abbreviations

CPI	Climate Policy Initiative
DFI	Development Finance International
FSF	Fast Start Finance
GDP	Gross Domestic Product
HIPC	Highly Indebted Poor Countries Initiative
IMF	International Monetary Fund
LDC	Least Developed Countries
MDRI	Multilateral Debt Relief Initiative
NAMA	Nationally Appropriate Mitigation Actions
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SIDS	Small Island Developing States
TFCA	Tropical Forest Conservation Act
UNFCCC	United Nations Framework Convention on Climate Change
USD	US Dollar

## 1. Introduction

**International context.** At the end of 2015, Parties to the United Nations Framework Convention on Climate Change (UNFCCC) will gather in Paris to adopt a new climate agreement which shall come into force in 2020. International climate finance – the provision of financial support to developing countries for mitigation and adaptation actions – constitutes one of the key aspects being discussed. In 2010, developed countries have committed to mobilize USD 100 billion annually by 2020 to support developing countries in reducing greenhouse gas emissions and in adapting to climate change (UNFCCC, 2010, para 98). This financial support can come from a variety of sources, including public and private, bilateral, multilateral and innovative sources (UNFCCC 2010, para 99). Since then, there have been ongoing discussions on these potential sources for international climate finance. One of the potential instruments discussed in this context are so called “debt for climate swaps”.

**Debt for climate swaps – the concept.** Debt for climate swaps operate on the principle that state bonds trading at deep discounts to their face value are bought up, and the debtor invests a domestic currency amount that is higher than the level at which the bond was acquired in mitigation/adaptation activities (see Figure 1). Thereby, a double benefit could be achieved: mitigation or adaptation actions would be mobilized while a country’s debt could be reduced at lower cost for the debtor country than if it would repay the debt. Such swaps involve at least a creditor and a debtor but have in the past in the case of debt for nature swaps often involved a third party, such as a non-governmental organization (NGO), which supports the agreement (Thapa, 1988, p.254). Often, in order to ensure that the agreed investment is actually undertaken, separate funds are set up, which are normally governed by a committee with representatives from the creditor and debtor country (Thapa, 1988, p.254).

**High indebtedness of some developing countries.** In 2014, low income and middle income countries had an average ratio of debt to GDP of 44% – for small island developing states (SIDS) it reached 57% (Hurley, 2015, p.4). While for both groups, the overall ratio has decreased in 2014 substantially compared to 2006, since 2011 trends have tended towards an increase again (Hurley, 2015, p.4). Yet there are geographic variations regarding the indebtedness ratio among SIDS, with the highest value reached in the Eastern Caribbean Currency Union (Hurley, 2015, p.5). Considering that the World Bank and IMF (2015) in their debt risk analysis for low income countries apply a sustainability threshold for public debts at 18-22% of government revenues, this shows the great indebtedness of many countries.

International debt relief initiatives, such as the Highly Indebted Poor Countries Initiative (HIPC) or the Multilateral Debt Relief Initiative (MDRI) have been undertaken since the 1980s. A study by Hurley (2015, p.16) shows that in the case of some SIDS, i.e. São Tomé and Príncipe (MDRI and HIPC) or Guinea-Bissau (HIPC), debt could be significantly reduced in the year of completion of the initiative.

However within the first three years afterwards, debt levels started again to increase. FOSDEH (no date) describes a similar experience in the case of Honduras where in 2013 debt levels were again higher than before the debt relief which took place between 1998-2001 and 2002-2006. It is thus unclear whether debt relief can lead to a long-term solution of the indebtedness problem.

## 2. Lessons from debt for nature swaps for debt for climate swaps

Debt for climate swaps can build on several decades of experience with debt for nature swaps. For a description of approaches often applied for debt for nature swaps, see Thapa (1998, p. 255) and Cassimon (2009, p. 13). Especially during the 1990s, a number of debt for nature swaps were undertaken, particularly for forestry projects. Estimates for the total cumulative volume of financing generated for conservation between 1987 and 1996 resp. 1997 differ, with Thapa (1998, p.257) estimating about USD 163 million and DFI (2009, p.17) estimating that the swap of debts with a face value of USD 133 million resulted in conservation financing of USD 126 million<sup>1</sup>. The OECD (2007, p. 58f.) in turn estimates for the period from 1991-2003 that almost USD 1.1 billion have been generated for conservation measures through debt for environment swaps (stemming from swaps with face value volumes of almost USD 3.6 billion). Half of it (USD 588 million) resulted from one swap involving Poland. Most individual transactions were – compared to overall debt values – rather small (mainly of single digit million USD value) (see DFI, 2009, p.17). In the 2010s, the instrument has become largely dormant, and few new assessments have been undertaken. This may explain why the more recent literature on debt for climate swaps (e.g. Fenton et al., 2014, Mitchell, 2015) has not really made reference to the debt for nature swap literature.

Debt for nature swaps have shown the following advantages and disadvantages which will be equally valid for debt for climate swaps.

### 2.1. Advantages

**Mobilization of new resources for climate change mitigation or adaptation.** Under ideal conditions, more funding is being spent on mitigation or adaptation activities, since the debt for climate swap agreement includes the use of funds for such activities. In non-ideal situations however, such a swap might not necessarily lead to new resources for climate change mitigation or adaptation, if the debtor government may decide to reduce its own spending in the respective field (Cassimon et al. 2009, p.16). Yet, this “crowding out” can occur for many types of internationally funded climate activities and should hence not be seen as a disadvantage specific to debt for climate swaps.

**Financial benefits for the debtor country.** The debt status of the debtor country can improve in the short term, if no new debts are being taken up at the same time. Yet, impacts on economic growth

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<sup>1</sup> Partly, the estimated fund volumes for specific countries in the same year differ, partly, swaps included differ.

through debt for nature swaps tended to be rather small (Thapa, 1988, p. 259; Moye, 2001, p.1). One explanation could be the generally small size of the transactions. Furthermore, the swap design must align the points of time when investments in the agreed activities are due and when debts are cancelled (Cassimon et al., 2009, p.14). Otherwise the debtor country might be in a financially worse situation. Another financial benefit is the improved potential for leveraging private funds for climate-relevant investments as the debt status of the debtor country improves, since the improved debt situation improves the risk rating, making the country more attractive for private investments and reducing the required rates of return on capital (Cassimon et al., 2009, p.17).

**Poverty reduction and co-benefits.** Given that the repayment of the debt that would have to be done in the absence of the debt swap would reduce capital available in the country, the swap means that more financial resources are invested in the country. If spent wisely, they can reduce poverty or pressure on environmental resources (Cassimon et al., 2009, p.17; OECD, 2007, p.21). Especially if the fund goes into adaptation measures, benefits for local communities can be extensive. But also for mitigation measures designed to promote sustainable development, additional benefits such as poverty reduction, rural electrification or alike can be achieved.

**Predictability of funding and potential to attract further funding.** The need for predictable climate finance flows has often been highlighted. Debt for climate swaps could provide predictability since these agreements often span throughout several years (see also DFI, 2009, p.6, 15) where investments in the agreed climate change mitigation or adaptation activities take place in regular intervals. Due to the debt for climate swap, international funding institutions might decide to co-finance such activities in the debtor country (Moye, 2001, p.7; OECD, 2007, p.22), leading hence to even more investments in climate change mitigation or adaptation.

## 2.2. Disadvantages

**Inverse relation between debt for climate swap potential and governance quality.** The higher the discount of the debt to its full redemption value, the more debt reduction is achieved. This means that countries with the highest level of indebtedness, which is usually linked to a low quality of governance are the most attractive targets for this instrument. Moreover, debt for climate swaps generate moral hazard that in the future, debt will again be bought out cheaply (see also Thapa, 1998, p.259). Poor governance makes it highly unlikely that the money allocated to mitigation and adaptation projects will actually be used efficiently; the money is more likely to end up in the pockets of corrupt entities and individuals. Only if the money is administered by entities that are less prone to corruption, such as international implementing entities, this risk might be alleviated to some extent, but it will create significant transaction costs and problems with the national sovereignty of the recipient country.

**Transaction costs.** Debt for nature swap transactions have proven time consuming, particularly for government officials structuring the deal. Similar experiences can be seen for debt for climate swaps. For instance the debt for climate swap between the Paris Club and the Seychelles (see section 3.1) has taken three years to negotiate (Responsible Investor, 2015). Thus, while Mitchell (2015, p.2) highlights the difficulties of some developing countries in accessing climate finance, for instance due to varying requirements of donors, it is questionable whether debt for climate swaps would make it easier for countries to get support for mitigation or adaptation, since such swap agreements tend to require long negotiations. Yet, once such negotiations have been finalized, there is a predictable funding stream.

**Budget squeeze.** There may not be sufficient domestic budget available for the funds that are to be provided by the debtor government for mitigation/adaptation projects under the debt for climate swap agreement and priority public spending areas may suffer from “crowding out”.

**Risk of inflation.** There is a risk that a government could print new money to provide the local currency funds. In this case, the local currency injected into the national economy increases the monetary volume and triggers price increases (Moye, 2001, p.8, OECD, 2007, p.23).

**Perceived sovereignty issues.** In the past, sovereignty issues were perceived as significant by various groups, including governments (Thapa, 1998, p.260; Moye, 2001, p.8). Especially in the case of forestry projects, it was felt that the creditor now controls land areas of the debtor country. Therefore governments have been reluctant to link debt for nature swaps to policy change (Moye, 2001, p.8) and might also be hesitant to do so for transformative change in the course of debt for climate swaps. To overcome this, it is crucial that debtor countries feel ownership for the planned climate change mitigation or adaptation activities. Further, some argue that there are moral constraints towards debt for climate swaps (Hassoun and Frank, 2010; Thapa, 1998, p.260).

### 3. Discussion

#### 3.1. Examples of debt for climate swaps

After three years of negotiation **The Paris Club creditor group, South Africa and the Seychelles** agreed in February 2015 on a debt for climate swap of USD 30 million (Paris Club, 2015, Responsible Investor, 2015, see also Cicero/CPI, 2015, p. 61). Under this swap, The Nature Conservancy division NatureVest supported the Seychelles by means of grants and low interest loans<sup>2</sup> to repurchase almost all (90%) of its debt maturities it had towards members of The Paris Club for a reduced price (Amla, 2015). After conversion to new government debt, the funding will be transferred to the “Seychelles Conservation and Climate Adaptation Trust”. Besides adaptation and

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<sup>2</sup> 23 million USD of impact capital and additional 8 million USD of raised grant funding (The Nature Conservancy, 2015).



marine conservation activities, an endowment for future conservation activities will be set up (Amla, 2015, The Nature Conservancy, 2015).

During the Fast Start Finance (FSF) period, the **USA provided USD 32 million for a debt for nature swap with Indonesia under the Tropical Forest Conservation Act (TFCA)** (Watson et al., 2014, p.7; USA, 2012, p.20, see also Cicero/CPI, 2015). Under this swap, the USA cancelled debt of Indonesia under the condition that they provide the same amount of funding to forest protection measures on Sumatra (Cassimon et al., 2009, p.12)<sup>3</sup>. While this constituted the greatest swap under the TFCA, Cassimon et al. (2009, p.15ff.) argue that its benefit to reduce debt was limited since i) Indonesia had to invest an amount equivalent to the full value of the outstanding principal and interest rates and ii) reflecting the overall indebtedness of Indonesia, the swap's amount was comparably small (addressing only 0.02% of Indonesia's overall debt). However, it provides valuable insights regarding governance. A local oversight body was established in Kalimantan, where parts of the swap program activities take place, the oversight body consists of representatives from the involved institutions/organization (namely one person each from the Indonesian Government, USAID, The Nature Conservancy and WWF Indonesia) as well as a representative from the NGO Pelangi not involved in the swap (TFCA Kalimantan, 2012, KEHATI, 2013b)<sup>4</sup>. One could argue that with such arrangement, each participating party is equally reflected in the oversight body. Yet, Cassimon et al. (2009, p.20) see limited country ownership because the Indonesian government has only one seat while three seats are reserved for other actors.

**Italy provided parts of its FSF commitment as debt swaps**, namely EUR 35 million to Ecuador (Yasuni ITT), approx. EUR 7.7 million EUR to Vietnam (REDD+) as well as EUR 2.9 million to the Philippines (adaptation) (EU, 2013; see also Cicero/CPI, 2015, Openaid Italia, 2015). For the latter, the money shall be channeled to a separate fund account according to the debt repayment schedule (Government of Italy and Government of Philippines, 2012, see also Department of Finance, Philippines, 2011). Projects can be fully or partially funded through Italian funding under this agreement; where they are partially funded the Philippine Government shall "ensure or cause to ensure" the rest of the funding (Government of Italy and Government of Philippines, 2012). The agreement includes various steps for monitoring of project progress:

- In order to annually ensure a project's progress, funding channeled to the separate fund account is only deemed as cancelled, if the project report of this year is accepted by the Management Committee (consisting of both Italian and Philippines' representatives). Full cancellation only

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<sup>3</sup> For a detailed description of the functioning of this swap as well as for a critical assessment of its potential to lead to new financial resources for Indonesia, see Cassimon et al., (2009), p. 13, 15.

<sup>4</sup> A similar approach is being taken in the region of Sumatera, where in addition for a period of three years three additional members representing outside stakeholders (one person each from Transparency International Indonesia, University of Syiah Kuala and Business Link) are part of the oversight committee (KEHATI, 2013a).

takes place at the final approval at the end of a project. (Government of Italy and Government of Philippines, 2012)

- Field visits can be conducted by the Management Committee (Government of Italy and Government of Philippines, 2012).
- The Technical Committee, within which representatives from civil society organizations also have an advisory role, needs to verify the progress of projects (Government of Italy and Government of Philippines, 2012).
- In addition, the Italian Government has reserved the right to conduct additional monitoring activities (Government of Italy and Government of Philippines, 2012).

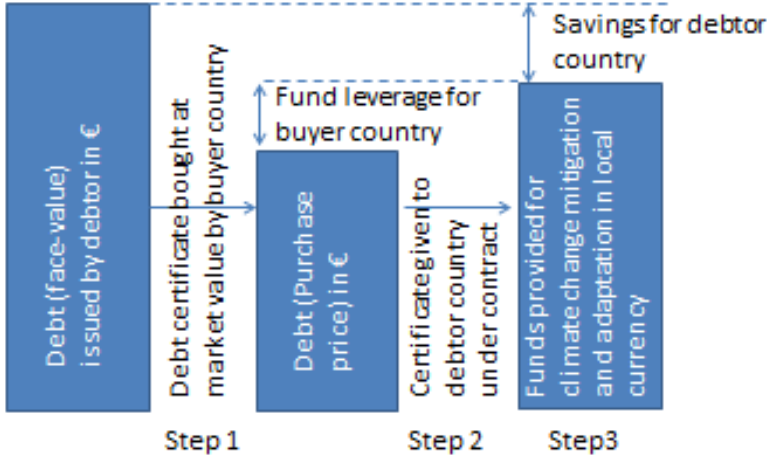
These agreements provide interesting insights into governance structures of such agreements and monitoring mechanisms. In all three cases, funding resulting from the swap is channeled to a separate account or fund. While one can argue that this results in financial structures outside of the budget lines of the government and thereby to greater costs (Cassimon et al., 2009, p. 21ff.), it provides much greater oversight potential of funds, thereby providing improved confidence on the agreed use of funds for creditor countries. In the latter two swaps Oversight or Management Committees have been established where representatives of both involved countries were included. Thereby, creditor countries can receive confidence about the usage of the money and debtor countries can ensure alignment of the projects with overall country strategies and thereby enhance country ownership. The swap between Italy and the Philippines provides an example of conditioning financing (cancellation) on project's progress. However, the structure seems rather heavy given the rather small amount of funding.

The Yasuni ITT Initiative – addressed by the swap between Ecuador and Italy – was eventually scrapped by the Ecuadorian president due to the Ecuadorian government being disappointed about the small amount of international funding that had been mobilized by the initiative. Unfortunately no information could be found on implications of this decision on the swap. Yet, this case highlights i) the need to be able to make adjustments to the swap agreement in case that the overall program is not realized but also ii) to ensure that the intended benefits can be enjoyed for a long time.

### **3.2. Debt for climate swaps - potential relation to climate finance.**

In 2009, debt for climate swaps have been discussed at UNFCCC level (UNFCCC, 2009, see also Cassimon et al., 2009, p.8), yet this did not lead to inclusion of such instruments in the Copenhagen Accord. However, as indicated above, the USA and Italy have already accounted debt for climate swaps under their FSF commitment. Fenton et al. (2014) discuss the potential of debt for climate swaps for climate finance, suggesting that in certain cases already the relief of interest rates would

outweigh current levels of international climate finance flows<sup>5</sup>. The potential approach for debt for climate swaps is displayed in figure 1.



**Figure 1 Potential approach of debt for climate swaps** (display of relation of funding volumes is arbitrarily)

For debt for climate swaps to be accountable to international climate finance commitments, Fenton et al. (2014, p.651) argue that only bilateral debts (incurred towards industrialized countries) could be used for such swaps, since external debts (towards companies, other countries or multinational institutions) would not provide funding from those who committed to mobilize international climate finance. Such a narrow definition would be highly constraining, as in many cases, bilateral debts constitute only a small share of the overall indebtedness of a country (for small states, see for instance Partow, no date). Thus, the definition of the term “mobilized” becomes important. In our view it does not matter whether the initial debt is held by an industrialized country, a company or another developing country. What is crucial is the determination whether under baseline conditions a debt swap would not have occurred; then a swap of such debts could be accounted for as “mobilized” finance, as long as the funding triggering the swap (used for buying the debt certificate) is mobilized by government action. Yet, there are also voices overall questioning the appropriateness of accounting debt for climate swaps towards climate finance commitments, indicating that the underlying debt is “unjust” and thus should be cancelled anyway (the Guardian, 2014).

Mitchell (2015, p.4f.) has proposed a Commonwealth multilateral debt for climate swap initiative. The approach of this initiative would differ from “conventional” debt for climate swaps, inasmuch it would have a long term perspective. Here a group of creditors would agree to reduce the debt owed by a debtor country to different multilateral institutions. To do so, they would use part of their international

<sup>5</sup> For instance Bangladesh had received during the FSF period USD 357.57 million in FSF, while paying interest rates of USD 178 million on long term bilateral loans and repaying USD 1.3 billion in such loans (Fenton et al., 2014, p.652).

climate finance and transfer it to the multilateral institutions – thereby reducing the debt from the participating debtor country towards this institution<sup>6</sup>. In turn, the debtor country would need to commit to providing annually a pre-defined amount of local currency (in total in the volume “equivalent of annual multilateral concessional debt service obligations”) to a local trust fund, which could use this to finance mitigation and adaptation activities (Mitchel, 2015, p.5). Interest could be generated from the funds in the local trust fund. Thus, the benefit would be further increased.

### 3.3. Requirements for successful debt for climate swap implementation

**On the creditor side.** Creditors need to be prepared to provide additional funding and to sell an existing debt at a price lower than face value (Partow, no date, p.5, 8). In order to provide a meaningful critical mass for a debt for climate swap, creditor countries could form groups (as is also done by The Paris Club) to be able to provide greater amounts of debt relief to a debtor country. If swaps were to reduce funding flows otherwise provided by creditors, this might reduce interest of debtors to participate in such swaps (see also DFI, 2009, p.15). Further, creditors ought to be willing to provide capacity building support to local institutions where required (see O’Sullivan, 2013, p.14).

**On the debtor side.** Part of the agreement would constitute the commitment of the debtor country to use the funds for climate change mitigation or adaptation purposes (Partow, no date, p.8). In order to provide creditors the confidence needed that funding is used in the agreed way, debtor countries need to have strong governance systems and be willing to implement a monitoring and reporting system with clear indicators to document progress, as is for instance being done in the above mentioned agreement between the USA and Indonesia. Another tool to prove the agreed use is the setup of a separate fund or account (Partow, no date, p.8) – hence the willingness of a debtor country to establish such a fund if it does not yet exist is important. Further, the debtor country needs to have the budgetary means to invest the agreed amount of funding in climate change mitigation or adaptation measures. In this context, it needs to be avoided that the funds are just generated by printing money, as otherwise inflation will be triggered. Further, only debtors with unsustainable debt levels should participate in a swap (OECD, 2007, p.25f.) – for low income countries World Bank and IMF (2015) apply in their debt risk analysis a threshold for public debts at 18-22% of government revenues. According to Moye (2001, p.26) debt swaps should ideally be embedded in the debtor’s overall strategy for debt reduction.

**Country ownership.** In order to ensure alignment with national strategies and plans, countries which have already climate change mitigation or adaptation plans in place could be especially attractive for such swaps (Fenton et al., 2014, p.652). Further, debtor countries need to play a major role in the

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<sup>6</sup> According to the proposal the funding provided per donor country should be proportionate to the committed funding from this donor country to the respective debtor country (Mitchel, 2015).

decision making of funding being spent. This is crucial to counter arguments of perceived state sovereignty issues.

**Ensure longevity.** In order to ensure successful mitigation and adaptation benefits, the agreements need to ensure that the measures undertaken will remain in place for a long time (see section 3.1).

For identifying potential debtor countries, further criteria could be applied. For instance, for programs under the TFCA the US relies on political criteria, including the country being a democracy and not conducting any violations of internationally recognized human rights, as well as on economic criteria (US Aid, 2015).

### 3.4. Identification of countries for which debt for climate swap could be relevant

Different views exist regarding countries for which debt for climate (or nature) swaps would be most relevant. According to the OECD (2007, p.10) debt for nature swaps have been used in low-income countries. Similarly, debt for climate swaps could focus on low-income countries. One suggestion is that such swaps would be best applicable to debts owed by HIPC members towards creditors who have not yet participated in debt relief programs and to debts owed by middle income countries or low income countries which are not heavily indebted poor countries (DFI, 2009, p.12). Such approach would ensure that additional debts than those under HIPC<sup>7</sup> are being addressed. For a list of SIDS, LDCs and HIPC, see Appendix I. Fenton et al. (2014, p.652) propose to focus on vulnerable low income countries with high long term bilateral debts in relation to long term external debts (Fenton et al., 2014, p.652). In order to counter arguments regarding potential inverse relations between debt swap potential and governance quality, one could also consider the country's ranking according to the Corruption Perception Index of Transparency International.

In the previous chapters possible requirements for identifying potential debtor countries have already been described. In the climate context, low income, highly vulnerable countries could be of particular interest for climate swaps (see also Fenton et al., 2014) since they need to spend the greatest amount of finance for adaptation measures. Similarly, debt for nature swaps have focused in Africa on vulnerable countries, in this case vulnerable to desertification (OECD, 2007, p.10). Furthermore, countries whose debt or challenges in repaying debt can be linked to the consequences of natural disasters, e.g. SIDS devastated by tropical cyclones would be particularly good candidates. Such approach is also reflected by the IMF Catastrophe Containment and Relief Trust which provides – under specific conditions – debt relief to low income countries hit by natural disasters. Thereby countries can use the funding for tackling the disaster impact instead of repaying debts (Cabezon et al., 2015, p.21; IMF, 2015b). According to Acevedo (2014, p.18) the debt growth rate increases in

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<sup>7</sup> Which has been superseded by the Multilateral Debt Relief Initiative (Cassimon et al., 2009, p.11).

Caribbean states after moderate storms or floods and in the case of severe floods increases significantly. While his models indicates a decrease in the debt rate after severe storms<sup>8</sup>, it showed for countries of the Eastern Caribbean Currency Union (mostly smaller countries), also after severe storms a strong increase of the debt ratio (Acevedo, 2014, p.20). Therefore, SIDS which are also highly vulnerable to climate change impacts such as sea level rise could be interesting candidates for such swaps. Weary and Batista (2011) as well as Mitchell (2015) also note the potential of debt for climate swaps for SIDS.

Thus, from the preceding discussion the following four general criteria can be derived in order to identify countries for which debt for climate swaps would be appropriate:

- Country is either an LDC, HIC or SIDS
- High level of indebtedness (external debt  $\geq$  150 % of exports),
- Governance improvement (improvement of at least 5 percentage points in the Corruption Perception Index by Transparency International between 2005 or a later year and 2014<sup>9</sup>), and
- Highly vulnerable (above average vulnerability rating<sup>10</sup> in the Notre Dame Global Adaptation Index Rating).

One could also relax the approach inasmuch as only three criteria, including the governance criterion would have to be fulfilled.

While one would need to conduct individual country by country analysis, Figure 2 shows countries which fulfil the criteria identified above (marked in dark blue for the nine countries<sup>11</sup> fulfilling all four and light blue for the 19 countries<sup>12</sup> fulfilling three criteria). A detailed listing of all criteria values is found in Appendix 1.

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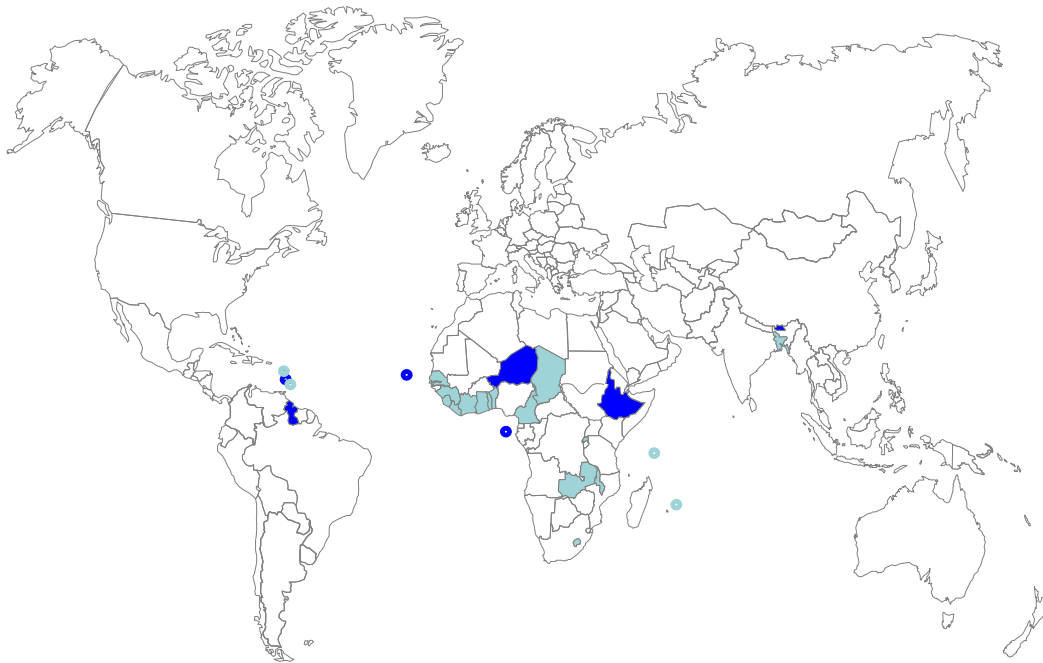
<sup>8</sup> According to Acevedo (2014, p.22), there is weak evidence that this could be due to more aid being received after severe storms than after floods.

<sup>9</sup> Where no data was available for 2005 but for 2004, data for 2004 has been used.

<sup>10</sup> The average index value for all evaluated countries reached 0.440 in 2013.

<sup>11</sup> These countries are: Bhutan, Cabo Verde, Djibouti, Ethiopia, Guyana, Niger, Samoa, São Tomé and Príncipe, St. Vincent and the Grenadines.

<sup>12</sup> These countries are: Bangladesh, Barbados, Benin, Cameroon, Chad, Cote d'Ivoire, Dominica, Ghana, Guinea, Lesotho, Liberia, Malawi, Mauritius, Rwanda, Senegal, Seychelles, Sierra Leone, Togo, Zambia.



**Figure 2 Countries fulfilling indebtedness, governance and vulnerability criteria**

Data sources: Transparency International (2005, 2006, 2007 and 2014), World Bank (2015a, 2015b) and ND Gain (2013)

It must however be noted that more countries, especially SIDS, might fulfill these criteria, yet there was either a lack of data from the Corruption Perception Index by Transparency International<sup>13</sup>, the World Bank data<sup>14</sup> or the Notre Dame Global Adaptation Index<sup>15</sup>. Thus there is a strong need to improve data availability for SIDS. Since simply suggesting all SIDS to be eligible might include countries with rather high per capita incomes like Singapore, the Bahamas and Trinidad and Tobago and thus is not recommended by us.

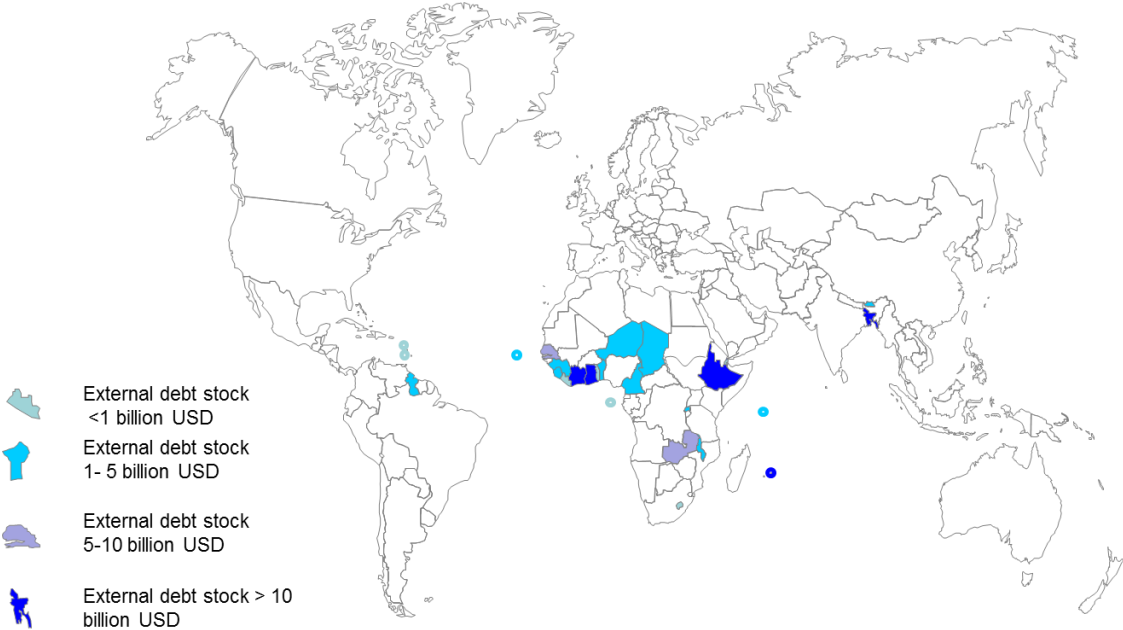
The external debt volume of these potentially eligible countries is shown in Figure 3. It reaches 22.3 billion USD for the countries fulfilling all four criteria, and additional 97.3 billion USD for those that

<sup>13</sup> For the following LDCs, HIPC members and SIDS, no data was available in the Corruption Perception Index: Antigua and Barbuda, Belize, Cook Islands, Equatorial Guinea, Fiji, Grenada, Kiribati, Maldives, Marshall Islands, Micronesia, Nauru, Niue, Palau, Solomon Islands, South Sudan, St. Kitts and Nevis, St. Lucia, Tonga, Tuvalu and Vanuatu.

<sup>14</sup> For the following LDCs, HIPC members and SIDS, no data was available regarding their indebtedness: Antigua and Barbuda, Bahamas, Bahrain, Barbados, Cook Islands, Cuba, Equatorial Guinea, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Singapore, South Sudan, Somalia, St. Kitts and Nevis, Suriname, Timor-Leste, Trinidad and Tobago and Tuvalu.

<sup>15</sup> For the following LDCs, HIPC members and SIDS, no data was available in the Notre Dame Vulnerability Index: Cook Islands, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, South Sudan and Tuvalu.

fulfil three criteria. Yet here it must be noted that in most previous cases, debt for nature or climate swaps addressed only a small share of the overall debts of a country and that the volume of funds used for nature conservation respectively climate change mitigation or adaptation measures has been smaller than the face value of the debt (see sections 2 and 3.1). Thus the final potential for debt for climate swaps is much smaller than the overall external debt value.



**Figure 3 Volume of external debt stock of countries fulfilling three or four criteria for indebtedness, governance and vulnerability.**

Data sources: Transparency International (2005 and 2014) (for TTO Transparency International 2004 and 2014), World Bank (2015a, 2015b) and ND Gain (2013)

Since for several SIDS the data for all indicators was not available, the following section discusses in more detail why debt for climate swaps could be of interest for SIDS:

- **High indebtedness.** As indicated above, several SIDS have particular high debt to GDP ratios (for further challenges of SIDS, see Hurley, 2015, p. 5ff.). While this could imply that their overall indebtedness might not improve significantly through debt for climate swaps, their resilience benefit might nevertheless be significant. Some SIDS are or might be qualified for participating in the HIPC Initiative (i.e. Guinea-Bissau and Haiti), others have already participated in some form of debt restructuring or debt relief and some, i.e. Antigua and Barbuda and Belize have participated in debt for nature swaps already (IMF, 2015a; Hurley, 2015, p. 15, 19).
- **Governance.** While some of the smaller countries are not included in the 2014 Corruption Perception Index of Transparency International (2014), those SIDS that are ranked are found on all levels of the ranking with Barbados ranked best of SIDS (rank 17) and Haiti worst (rank 161).



Some of the SIDS have improved governance markedly over the last years: Cuba, Dominica, Mauritius, São Tomé and Príncipe, and the Seychelles for instance have increased their scoring by 8, 13, 12, 15 and 15 percentage points between 2005-7 and 2014 (Transparency International, 2005, 2006, 2007, and 2014).

- **National adaptation or mitigation plans.** More than ten SIDS have submitted National Adaptation Programs of Action under the UNFCCC (UNFCCC, 2015a) and five SIDS (Barbados, Cook Island, Dominica, Dominican Republic, Vanuatu) are currently seeking support for their plans for Nationally Appropriate Mitigation Actions (NAMA) (UNFCCC, 2015b, NAMA database (2011)), and could hence orient potential activities under a debt for climate swap along these national strategies.
- **Vulnerability.** Countries that are particularly vulnerable to climate change could be potential candidates for debt for climate swaps, since some of these disasters impact their indebtedness (see above). Many SIDS belong to the more or even most vulnerable countries to climate change, with for instance Solomon Islands and Papua New Guinea being among the ten most vulnerable countries according to the vulnerability criterion in the Notre Dame Global Adaptation Index (2013).

#### 4. Conclusions

The extensive investments required for mitigating and adapting to climate change require the identification of additional sources of climate finance. One potential source discussed is debt for climate swaps. They have the potential to reduce a country's debt as well as to lead to climate change mitigation and adaptation measures. Yet in order to actually being able to fulfill this potential, they need to be designed carefully.

Overall, debt for climate swaps seem to be a niche instrument for countries that have in the past suffered from bad governance, but whose governance has improved. Particularly interesting candidates are those countries with significantly improved governance (e.g. shown on the Transparency International Corruption Perception Index) that are either particularly indebted or particularly vulnerable to the consequences of meteorological extreme events. We show that an index-based approach to identifying such countries can be applied, and that these countries have a sufficiently high debt stock to make the instrument of debt for climate swaps relevant in quantitative terms, even if the potential for debt for climate swaps can be expected to be much smaller than the overall debt stock. However, particularly with regards to small SIDS, data for applying the index-based approach are currently lacking and should be collected in the future. With arrangements which address the concerns addressed above, debt for climate swaps could be an interesting approach towards ensuring the implementation of climate change mitigation and adaptation activities in countries with high indebtedness, improved governance and high vulnerability.

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## 5. Appendix I: Country analysis according to proposed indicators

Country Name	SID S	LDC	HIPC	External debt stocks, total (billion current US\$, 2013)	Debt/ Exports (%)	Change in Corruption Performance Index 2005-2014 (percentage points)	Vulnerability indicator of the Notre Dame Global Adaptation Index (2013)	Eligibility 4 criteria	Eligibility 3 criteria
Afghanistan		X	X	2.577	72	-13	0.607	No	No
Angola		X		2.400	35	-1	0.547	No	No
Antigua and Barbuda	X			#N/A	#N/A	#N/A	0.521	?	?
Bahamas	X			#N/A	#N/A	-2 (since 2010)	0.454	No	No
Bahrain	X			#N/A	#N/A	-9	0.460	No	No
<b>Bangladesh</b>		<b>X</b>		<b>27.804</b>	<b>84</b>	<b>+8</b>	<b>0.539</b>	<b>No</b>	<b>Yes</b>
<b>Barbados</b>	<b>X</b>			<b>#N/A</b>	<b>#N/A</b>	<b>+5</b>	<b>0.456</b>	<b>No</b>	<b>Yes</b>
Belize	X			1.249	115	#N/A	0.454	No	No
<b>Benin</b>		<b>X</b>	<b>X</b>	<b>2.367</b>	<b>126</b>	<b>+10</b>	<b>0.612</b>	<b>No</b>	<b>Yes</b>
<b>Bhutan</b>		<b>X</b>		<b>1.480</b>	<b>222</b>	<b>+5 (since 2006)</b>	<b>0.482</b>	<b>Yes</b>	<b>Yes</b>
Bolivia			X	7.895	59	+10	0.433	No	No
Burkina Faso		X	X	2.564	136	+4	0.548	No	No
Burundi		X	X	0.683	307	-3	0.645	No	No
<b>Cabo Verde</b>	<b>X</b>			<b>1.484</b>	<b>164</b>	<b>+8 (since 2007)</b>	<b>0.507</b>	<b>Yes</b>	<b>Yes</b>
Cambodia		X		6.427	64	-2	0.536	No	No
<b>Cameroon</b>			<b>X</b>	<b>4.922</b>	<b>61</b>	<b>+5</b>	<b>0.493</b>	<b>No</b>	<b>Yes</b>
Central African Republic		X	X	0.574	#N/A	0 (since 2006)	0.564	No	No
<b>Chad</b>		<b>X</b>	<b>X</b>	<b>2.216</b>	<b>#N/A</b>	<b>+5</b>	<b>0.631</b>	<b>No</b>	<b>Yes</b>
Comoros	X	X	X	0.146	163	0 (since 2006)	0.571	No	No
Congo, Dem. Rep.		X	X	6.082	46	+4 (since 2007)	0.607	No	No

Country Name	SID S	LDC	HIPC	External debt stocks, total (billion current US\$, 2013)	Debt/Exports (%)	Change in Corruption Performance Index 2005-2014 (percentage points)	Vulnerability indicator of the Notre Dame Global Adaptation Index (2013)	Eligibility 4 criteria	Eligibility 3 criteria
Congo, Rep.			X	3.451	56	+1 (since 2006)	0.577	No	No
Cook Islands	X			#N/A	#N/A	#N/A	#N/A	?	?
<b>Cote d'Ivoire</b>			<b>X</b>	<b>11.288</b>	<b>87</b>	<b>+11 (since 2006)</b>	<b>0.511</b>	<b>No</b>	<b>Yes</b>
Cuba	X			#N/A	#N/A	+8	0.414	No	No
<b>Djibouti</b>		<b>X</b>		<b>0.833</b>	<b>177</b>	<b>+5 (since 2007)</b>	<b>0.556</b>	<b>Yes</b>	<b>Yes</b>
<b>Dominica</b>	<b>X</b>			<b>0.293</b>	<b>173</b>	<b>+13 (since 2006)</b>	<b>0.398</b>	<b>No</b>	<b>Yes</b>
Dominican Republic	X			23.831	149	+2	0.447	No	No
Equatorial Guinea		X		#N/A	#N/A	#N/A	0.480	No	No
Eritrea		X	X	0.946	#N/A	-8	0.644	No	No
<b>Ethiopia</b>		<b>X</b>	<b>X</b>	<b>12.557</b>	<b>210</b>	<b>+11</b>	<b>0.561</b>	<b>Yes</b>	<b>Yes</b>
Fiji	X			0.797	35	#N/A	0.509	No	No
Gambia, The		X	X	0.523	157	+2	0.632	No	No
<b>Ghana</b>			<b>X</b>	<b>15.832</b>	<b>98</b>	<b>+13</b>	<b>0.496</b>	<b>No</b>	<b>Yes</b>
Grenada	X			0.586	279	#N/A	0.425	?	?
<b>Guinea</b>		<b>X</b>	<b>X</b>	<b>1.198</b>	<b>60</b>	<b>+6 (since 2006)</b>	<b>0.549</b>	<b>No</b>	<b>Yes</b>
Guinea-Bissau	X	X	X	0.277	181	-3 (since 2007)	0.613	No	No
<b>Guyana</b>	<b>X</b>		<b>X</b>	<b>2.303</b>	<b>150</b>	<b>+5</b>	<b>0.518</b>	<b>Yes</b>	<b>Yes</b>
Haiti	X	X	X	1.271	83	+1	0.570	No	No
Honduras			X	6.831	107	+3	0.469	No	No
Jamaica	X			13.790	319	+2	0.474	No	No
Kiribati	X	X		#N/A	#N/A	#N/A	#N/A	?	?
Lao PDR		X		8.615	283	-8	0.517	No	No

Country Name	SID S	LDC	HIPC	External debt stocks, total (billion current US\$, 2013)	Debt/ Exports (%)	Change in Corruption Performance Index 2005-2014 (percentage points)	Vulnerability indicator of the Notre Dame Global Adaptation Index (2013)	Eligibility 4 criteria	Eligibility 3 criteria
<b>Lesotho</b>		X		<b>0.885</b>	<b>98</b>	<b>+15</b>	<b>0.562</b>	<b>No</b>	<b>Yes</b>
<b>Liberia</b>		X	X	<b>0.542</b>	<b>65</b>	<b>+15</b>	<b>0.610</b>	<b>No</b>	<b>Yes</b>
Madagascar		X	X	2.849	89	0	0.585	No	No
<b>Malawi</b>		X	X	<b>1.558</b>	<b>112</b>	<b>+5</b>	<b>0.550</b>	<b>No</b>	<b>Yes</b>
Maldives	X	X		0.821	25	#N/A	0.492	No	No
Mali		X	X	3.423	104	+3	0.606	No	No
Marshall Islands	X			#N/A	#N/A	#N/A	#N/A	?	?
Mauritania		X	X	3.570	126	-1 (since 2006)	0.627	No	No
<b>Mauritius</b>	<b>X</b>			<b>10.919</b>	<b>167</b>	<b>+12</b>	<b>0.416</b>	<b>No</b>	<b>Yes</b>
Micronesia, Fed. Sts.	X			#N/A	#N/A	#N/A	#N/A	?	?
Mozambique		X	X	6.890	131	+3	0.559	No	No
Myanmar		X		7.367	65	+3	0.503	No	No
Nauru	X			#N/A	#N/A	#N/A	#N/A	?	?
Nepal		X		3.833	175	+4	0.505	No	No
Nicaragua			X	9.601	192	+2	0.445	No	No
Niue	X			#N/A	#N/A	#N/A	#N/A	?	?
<b>Niger</b>		<b>X</b>	<b>X</b>	<b>2.656</b>	<b>185</b>	<b>+11</b>	<b>0.606</b>	<b>Yes</b>	<b>Yes</b>
Palau	X			#N/A	#N/A	#N/A	#N/A	?	?
Papua New Guinea	X			21.733	319	+2	0.640	No	No
<b>Rwanda</b>		<b>X</b>	<b>X</b>	<b>1.690</b>	<b>140</b>	<b>+18</b>	<b>0.593</b>	<b>No</b>	<b>Yes</b>
<b>Samoa</b>	<b>X</b>	<b>X</b>		<b>0.447</b>	<b>199</b>	<b>+7 (since 2007)</b>	<b>0.535</b>	<b>Yes</b>	<b>Yes</b>
<b>São Tomé and Príncipe</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>0.214</b>	<b>275</b>	<b>+15 (since 2007)</b>	<b>0.563</b>	<b>Yes</b>	<b>Yes</b>

Country Name	SID S	LDC	HIPC	External debt stocks, total (billion current US\$, 2013)	Debt/ Exports (%)	Change in Corruption Performance Index 2005-2014 (percentage points)	Vulnerability indicator of the Notre Dame Global Adaptation Index (2013)	Eligibility 4 criteria	Eligibility 3 criteria
Senegal		X	X	5.223	138	+11	0.547	No	Yes
Seychelles	X			2.714	198	+15	0.388	No	Yes
Sierra Leone		X	X	1.395	64	+9	0.597	No	Yes
Singapore	X			#N/A	#N/A	-10	0.405	No	No
Solomon Islands	X	X		0.204	36	#N/A	0.673	No	No
Somalia		X	X	3.054	#N/A	-13	0.687	No	No
South Sudan		X		#N/A	#N/A	#N/A	#N/A	?	?
St. Kitts and Nevis	X			#N/A	#N/A	#N/A	0.484	?	?
St. Lucia	X			0.486	79	#N/A	0.334	No	No
<b>St. Vincent and the Grenadines</b>	<b>X</b>			<b>0.293</b>	<b>151</b>	<b>+6 (since 2007)</b>	<b>0.491</b>	<b>Yes</b>	<b>Yes</b>
Sudan		X	X	22.416	383	-10	0.638	No	No
Suriname	X			#N/A	#N/A	+4	0.403	No	No
Tanzania		X	X	13.024	154	+2	0.547	No	No
Timor-Leste	X	X		#N/A	#N/A	+2 (since 2006)	0.586	No	No
<b>Togo</b>		<b>X</b>	<b>X</b>	<b>0.903</b>	<b>52</b>	<b>+5 (since 2006)</b>	<b>0.582</b>	<b>No</b>	<b>Yes</b>
Tonga	X			0.199	205	#N/A	0.512	No	No
Trinidad and Tobago	X			#N/A	#N/A	+6 (since 2006)	0.383	No	No
Tuvalu	X	X		#N/A	#N/A	#N/A	#N/A	No	No
Uganda		X	X	4.361	85	+1	0.570	No	No
Vanuatu	X	X		0.132	35	#N/A	0.559	No	No
Yemen, Rep.		X		7.671	80	-8	0.642	No	No



<b>Country Name</b>	<b>SID S</b>	<b>LDC</b>	<b>HIPC</b>	<b>External debt stocks, total (billion current US\$, 2013)</b>	<b>Debt/ Exports (%)</b>	<b>Change in Corruption Performance Index 2005-2014 (percentage points)</b>	<b>Vulnerability indicator of the Notre Dame Global Adaptation Index (2013)</b>	<b>Eligibility 4 criteria</b>	<b>Eligibility 3 criteria</b>
<b>Zambia</b>		<b>X</b>	<b>X</b>	<b>5.596</b>	<b>51</b>	<b>+12</b>	<b>0.521</b>	<b>No</b>	<b>Yes</b>

Original data sources: Transparency International (2005, 2006, 2007 and 2014), World Bank (2015a, 2015b) and ND Gain (2013), own calculations



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