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# A new model for *Development Impact Bonds* and its application to Girl Move Foundation.

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## Abstract

Payment by Results mechanisms in social domains have been gaining attention in the last decade. The implementation of these models has led to the creation of specific instruments, more and more tailored to different situations. This is how Impact Bonds appeared in 2010, being later on sub-categorized into Social Impact Bonds and Development Impact Bonds, with the main specificity of its application being for developed countries and developing countries, respectively. However, there is an unequal growth in the use of these mechanisms: While SIBs have become very popular and widely adopted, DIBs only saw two cases of actual implementation, despite strong interest.

This thesis will focus on Development Impact Bonds, aiming to understand how its structural differences from SIBs might be influencing its adoption. As a second step, after such issues are assessed, there will be suggested design choices, originating a new DIB model. As a third and final step, the new DIB model will be applied to the case of Girl Move, an NGO that operates in Africa and aims to fight low school attainment of girls.

## Abstracto

Pagamentos por resultados têm vindo a ganhar atenção em domínios sociais na ultima década. A implementação destes modelos tem vindo a proporcionar a criação de instrumentos específicos, cada vez mais adaptados a diferentes situações. Foi desta forma que em 2010 surgiram os *Impact Bonds*, sendo mais tarde categorizados em *Social Impact Bonds* e *Development Impact Bonds,* distinguindo-se pela sua aplicabilidade a países desenvolvidos e a países em desenvolvimento, respetivamente. Contudo, tem-se vindo a observar um crescimento desigual na aplicação destes instrumentos: Enquanto os SIBs tornaram-se populares e amplamente adotados, no caso dos DIBs apenas dois foram implementados, apesar de um grande interesse.

Esta tese vai focar-se nos *Development Impact Bonds,* com o objetivo de averiguar como as suas diferenças estruturais comparadas à de um SIB podem estar a influenciar a sua adoção. Como segundo passo, após tais problemáticas serem analisadas, serão feitas sugestões a nível de design, originado um novo modelo para DIBs.

Como terceiro e ultimo passo, o novo modelo de DIB vai ser aplicado ao caso da Girl Move, uma NGO que cujas atividades em África incidem em lutar o baixo nível de escolaridade para raparigas.

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I am grateful to my parents: I would like to thank my father for always accepting and backing up my decisions, as for his constant interest on the development of this dissertation.
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## List of Abbreviations

| | |
|---|---|
| PbR | Payment by Results |
| CG | Calouste Gulbenkian |
| DIB | Development Impact Bond |
| EG | Economic Gain |
| IP | Impact Payment |
| KPI | Key Performance Indicator |
| NGO | Non Governmental Organization |
| SIB | Social Impact Bond |
| TAC | Total Allocated Capital |
| TEG | Total Economic Gain |
| TIP | Total Impact Payment |
| UEG | Unitary Economic Gain |
| UIP | Unitary Impact Payment |
| WGSS | Women and Girls Safe Spaces |

# I. Introduction

On the 2nd of March of 2005 in Paris, the Paris Declaration on Aid Effectiveness was issued, with the fundamental goal of making aid effectiveness a high priority.

Every year, governments dedicate tremendous amounts of money trying to tackle current problems within their societies. Improving maternal and child health, increasing educational attainment and employment, or strengthening family stability, are just some of the main issues that governments so arduously try to overcome. Nevertheless, often the resources are allocated to interventions that yield discouraging results, instead of aiming towards innovative and improving approaches (Development Assistance Committee).

Payment by Results (PbR) is a relatively new funding mechanism that intends to overcome such misallocation of funds. It aims to break the traditional concept of Governments establishing contracts or providing grants to a certain service provider (ex: NGO) in exchange for inputs, rather aiming for outcomes. Another specific feature of PbR is the post-payment feature; governments will disburse capital if pre-established outcomes were actually achieved by the service provider. (Pearson, Johnson, & Ellison, 2010)

There are clear benefits of PbR mechanisms to governments. Since payments are made only if the pre-established outcomes were achieved, PbR can be especially attractive to governments as a way to realize greater accountability and efficiency by allocating resources to programs with demonstrable outcomes. However, this implies that the service provider will have to pre-finance the activities in the first place, requiring enough working capital for the intervention. This is an issue, considering that most service providers may not have a strong financial position to run interventions without receiving any revenues for a period of time, plus the risk of not being repaid in case they do not meet the pre-agreed outcomes.

This led to the creation of a derivate of PbR, Impact Bonds. In a nutshell, Impact Bonds solve this issue by adding a third stakeholder, investors, who will provide upfront capital to social providers so they can run their activities to deliver the pre-defined outcomes. If these are met, governments will still make the disbursement of capital but to investors instead of social providers.

This model of Impact Bonds has been proven to be quite successful in developed countries. So far 87 SIBs were launched since 2010 (Social Finance, 2017).

However, when this same model is applied to developing countries, there is one issue that automatically arises: the lack of credibility and capability of these governments to re-pay investors for the outcomes they pre-financed. In 2015 the first impact bond directed to

developing countries was launched, switching the governmental entity for a foundation that would now assume the role of payer of outcomes. (Instiglio, 2015)
The need for an adaptation from the model used for developed countries originated different nomenclatures for Impact Bonds directed to developed countries (Social Impact Bonds) and developing countries (Development Impact Bonds).

Development Impact Bonds (DIBs) will be the center of study of this dissertation. There has been a continuous propaganda of the model for DIBs as a straightforward adaptation from the model of Social Impact Bonds (SIBs): simply put, switching governments for an external funder, for instance a development agency or charitable foundation (Instiglio, 2015). Nonetheless, as simple as the application of a DIB may seem, that is not what has been found in reality. Since 2015, when the first DIB was launched, the DIB market counts with only 2 DIBs. (Social Finance, 2017)

*Why such a disparity in the number of SIBs and DIBs that make to the market?*

This question originated a further interest on how the change in one of the main actors involved would impact the underlying principles of DIBs and SIBs.
This thesis will focus on analyzing the structural change of replacing the government entity for an external entity in the DIB model, in order to find how such modification will affect the underlying principles of the DIB (section 2.1). In the end, the proposed DIB model will be applied to a real case of an NGO in Mozambique, Girl Move, which fights Low School Attainment for Girls.

# II. Literature Review

## 1. Payment by Results Models

A characteristic feature of a PbR mechanism is measuring results in terms of outcomes instead of outputs. The difference can be exemplified by the following: If a government is aiming to improve learning outcomes in schools, investment could either be either allocated to outputs "investment would buy training for 1000 professors" or on outcomes "investment would generate an increase in average exams' score ".

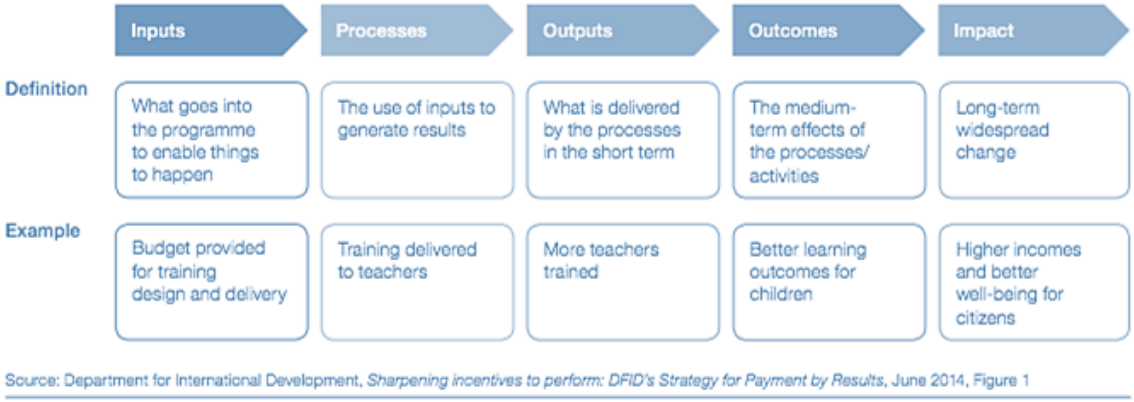



*Figure 1 Definitions: Inputs, processes, outputs, outcomes, impact*

### 1.1. Rationale

Capital is directed towards specific activities in order to fight a social issue, and on a later stage, the intervention's outcomes are measured by an independent entity, to certify if the pre-stablished results were achieved. If so, a third stakeholder, denominated outcome payer, will repay service providers their initial investment. (Pearson, Johnson, & Ellison, 2010)

In the PbR mechanism there are five crucial roles that must be performed: Service Provider, Investor, Outcome Payer, Intermediary and Independent Evaluator. In some situations, the service provider assumes the role of investor, therefore pre-financing its own activities (Pearson, Johnson, & Ellison, 2010).

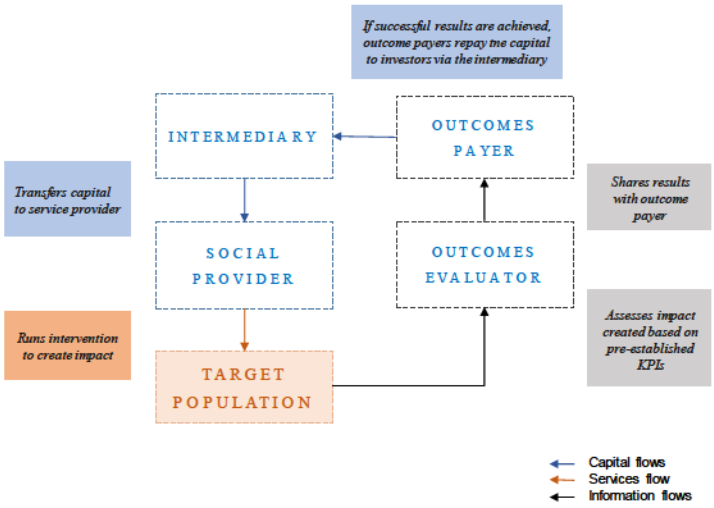



*Figure 2 PbR Rationale- Social Provider is Investor*

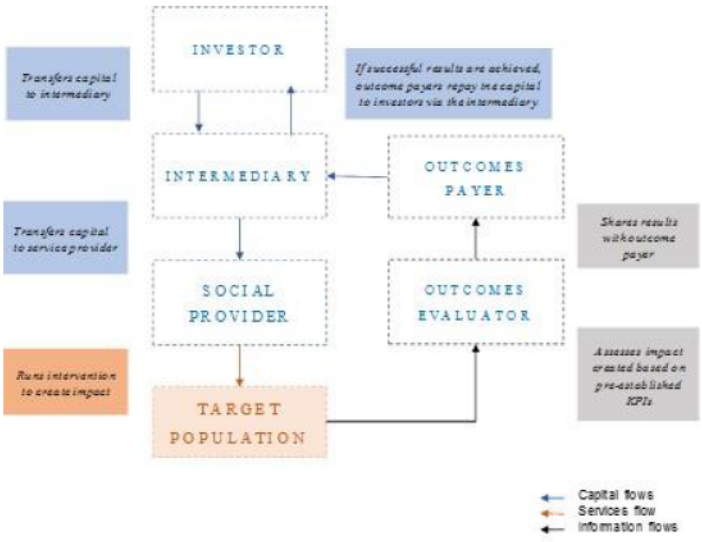



*Figure 3PbR Rationale- Social Provider does not assume Investor role*

### 1.1.1. Description of Key Stakeholders

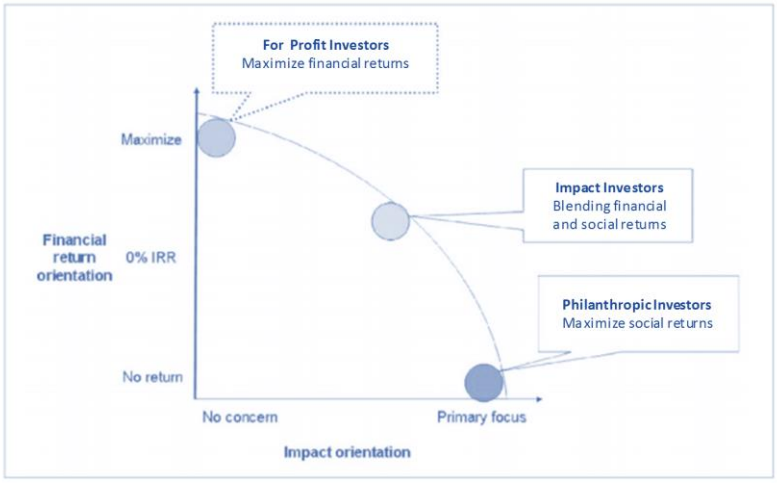
The investor, service provider and outcome payer's role are the basis of a PbR mechanism. It is among them that the money flows in order to finance the intervention. The intermediary and outcome evaluator are not imperative for the existence of this model, but on the other hand, they are important for its validity and well-functioning (Social Finance, 2017).

#### *1.1.1.1. Investor(s)*

This role is attributed to the entity that finances the intervention, bearing the risk in case the project fails. In other words, if the outlined outcomes are not reached at the end of the period established, investors may not recover their investment. Occasionally, the entity who assumes

the role of service provider can also be the investor, if it has enough funds and is willing to assume the risk of non-deliver of the agreed outcomes.

When an entity other than the service provider decides to join a PbR mechanism as an investor, there are two main components that might have driven to this decision, financial return and/or social return.




Adapted from:



*Figure 4 Investors- Types*

Still, it cannot be said that these two components are equally important for every investor. As investor's motivations change, so does change the aversion to risk, creating a spectrum of capital that ranges from financial-return-first to social-return-first. There can be recognized three types of investors according to motivations (Trelstad, 2009).

Profit investors: The focus is financial return first. They may be attracted to PbR purely on the basis that they offer a chance to make a financial return on investment. Private equity investors develop program-related investment with Clients interest in social return being a motivating factor for these institutions to be involved (Trelstad, 2009).
Examples of possible entities to assume this role: Private Equity Investors, High Net Worth Individuals, Commercial Banks, Credit Unions.

Impact Investors: Are defined as someone who takes a double bottom line approach to their capital, and attributes real value to the social or environmental return in their investment decision making. They will often, but not always, be willing to exchange a lower economic

return for potential social or environmental impact. Foundations can either assume the role of Impact or Philanthropic Investors, while Impact Investment Firms have focus on the duality of impact and return. High Net Worth Individuals can also fit in this profile. (Trelstad, 2009)

Philanthropic Investors: At the other end of the spectrum are Philanthropic Investors. In contrast to a profit investor, who will seek to maximize financial return, a Philanthropic investor primarily cares about maximizing social return. Foundations can be motivated by the opportunity to make program-related investments, which allows them to earn back their money and recycle funding into other grant or investments, to foundations that are comfortable making a high risk, potentially non-recoverable investment. (Trelstad, 2009)

#### *1.1.1.2. Service Provider*

The Service Provider has to work with the targeted population and deliver the social outcomes defined in the contract, being expected to provide an innovative intervention to originate the estimated results. It receives the funds from the investors or via the intermediary to be used as working capital. (So & Jagelewski, 2013)

A service provider can be one of the following entities: Non-profit or nongovernmental organization, public sector service provider, cooperative, non-profit or for-profit social enterprise and for-profit business.

#### *1.1.1.3. Outcome Payer(s)*

After results are assessed, this entity will disburse capital to investors, depending on the pre-established levels of success. Therefore, in case of success this stakeholder will potentially pay for the whole project, sometimes even with a premium. As it will be seen, these entities assume such obligations because there might be financial incentives involved in the form of future savings and/or the desire to create impact.

This role can be assumed by a varied spectrum of stakeholders: public sector entity, aid agencies, philanthropists, trust funds, foundations, impact investment firms, community development financial institutions, CSR units from large corporations, etc. These entities aim to allocate financing more ethically and in ways that were more aligned with their missions. (Wright & Gardiner, 2015)

#### *1.1.1.4. Independent Outcome Evaluator*

The evaluator is an independent organism that determines whether the previously established outcomes were reached by the end of the time period. Such outcomes are set for every Key Performance Indicator (KPI) or Indicator, which aim to measure the success of the intervention. If the goal-values for outcomes were reached, this information is passed on to the outcome payers, who will reimburse the investment. (Wright & Gardiner, 2015) Possible evaluators are consulting firms, research institution, university and government agencies.

#### *1.1.1.5. Intermediary/ Performance manager*

It is an entity that brings together the project's stakeholders and manages its' relationships in order to build the best possible contract that fits the needs and capabilities of every part (Peña, 2014). The intermediary is in charge of receiving the funds from the investors and passing them on to the service providers, as well as receiving the payment from the outcome funders and making outcome payments to investors. When the service provider is assuming the investor role, the intermediary will only have one financial flow with the service provider, to transfer the funds from the outcome payers. This role is particularly important in complex structures with multiple investors and/or multiple service providers.

### 1.2. Types of Payment by Results models

Within the scope of Payment by Results there are variations in nomenclature that depend on the type of entity who assumes the roles of service provider, investor and outcome payer. Such variations are Results Based Aid, Results Based Finance, Hybrid Results Based Aid/Financing, Social Impact Bonds and Development Impact Bonds, the latter being the central focus of this dissertation. A major criterion for RBA, RBF and HRB, is that the service provider pre-finances its own activities, therefore assuming the role of investor as well (detail description of these models can be found in (*appendix 1*). (Pearson, Johnson, & Ellison, 2010) Oppositely for impact bonds, it is common for both roles to be executed by independent entities, ie, the investor's role is assumed by an entity other than the service provider, and the service provider only executes the intervention.

### 1.3. Social Impact Bonds (SIBs)

A drawback of the presented mechanisms is that often the service provider cannot undertake the investor's role (especially in the social sector) since it does not have the capital to assume

the risk of failure and does not have the liquidity to pre-finance the intervention (Nonprofit Finance Fund, 2017). Thus, was developed in 2010 the impact bond model that brings a new external entity, with liquidity and ability to adopt risk, to act as investor.

### 1.3.1. Rationale

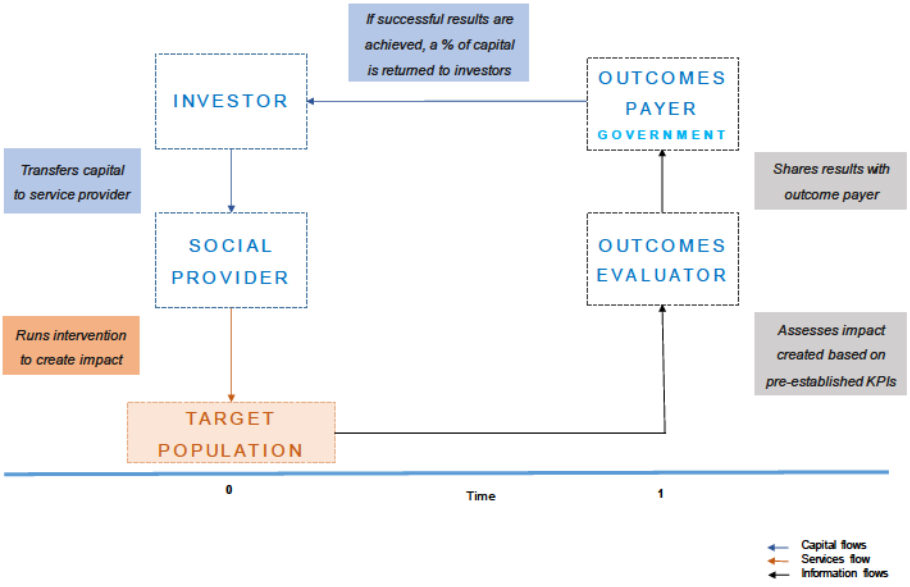



*Figure 5 SIB Rationale*

A SIB works as the previous PbRs models, except the investor role is assumed by an entity other than the service provider. In short, a SIB is a partnership among one or more service providers, investor(s) and outcome payer(s), where results are evaluated by an independent entity (outcome evaluator). The information and capital flows among stakeholders are managed by the intermediary. Investors provide up-front working capital directly to socially driven service providers (direct structure) or via the intermediary (indirect structure) (*appendix* 2). In the end of the intervention, if the service provider reaches all proposed results, then the outcome payers, usually the Government or other public entities, will repay investors (principal plus return). If not, investors will not be refunded from outcome payers. (DEAR, et al., 2016)

Another natural feature of a SIB is its aim to tackle societal problems in developed countries. The entity who repays investors, in case of success, is a country's government that by tackling a social issue will have long term social and financial benefits. As for the funding, it may come from impact investors or for-profit investors. If the service provider originates sizable impact with the intervention, then investors will have their investment repaid plus additional returns; otherwise they will lose the capital. (DEAR, et al., 2016)

Let's suppose the following figure describes a SIB where government wishes to reduce unemployment by funding the outcomes of an intervention to unemployed individuals that will cost 40M euros. In a status quo position (i.e., without any intervention) the government would spend 100M with these individuals in unemployment benefits, food assistance, etc.
After developing the SIB, the outcomes generated (higher employment, therefore leading to less unemployment benefits and related expenses and higher tax revenues) will produce financial gains to the government by saving $75M of the initial $100M expenditure. These savings are enough to repay the investors $40M and still keep a $35M margin of savings.

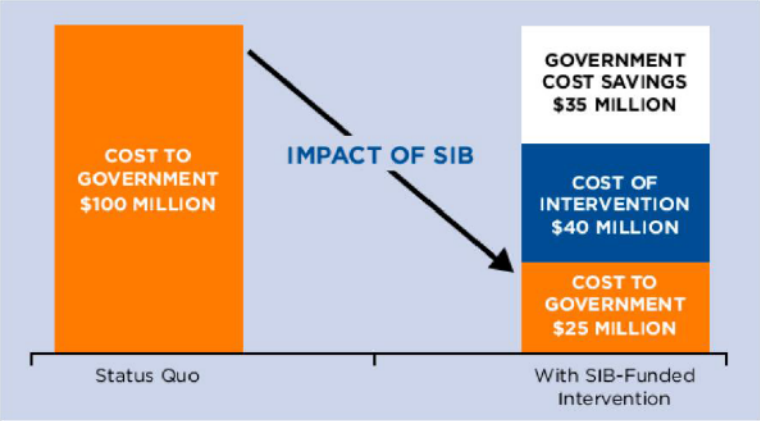



*Figure 6 SIB- Savings for Government*[1]

These attractive features of SIB's have led this mechanism to be adopted by governments of developed countries to fight social problems within their societies.

### 1.3.1. SIBs Market

According to Social Finance database, a total of 87 SIBs were launched since 2010, raising an estimate of $320M and impacting 113,643 lives. So far, the country that has launched more SIBs was the United Kingdom, with 33 bonds and £35,7M of capital raised. The biggest bond launched was the Peterborough bond, coincidently also the first ever developed SIB in the world. Aiming to fight re-offending, it raised £5M and positively impacted 2000 short-term offenders by reducing their rate of re-offense after leaving jail.
The second biggest country on SIBs development is the United States of America, where 16 SIBs were already launched, with $178M of capital raised and 21,237 lives touched. The biggest SIB in terms of capital raised was launched in South Carolina in February of 2016,

[1] Social Finance, 2017

raising $30M in capital to invest in Early Childhood Development. The third country is The Netherlands, with 7 SIBs launched and €10,5M raised. The biggest SIB raised €3M.
Portugal has launched 4 SIBs, 2 in Oporto. Fundão and Lisbon, totaling €1,72M of capital raised and an estimate of 611 lives touched. The SIB in Fundão was the biggest one with €0.7M raised for 180 young unemployed adults learning software programming.

### 1.3.2. Stakeholders' motivations

The reason for being possible to develop a mechanism like a SIB is due the different motivations for each stakeholder:

- Social providers receive funding from investors to finance their activities and to develop innovative solutions that later on can be scalable/ applicable to other interventions. If well applied, this can be used as a method to create financial sustainability for the social provider.
- Outcome payers in a SIB are governmental entities that desire to tackle a social problem of their society. By having the private sector (investors) upfront funding the interventions it allows the government to shift financial risk to them. If the SIB is successful, it will diminish the negative externalities of the social problem and consequently of the spending associated to it, even after paying for the cost of the intervention, therefore creating a financial gain in form of savings.
- SIB Investors are individuals or organizations from the private sector that embrace hybrid incentives, risk and impact. When the outcomes are met, investors receive the previous investment plus some level of return. This is possible since the SIB generates savings on the government's budget.

In conclusion, a Social Impact Bond is targeted to developed countries and potentiates benefits to the all involved stakeholders: the social provider receives funding for its activities, the investor applies capital to projects with the perspective of having returns and impact, and the government diminishes negative externalities and has financial gains (savings) if the intermediary confirms that the goals were met. (DEAR, et al., 2016)

The increased use of the SIBs mechanisms for developed countries opened an opportunity to apply the impact bond model in developing countries, which are called Development Impact Bonds (DIBs).

### 1.4. Development Impact Bonds (DIBs)

The DIB market is still rather small when compared with SIBs. So far, only 2 DIBs were launched: "India's Education DIB", targeting a total of 19,000 young girls, and "Asháninka cocoa and coffee DIB" in Peru, focusing on 99 cocoa and farm producers (Social Finance, 2017).

Several entities have claimed to be currently developing DIB's, however, "for every 10 DIBs that are discussed, in-depth work is done on three to four and likely only one goes through", said Avnish Gungadurdoss, co-founder and managing director at Instiglio. It is intriguing why so many SIBs are launched while DIBs experience an opposite reality: in seven years 87 SIBs were launched against 2 DIBs.

After analyzing both the launched DIBs and the available literature on the topic, it is possible to observe a direct adoption of the SIB's structure in the DIBs' model, with one difference: the outcome payer role typically can no longer be assumed by governments. An explanation for the failure in deploying DIBs might thus be in its own conceptualization which does not include the necessary changes originated from switching from a Developed Country context to Developing Countries.

The following section will analyze the model currently adopted for DIBs and the changes that should be implemented, therefore suggesting a new model for DIBs.

#### 1.4.1. Rationale

In a developing country context, the government will not be a suitable payer of outcomes considering that it has restrained financial means and usually political instability, indicating to investors a low probability of payment and consequently that the DIB would be high risk. As a solution, the DIB structure replaces the governmental entity for an external outcomes funder, typically an aid agency.

On the only two DIBs already launched, apart from the outcome payer, whose role was assumed by aid agencies on both DIBs, the structures were found to be similar to a SIB: service provider receives money from investors, and if outcomes are met, outcome payers will return the capital plus a financial return to investors.

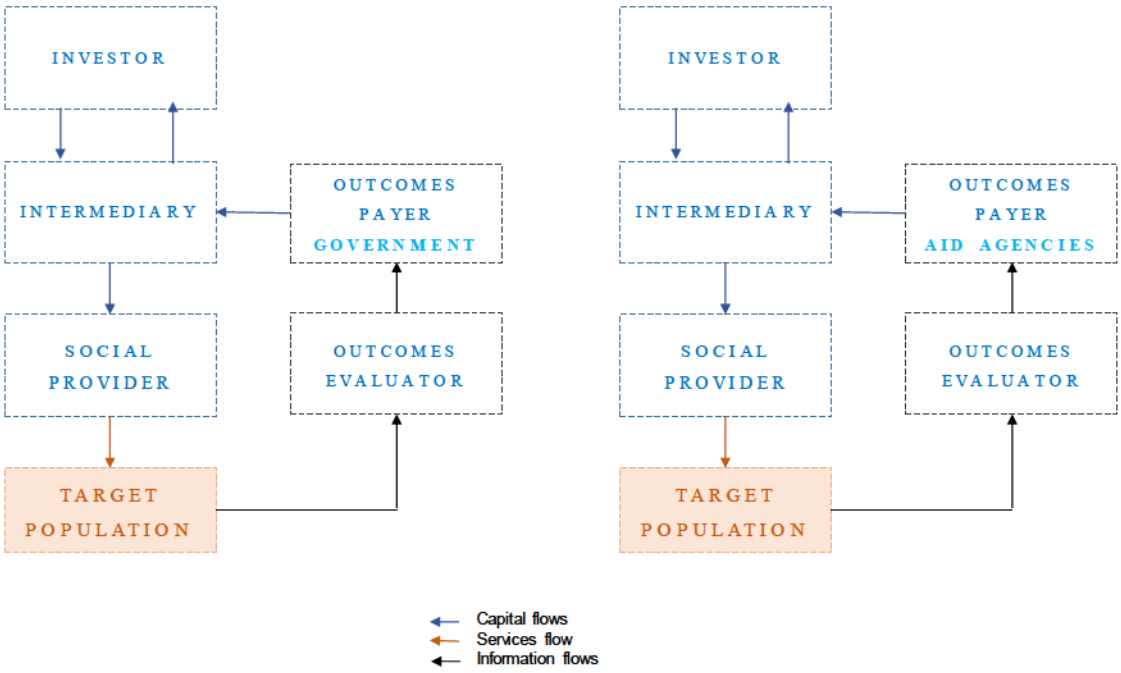



*Figure 7 SIB and DIB Rationale- Contrast*

However, some issues arise from the fact that in a DIB there is no longer a governmental entity involved as outcome payer, as other type of entities must assume this role and there is a shift in expectations:

*i.* The impact originated from a DIB can no longer be measured in terms of financial gains (savings) for the government, considering that it is no longer one of the main DIB's stakeholders. Being the outcome payer role now assumed by Aid Agencies, a potential new measure for impact could be the "gains" that were brought for the economy due the DIB.

*ii.* Outcome payers will have to finance the principal plus return, which might raise difficulties on finding donor agencies willing to pay the return component. On the other hand, if return is not part of the deal then commercial and impact investors may lose interest on financing the DIB.

Having such concerns in consideration, one of the goals of this thesis is to design a new DIB's model that overcomes the just mentioned problems.

# III. Thesis' Contributions

## 2. DIBs: A new conceptualization

The last section concluded by stating that DIBs should not be a straightforward adaptation of SIBs, and pointed out two issues as probable causes for the low number of DIB's launched so far. Having such issues in consideration, the aim of this chapter is to design a DIB model that overcomes such problems. As a result, it is expected that this new approach will make DIBs an easier and better understood form of financial mechanism to be adopted for developing countries

### 2.1. DIB Model Specifications

The absence of a government authority as outcome payer in a DIB is the starting point to require changes in its structure. In a SIB, governments assume the role of ultimate payers because the impact originated with the intervention will bring improvements on a social issue that consequently led to short-term and long-term financial savings to the public budgets. Therefore, by engaging in a successful SIB, the government has economic and financial gains, in addition to the improvement in the social problem.

In a DIB, the developing country's government is not assuming the payment in case of success due the lack of financial means, lack of outcome orientation or merely inefficiency. The capital will have to be disbursed by an external entity whose interests are aligned with the DIB's social issue.

While a SIB generated savings for the public authorities of the targeted country who serve as outcome payers, in a DIB, the savings component does not exist for the outcome payer, only remaining incentives in the form of economic and well-being benefits for society.

This reasoning suggest that the outcome payer will have to be an entity that is comfortable with the role of only acquiring impact, whereas governments were also accomplishing budget improvements in the form of higher savings. The proposal is that entities who focus on allocating capital in exchange for impact and do not have financial returns as incentive, assume the role of outcome payers. However, this creates potential problems for the DIB model:

*i.* The outcome payments for a DIB can no longer be determined based on financial savings.

A great deal of SIBs establishes the payment of outcomes based on

- the intervention costs (how much was spent to fund the intervention),
- potential savings (how much the government saved with the intervention), and,
- return for investors (how much should investors get back as return?).

A solution is to attribute a value to the DIB that is linked to the impact it generates rather than with the direct financial results of the intervention (returns or savings). Measuring in terms of financial gains would mean accounting for the savings on social benefits and gains in taxes, but this is not what is it aimed to be measured. The design of the DIB mechanism is to replace returns and center fully on originated impact, making the outcome payments based on the value of economic gains generated from the intervention. Economic gains or economic opportunity costs, is a measure of calculating macroeconomic gains [Buckup, 2009], in this specific case of tackling a social issue. For instance, in the case of one extra person starting to work, the economic gain could be measured by the additional potential earnings for this person, also known as cost of opportunity of being unemployed. If the life time economic gains would totalize 100,000€ for one individual who would start to work, then the outcome payment would be calculated in reference to this value.

For coherence reasons, the nomenclature of outcome payer, from now on, will be Impact Payer, since the payments are no longer based on outcomes but rather on impact and what we are proposing is in fact an Impact market.

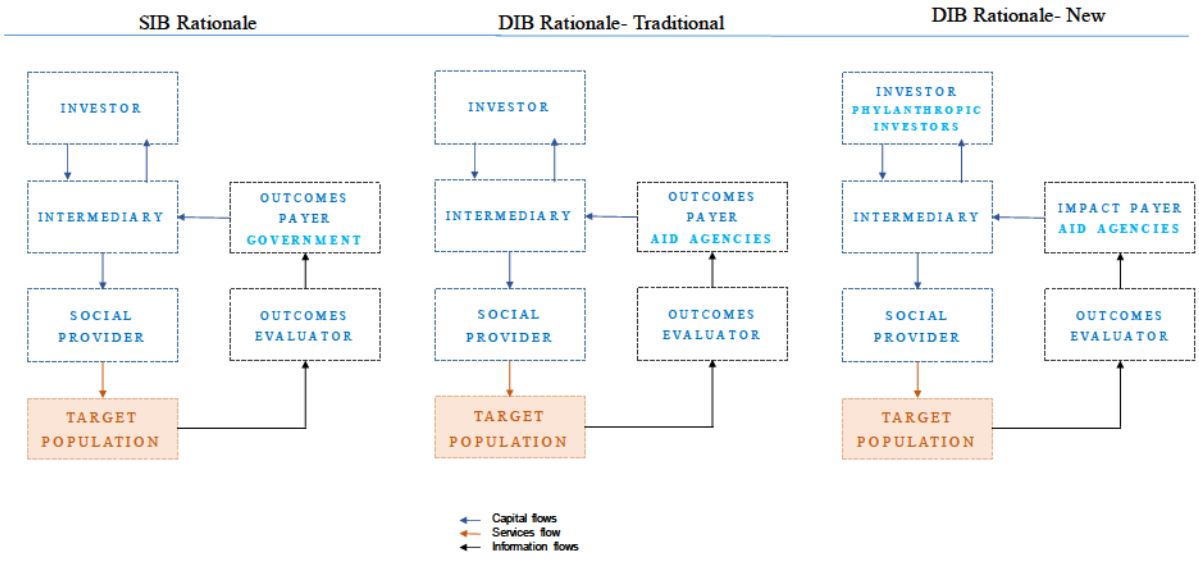



*Figure 8 SIB, Traditional DIB and New DIB Rationale- Contrast*

*ii.* Outcome payers (Impact payers) will have to finance the principal plus return, which might raise difficulties on finding entities willing to pay the return component. On the

other hand, if return is not part of the deal then some investors may lose interest on financing the DIB.

Outcome payers will allocate money for impact and get no financial benefit. Consequently, the following question arises: "Considering there are no financial gains for Aid Agencies, will they be willing to pay returns to investors?"

In a SIB perspective, it made sense for governments to pay returns: investors were the risk takers and the outcome payments were lower than the savings generated for the government. The solution proposed for DIBs is to redefine the goals/motivations of investors. Depending on the success of the intervention, investors would receive back a portion of the total investment made, instead of receiving principal plus returns. Their initial financial allocation can be called redeemable grants linked to outcomes from the perspective of Philanthropic Investors. In other words, a higher portion of the grant is given back to the impact philanthropist if better outcomes are achieved, up to the full amount. For this to happen, the key element is finding entities, for the investor role, who perceive a DIB as way to expedite their budget and therefore leverage other investment opportunities. Philanthropists or foundations would be suitable performers for this role. Both entities have established annual budgets, where capital must be allocated to projects that have higher return of impact.

### 2.2. DIB Development Process and Rationale

There is no specific stakeholder mandated to assume the initiator role when it comes to a DIB. The initiative of starting to develop such mechanism can come from an impact payer that wishes to focus on a specific social issue, or from a service provider that seeks funds for its activities within a developing country. Nevertheless, after the DIB development is implemented and all the contracts among stakeholders are closed, the rationale of the DIB must be the following:

i. Investors transfer agreed capital to the service provider (directly or indirectly). This value must be equivalent to the estimated costs of the intervention.
ii. Service provider funds its activities and starts intervention on the population, with the agreement of reaching and/or exceeding established outcomes.
iii. After a pre-determined time (can be after the first intervention, first set of outcomes measured, or in the end of the project) an independent evaluator will confirm if the

established impact, for each indicator, was reached. Such information is then forwarded to impact payers.

iv. Impact payers shall reimburse investors an amount of capital equivalent to the achieved impact. The impact payment to be reimbursed will be linked to the economic gains generated from the intervention. Such value will be specified in the contracts.

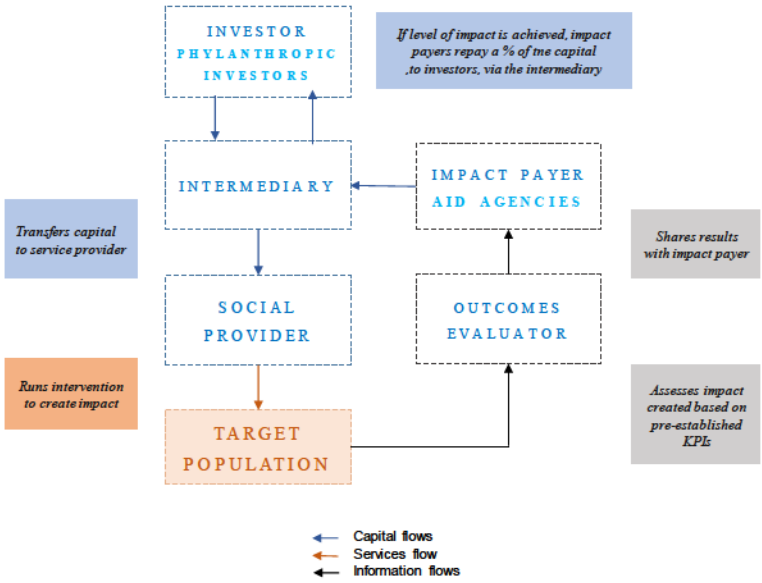



*Figure 9New DIB- Rationale*

To sum up, the essence of a DIB is to direct funding towards innovative and effective interventions to fight a social issue, and the success of a DIB is dependent on the additional macroeconomic benefits generated by the funded intervention.

Nevertheless, finding the right intervention to be funded and establishing a final payment based on economic gains are difficult tasks. For that reason, the next section will propose a framework that assesses both.

## 2.3. Impact Framework: Assessing the Social Issue and Economic Gains

Another contribution of this thesis is to suggest the application of *Problem Tree Analysis* tool, to support the tasks of "choosing an effective intervention" and "measure economic gains/ macroeconomic benefits".

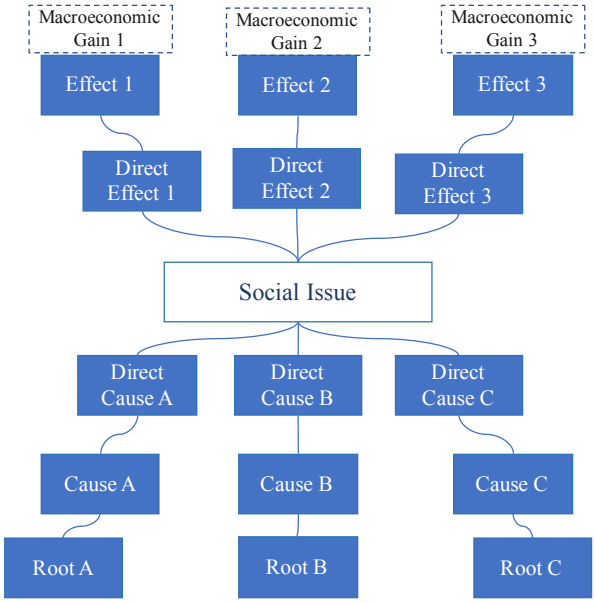



*Figure 10 Problem Tree Analysis*

The scheme assembles a tree-structure, where the roots symbolize the causes of the problem and the branches the consequent effects. According to (Santos, Salvado, Carvalho, & Azevedo, 2016), this tool "promotes the understanding of the anatomy of the societal problem through the identification of its causes and effects and the causality that links them". Once the direct causes of the main problem are found the exercise should continue to find the causes of the direct causes, and so on. The same method must be applied to the effects but instead of revealing underlying motives the goal is to find consequent effects of the main issue, direct effects, and then consequences of the direct effect.

The link between the tree analysis and previous tasks is the following: the underlying causes of the issue will help on choosing interventions that are tailored to fight the origins of the societal problem; the effects analysis will allow to measure the economic gains generated from fighting the issue.

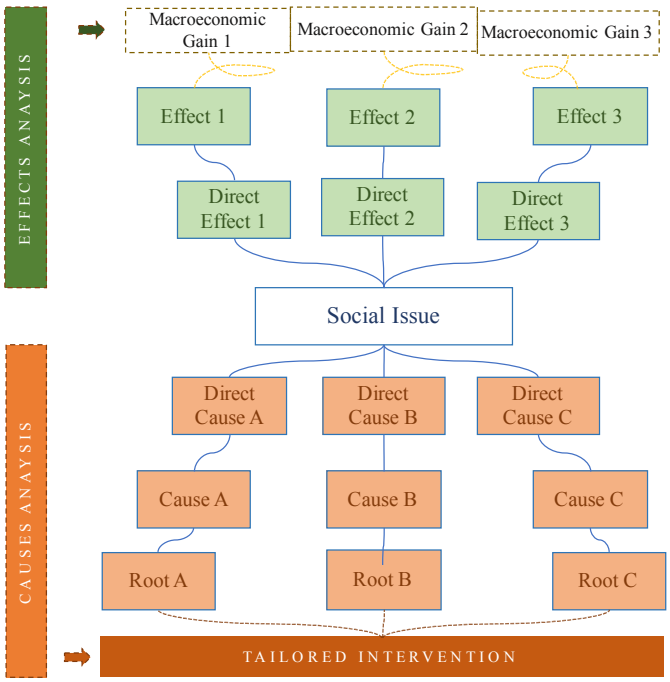



*Figure 11 Impact Framework*

### 2.3.1. Causes: choosing an effective intervention

Knowing the main causes of a problem is vital to proceed with the selection of an effective solution (Santos, Salvado, Carvalho, & Azevedo, 2016). In this context, it will allow to choose a service provider whose solution is tackling the roots of the problem (or at least one relevant and neglected root cause).

### 2.3.2. Effects: Measuring economic gains

Effects can be can be interpreted as symptoms of a "disease" that has not been solved, being clear that there is an associated cost that could have been avoided with the right intervention. This "disease-symptoms" analogy can be applied to the context of societal problems. When fitting interventions are not applied, hence permitting the problem to persist, there is a consequent loss of potential economic gains (or opportunity costs).

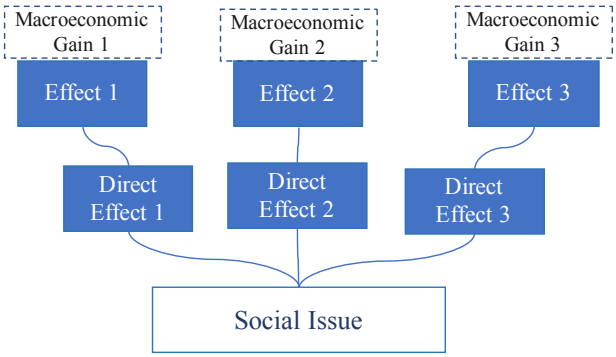



*Figure 12 Framework- Effects*

The micro-example for the effects' analysis will be succinctly applied to the social issue of "Childhood obesity". One direct effect of the social issue is poor physical health that leads to an increase in lifetime medical costs. The latter is seen as the ultimate effect of the problem, and that way will have a cost associated, in this case 93.000$ (Matthew Kasman, 2015). This amount means that a child that suffers from obesity will impose costs that a non-obese child won't, or in another word, an obese child that receives a fitting treatment and therefore loses weigh and avoids obesity will have generate economic gains amounting 93,000$, that can be reflected, in this case, in form of increased productivity and lower health costs.

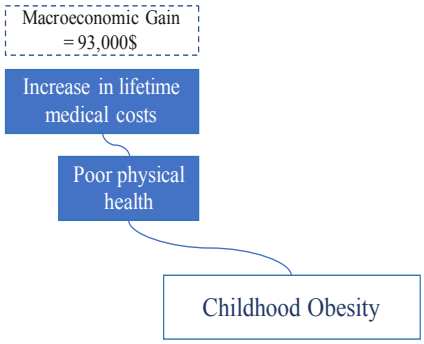


*Figure 13 Impact Framework- Effects of Childhood Obesity*

The measurement of economic gains values must be computed specifically for the country in analysis, which in some cases might be limited due to the lack of data for some countries. Therefore, two approaches are suggested, *Direct Values* and *Reference Values.*

- *Direct values*: is applied when there is sufficient data for the country under analysis.
- *Reference Values*: is used when there is not enough data for the country, requiring using a "proxy country". In this context, a proxy country is described as a country that presents similar results for indicators related to the social issue.

### 2.3.3. Key Performance Indicators (KPIs)

The establishment of KPIs is one of the key concerns of DIBs and SIBs. To be able to evaluate if the intervention is being successful, indicators are established, they will provide the stakeholders of the DIB with a measure for success. Depending on the impact results for each indicator, an impact payment will be made.

#### *2.3.3.1. Goals*

The goals of a KPI must translate the main purpose of the DIB. By re-using the example of a DIB aiming to reduce unemployment, possible KPIs could be "Entrance in the job market" and "Maintenance of employment after 6 months", which metrics could be, "number of individuals who got employed" and "maintenance rate", due the intervention.

#### 2.3.3.2. *Impact baseline*

Each KPI will have an "*impact baseline*" so that the additionality of the intervention can be measured. This value reflects the results that would have been expected (in the targeted country) if there was no DIB intervention plus an error margin, depending on the confidence of the values collected. For example, when considering two scenarios: without the DIB 200 out of 1000 people would be employed; and with the DIB 350 people got employed, the DIB would only start to generate impact from the 201$^{st}$ person onwards, because the first 200 would have been employed anyway. In this case, impact is equivalent to 150 additional people integrated into the job market due to the intervention.

Thus, "impact" will be referred as results that would not have been achieved without the intervention (additionally), while impact baseline will be the reference value after which impact is created.

#### 2.3.3.3. *Unitary Economic Gain (UEG) and Economic Gains (EG)*

Each KPI has a "*unitary economic gain"* (economic gain per individual), representing the macroeconomics benefits per additional outcome achieved that would not exist without the successful intervention. A KPI is selected depending if there are measurable and independent EG for that indicator. A DIB can be evaluated based on 2, 3 or even 4 KPI's, but only if each one of them translates into EG that does not overlap with any other KPI, or, if it does, all can be computed independently (ex: for the indicators "number of people who maintained the job over 6 months" and "number of people who maintained the job over 9 months", the last indicator's UEG should be computed based on the EGs generated from the last 3 months of employment). Such rule allows to calculate a total potential EG, generated from the DIB for each unit of additional successful intervention (e.g., economic value of one extra person being long-term employed)

Referring to the previous example, this EG is only computed for the impact originated from the intervention, which according to the last example, would be applied to 150 individuals. These individuals times the UEG of the KPI (ex: 150 individuals x 3000€ per individual) would originate 450,000€ in EG for this (single) KPI. When is mentioned "*Total Economic Gains"* (TEG), it refers to the sum of all KPIs' EG.

### 2.3.4. Impact payments´ formula

In many launched SIBs and DIBs, payments per KPI were computed based on the intervention costs and returns for investors, with financial incentives being the center of the reasoning since the payments should be enough to attract the investors but not too large that would offset the financial savings of the government.

The proposed DIB approach will calculate the *Total Impact Payment* (TIP) based on the EG and impact of each KPI. These values refer to the total amount of disbursed capital, referring to all KPIs, from outcome payers. This will be based on a formula of continual results rather than discrete, as any extra individual successfully intervened must be considered as impact. Additionally, the capital disbursement for this DIB will aim to provide investors some agility in their budgets by paying a percentage of the total costs of intervention.

$$Total\ Impact\ payment = PaymentRate \times \Sigma(UnitaryEconomicGain\_KPI_n \times Impact\_KPI_n)$$

#### *2.3.4.1. Payment Rate*

The payment rate is the percentage that is applied to the TEGs of both KPIs, originating the respective Impact Payment (IP). The sum of IP of both KPIs results in the TIP.

The payment rate is established based on the average of Impact originated for each KPI on the entire initiative. For example, if the DIB encompasses 2 interventions(one per year) and measures 2 KPIs, possible impact results for each year could be for KPI1 (20%, 25%) and KPI2 (15%, 20%). The average impact for KPI1 is 22.5% and for KPI2 17.5%, therefore the impact of the DIB is 20%, and so this would be the payment rate applied.
As the impact originated increases so does increase the payment rate until it reaches the limit of maximum impact possible. The lower limit of payment rate is 0%, in case no impact is created, while the upper limit refers to the scenario where the impact created is equal to the potential impact (If DIB targets 1000 people and the impact baseline is 200, the potential impact is 800).

#### *2.3.4.1. Impact*

It measures the outcomes achieved for each KPI and subtracts to the respective impact baseline. If the impact baseline were to be 200 employed individuals out of 1000 and the intervention reached 350 individuals, then the impact would be 150.

#### *2.3.4.2. IRAC*

This thesis will evaluate the attractiveness/efficiency of a DIB for investors based on *Impact Return on Allocated Capital*, a ratio of the TEG and the intervention's Total Allocated Capital (TAC):

$$IRAC = \frac{Total\ Economic\ Gains\ (TEG)}{Total\ Allocated\ Capital\ (TAC)}$$

The nominator term, TEG, refers to the sum of the EG of each indicator. As for the denominator, TAC, is the amount that impact payers will disburse (Impact Payment).
IRAC will measure the amount of impact created per one euro allocated by impact payers. If it is equal to one, then the impact originated is equal to the money allocated in the intervention. For a DIB to be feasible, IRAC must be higher than 1. A DIB with an IRAC of 2 is already considered as relevant because the economic gains originated are superior to the twice the costs of the intervention.

Besides the computation of TIP, it can also be computed micro-measures like the IP, and Unitary Impact Payment (UIP), that assess the payment per indicator and the payment per indicator per individual (respectively). Further development of these computations can be found in *appendix 3*.

# IV. Practical application: Girls Education DIB

The previous *Part III* developed a new model for Development Impact Bonds, contrasting with existing views on its conceptualization, specifically on the measurement of indicators, basing it on economic gains instead of financial incentives for the DIBs stakeholders. Consequently, to measure the economic gains, it is proposed the implementation of the Impact Framework.

This *Part IV* is aimed to apply the insights developed in *Part III*, by describing the development of a DIB with the purpose of fighting low school attainment. It is divided in three chapters, starting by exploring the societal problem on a macro level (statistics on school attainment) and micro level (impact framework) The impact framework will lead to conclusions on a potential social provider, leading to the next chapter that will describe the social provider and how its interventions are aligned with the issue's causes originated in the impact framework. The third, and last, chapter will be a comprehensive description of the development of the DIB.

## 3. Low school attainment for girls: A social issue

Education has been a central topic for many policymakers, especially in rural and poor areas of sub-Saharan Africa, the Middle East, and South Asia, where tens millions of children grow up without receiving the most basic education (HERZ & SPERLING, 2004). The eagerness to promote education stepped outside the geographic borders of the concerned areas, with institutions like United Nations setting as the second *Millennium Development Goal and Beyond 2015* "Achieve Universal Primary Education", with the aim to "Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling" (United Nations, 2015)

According to the World Bank, more than half of girls in sub-Saharan Africa —54 percent— do not complete even a primary school education. Another study shows that 15 million girls of primary-school age will never get the chance to learn to read or write in primary school compared to about 10 million boys. (UNESCO, 2016). Such findings on school attainment are alone alarming, but they become more intriguing when research confirms that investing in girls' education originates high returns in a micro and macro context: "Providing girls one extra year of education beyond the average boosts eventual wages by 10–20 percent" (Psacharopoulos & Patrinos, 2010). This conclusion matches so many other reports on the positive impact originated from investing in girls. Studies on the quantity of schooling have

provided strong evidence that extra education for girls in developing countries has a considerable impact in girls' life's but also produces economic gains at a macroeconomic level (Dollar & Gatti, 1999). These substantial conclusions on the topic have channeled billions of dollars of aid towards interventions and policies with the purpose of tackling the "low quantity of schooling" issue. This DIB aims to tackle exactly this same issue, by introducing an impact payment model.

The already existing background for a DIB in Education together with the data just provided, were strong contributors for this thesis to pursue the elaboration of a DIB in the education sector, specifically in school attainment for girls, by targeting a country in sub-saharan Africa, Mozambique. This country presents weaknesses in the educational context that must be fought, highlighting the low results of primary and secondary attainment (UNESCO, 2015) which, according to research, would provide great economic gains if increased.

It is possible to find an overview of School attainment in Mozambique in *appendix 4*. The existing data allows to realize how low school attainment either for boys and girls is, and evaluate the existing gender gaps. All educational variables (Net enrolment rate of primary education, the rate of students enrolled in the last year of primary school and intake on secondary level) presented lower values for females than boys.

Subsequently to the macro analysis, we are going to apply the Impact framework to break down the social issue into causes and effects.

### 3.1. Impact Framework application: Assessing the social issue and macroeconomic value

As previously mentioned, the impact framework is a tool that helps analysing which are the causes and consequent effects of a social issue. Despite the apparent simplicity this tool can be quite powerful on the context of a DIB. The assessment of causes gives light into what root-issues the DIB should attack while the quantification of the affects allows, in an ultimate stage, to understand the EG (in terms of % of GDP or $) that could be added to the country if the social issue under analysis had been fought.

#### 3.1.1. Causes for Low school attainment of girls

Research concentrated in the sub-Saharan Africa concluded several major causes for girls stop attending school: big distances from home to school, hostile environment at school, early pregnancy and/or marriage, poor health and menstruation, as others. Each of these direct causes will have underlying causes, and so on, reaching the roots of the issue, which can be found in figure 14.

To have a perception of how to interpret the tree analysis consider the following example: It was found that parents are discouraged from investing in girls' studies. Such is the result of high direct and indirect costs of schooling, such the payment of fees, buying uniforms, materials and dislocation expenses. Despite these being applied for both girls and boys, this motive is stronger for girls since they dedicate a great deal of their time providing unpaid labor at home. By attending to school, it implies loss of free labor. A third consequence is the broad wage gender gap favoring boys, discouraging parents to invest in girls when there are boys at home. By digging deeper, it can be concluded that the causes for these three problems can be associated with the lack of investment from the government on education (on school fees exemption, offering uniforms, etc.) and the cultural mindset of the role of women in society.

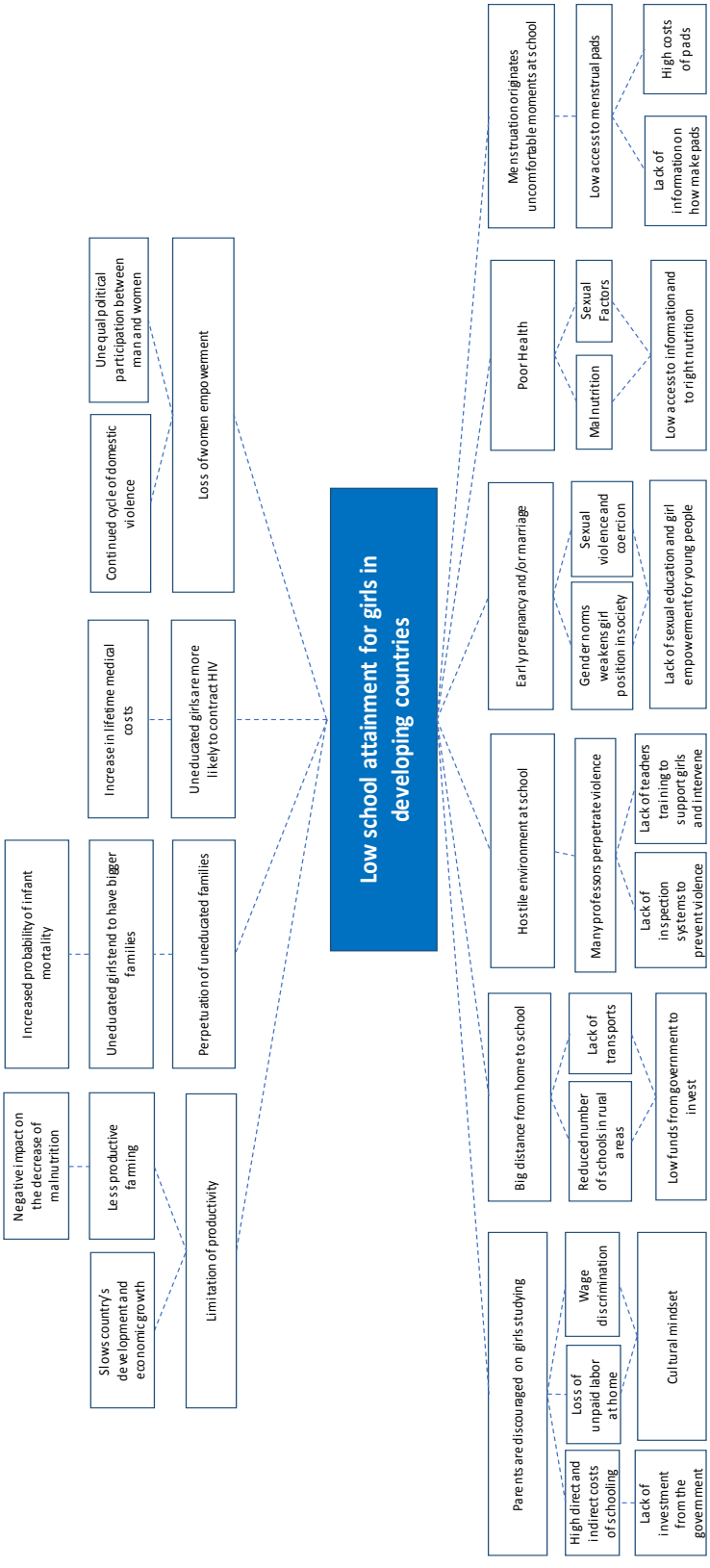



*Figure 14 Tree Analysis*[2]

[2] Tree analysis elaborated by the thesis' author, with following references: (Maia, 2008); (Rihani, s.d.); (Alvarez, et al., 2003); (Kondylis & Manacorda, 2006); (Shahidul & Karim, 2015); (Walque & Valente, 2016); (Sonia Bhalotra, 2014);

#### *3.1.1.1. Choosing an effective intervention*

The roots of the core problem are interpreted as the challenges that the social provider needs to tackle with the intervention in order for it to be successful. In the case of school attainment research showed that some of the causes for this problem to persist are: Cultural mindset, lack of sexual education and girl empowerment for young people, low access to information and to right nutrition, lack of inspection systems to prevent violence, lack of investment from the government, and others.

Having in consideration these root causes and the local where the intervention is aimed at, the country of Mozambique, it was found a NGO which intervention addresses many of the indicated causes and that operates in Mozambique: Girl Move. A further study of Girl Move and its interventions will be made in the next Chapter 4.

### 3.1.2. Effects for Low school attainment of girls

After the causes are defined, the next step is to consider the effects that this problem has originated. Loss of education and income growth, perpetuation of educated families, higher probability of contracting HIV, and lower of women empowerment are just a few of many possible consequences. Taking the example of a "loss of productivity", the second effects can be slowing country's development and economic growth, which according to Paul Schultz "returns to female secondary education are in the 15–25 percent range".

#### *3.1.2.1. Measuring economic gains*

The economic gains from each symptom translate the benefits originated by the DIB that otherwise would not exist. Still, not all of them are easily quantified in potential economic gains and the amount of available evidence might not be sufficient to provide a reliable result. As such, based on the tree analysis and on research, this thesis will compute the EG based on the *loss of potential productivity* for girls who withdraw from school early.

If girls stay in school they will have higher education and associated to that considerable higher salaries. Of course, this reasoning is quite broad because wages vary significantly according to the level of education (Murphy, 1992). To be aligned with the Millennium Development Goals on achieving universal primary education, it is going to be assessed the economic gains generated if a girl finishes primary school.

- **Methodology for measuring *loss of potential productivity***

This methodology will be adapted from the findings of Jad Chaaban 2001 on the paper "Measuring the economic gains of investing in girls".

Loss of potential productivity or loss of potential earnings due to lower education will be computed based on the average wage (a proxy for productivity) of girls who finish primary level compared with girls who do not. The goal is to obtain the lifetime costs of girls leaving primary school (independently of the level in primary school). The paper develops its methodology based on the total "*lifetime earnings differential"* that is obtained by subtracting total lifetime earnings for an individual who completed primary education, by the total lifetime earnings for an individual with an incomplete primary education. To compute the lifetime loss in earnings for all the girls [in a country] who were not in school at a given year, it is multiplied the lifetime earnings differential by the number of students in the population who did not go on to continue their education. As conclusion, the article computes these costs for several countries in value (millions of dollars) or as percentage of the country's GDP.

To put the pieces together: This DIB aims to increase school attainment for girls in Mozambique. To measure the economic gains generated it will be computed the "lifetime loss in earnings for all the girls who were not in school at a given year".
Taking Senegal as an example, the cost of all the girls dropping out of primary school is $2801M, according to the same article. If a DIB was able to decrease the country's primary school dropout [for girls] by 10%, roughly $280.1M of economic gains would be generated in terms of potential earnings. (Chaaban & Cunningham, 2011)

The next step, and goal of this section, is to compute the lifetime costs of a girl abandoning primary school for Mozambique. This same article does not present values for Mozambique and to use the described methodology it would be necessary to have the average wages for each level of education (wage for concluded primary school and wage for incomplete primary school) which is rather difficult to obtain.
A possible solution to obtain the EG is through a proxy country, as mentioned in section 3, implicating that the EG for Mozambique would be based on EG of another country of the report. This encompasses on selecting a country that presents similar strategic key indicators, ie, indicators that reflect the variables of the methodology and are available.

Because the methodology used to compute the life time cost of early school leaving was based on average wages and these were not found for Mozambique, it will be used the *household consumption* as a proxy indicator. However, average household consumption alone is not sufficient, as a centrality measure it does not provide the distribution of wealth. It is added Gini index to measure income distribution.

There were found strong similarities between Mozambique and Senegal, presenting the following results: for household consumption Mozambique spends on average $13.189PPP for all categories while Senegal $11.430PPP; as for the Gini index both have similar distribution of wealth, Senegal has 40.3 while Mozambique 45.7. Both countries present a considerable high level of inequality.

From this point forward, the cost associated to Senegal will be adopted by Mozambique, but first is necessary to eliminate the "population" factor, only then obtaining the cost associated to a single girl, which it will be assumed the same due the close results for household income and Gini Index.

The paper computed for Senegal a total life time cost of early school leaving for girls of $2801M, referring to all the girl students in the population that dropped out from primary education. In order to obtain this value per girl the amount $2801M must be divided by the number of girls in the population (in the theoretical age group for primary education enrolled in that level)[3] that dropped out from primary school.

According to the report, for the year of 2004, 40% girls[4] dropped out during the year, the equivalent to 356.760 girls (World Bank database). This results on a cost of 7851$. To conclude, for every girl that would drop out of school, but continued studying due the investment from the DIB, will provide an economic gain of 7851$. At an exchange rate of 1USD to 0,894€, originates 7019€.

3 Source: WB EdStats, Population of the official age for primary education, female (number)=891,902

4 Source: WB EdStats, derived from the variable ―net enrollment rates at the primary and secondary level

## 4. Girl Move

Girl Move is a Portuguese NGO founded in 2013, with headquarters in Nampula and branches in Lisbon and Maputo. Their activities are based in the areas of Napipine and Merrere. Its mission is to empower, through education, Mozambican girls and women to become the main development agents of their country. In order to achieve such goal, Girl Move has developed two programs: The Mwarusi project and the Leadership Academy. Although both create great value for the girls and community, the focus of this thesis is on the Mwarusi project, which effort is on young girls. (Girl Move, 2017)

### 4.1. Mwarusi Project

The Mwarusi project focusses on 12 to 15-year-old young girls, denominated *Mwarusis*, who are attending 7th grade (final year of primary schooling) and are living in conditions of potential vulnerability in the neighborhood of Marrere and Napipine (Girl Move, 2017). This project, which is centered on the Safe Spaces methodology, makes a contribution so that the adolescent girls from communities with limited resources in Nampula have:

- Increased school rates retention
- Greater access to good quality and relevant opportunities to develop life skills, such as: self-esteem, knowledge on health and hygiene and opportunities for personal development.

#### 4.1.1. Safe spaces Methodology

Safe Spaces is a tested and proven methodology that involves a space provided by the community and then rehabilitated, where all the interaction, training and activities take place. Promoting a system of rules and schedules, elements of identity and belonging, this methodology promotes both the access and use of the education and health local resources, and the building up of knowledge and skills in different areas, i.e. social, economic and health domains, according to the group and the community needs.

The Safe Spaces methodology is widely adopted for diverse causes, for instance Women and Girls Safe Spaces (WGSS) has emerged as a key strategy for the protection and empowerment of women and girls affected by the Syrian crisis and Child Friendly Spaces protects children (boys and girls) by providing a safe space with supervised activities. (UNICEF)

According to United Nations, there are 7 principles to establish safe spaces for girls and women [*appendix 5*]:

- Leadership and empowerment of women and girls
- Client/survivor centered
- Safe and accessible
- Community involvement
- Coordinated and multisectoral
- Tailored

### 4.1.2. Safe spaces applied to the Mwarusi Project

Girl Move has implemented the Safe Spaces methodology to the Mwarusi project, tailoring it according the girls needs in order to achieve the main goals of *conclusion of primary school* and *transition to secondary school*, consequently leading to a reduction in teenage pregnancy and child marriage.

Every year, Girl Move works with 900 girls from the neighborhoods of Marrere and Napipine, providing 3h per week of modules of "Abilities for life" and study sessions, a total of 12h per month. In addition, within the year, the girls receive at least 2 home visits from Girl Move.

The program "Abilities for life" has the duration of one year, starting in February and ending in January, and is divided in 4 modules [figure 15]: I protect myself, I protect my body, I protect my money and I protect my education. Each module has a 3month duration and its sequence is fixed, allowing a growth in trust among the mwarusis and Girl Move. The reason for the module "I protect my education" being the last one is to coincide with the end of a school year and the beginning of a new one, which corresponds to the exams period to conclude primary school and the timing to register in secondary school.

In total, 72h of lessons plus 72h of study sessions are given in the period of a year.

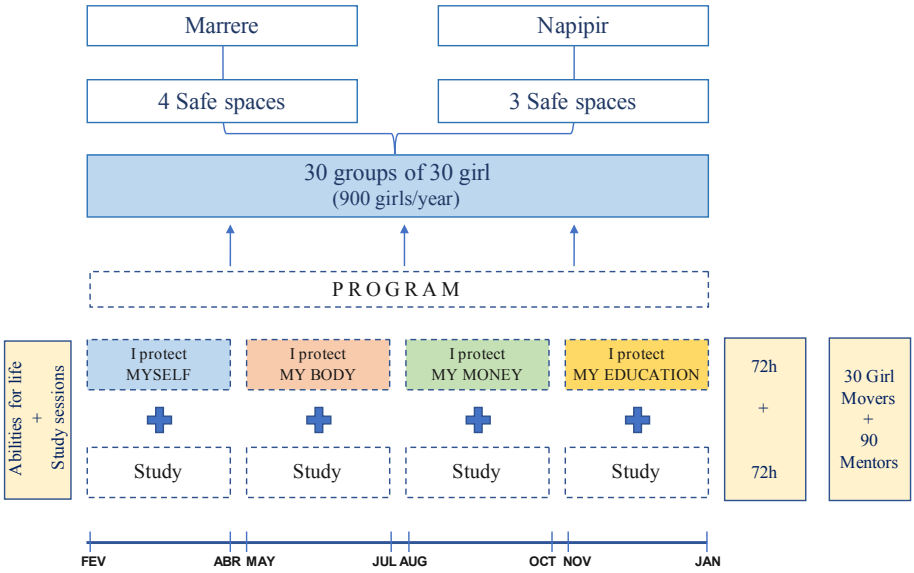



*Figure 15 " Abilities for Life"- Program Structure*

However, such program could not be developed without the inspiration factor. Throughout the program the Mwarusis will be accompanied by Mwarusi Mentors (young women enrolled in University) and Girl Movers. Girl Movers are Mozambican university graduated women who are enrolled in the "Advanced Program of Leadership and Entrepreneurship", also developed by Girl Move. One Girl Mover will give training and mentorship to 3 Mwarusi Mentors, which together will give classes and accompany 30 Mwarusis throughout the year.

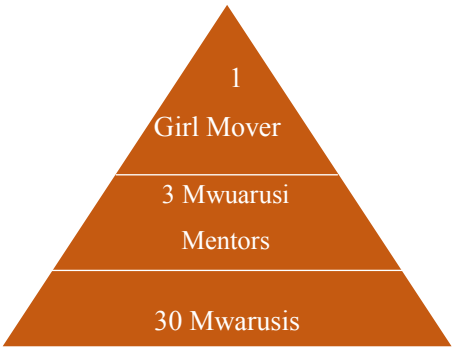



*Figure 16 Abilities for Life"- Program Structure*

In conclusion, Girl Move provides a unique intervention for girls in Mozambique, by putting together a tailored school program along with older educated and ambitious women that are seen as an inspiration. (Girl Move, 2017)

The uniqueness and success associated to Girl Move's past intervention, in terms of impact, in Mozambique makes this NGO as a most adequate service provider for this DIB focused in fighting low school attainment.

## 5. Girls' Education DIB

The DIB targets 2700 girls enrolled in one of the six schools of the cities of Marrere and Napipine. The program has a duration of three years, which is equivalent to three interventions with 900 girls each. This information is summarized in the following table.

| | |
|---|---|
| *Launch Date* | Fev 2018 |
| *Conclusion Date* | Jan 2021 |
| *Interventions (#)* | 3 (1 year each) |
| *Target Population (#)* | 2700 girls for 3 years |
| *Target Locations* | Marrere and Napipine (Mozambique) |
| *Total Intervention Costs (€)* | 801.309[5] |

*Table 1 Intervention summary*

After the first intervention is concluded, the intermediary will compare the established results of each indicator with the respective impact baseline, therefore assessing the level of impact originated with the intervention. Such assessment will be made after each intervention, resulting in a total of three assessments.

### 5.1. Stakeholders involved in the Girls Education's DIB

This DIB will follow an Indirect Contracting structure, proposing the presence of an intermediary. The following image describes the structure of the DIB and specifies which entities are proposed to assume the roles of each stakeholder.

[5] Detailed intervention costs in section 5.2.2

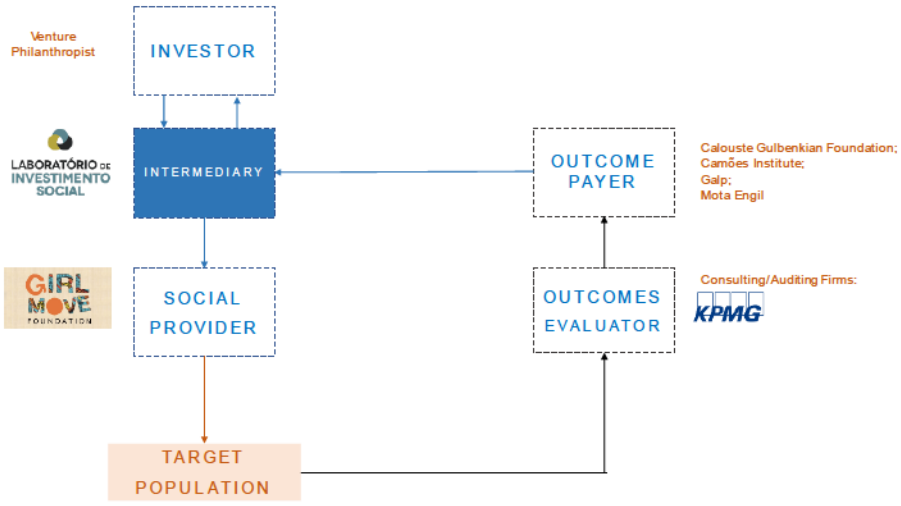



*Figure 17 DIB Rationale- Girl Move*

### 5.1.1. Service Provider-GM

*Girl Move* is the service provider in charge of executing activities on the field. In exchange of delivering specific results, it will receive working capital from investors to fund its' activities.

### 5.1.2. Impact Payer(s)

The role of outcome payer is to be assumed by Aid Agencies, or Foundations or the Social Responsibility units of large Portuguese corporations operating in Mozambique. Therefore, the following entities could be potential actors for this role.

A suitable outcome payer for this DIB would be *Calouste Gulbenkian (CG)* foundation. As a foundation, CG provides financing to third-parties; Supports innovative projects that generate progress and adaptability to change, among other activities. (Gulbenkian Foundation- What we do, s.d.)

Another possible entity is *Camões- Instituto da Cooperação e da Língua Portugal. Camões,* I.P. promotes, finances, co-finances and operates dozens of programmes […] particularly in Portuguese-speaking African countries (PALOP) and East Timor. (CAMOES, s.d.)

Being the Education DIB an innovative financial mechanism that intends to generate progress and improve community's standards, this would be aligned with these entities' goals.

On the private side, Portuguese companies that have operations in Mozambique could also be potential impact payers: Navigator, Petrogal[6] , Mota-Engil, Teixeira Duarte, and others

### 5.1.3. Investor(s)

In a DIB, this stakeholder is the one assuming all the risk, therefore having confidence on the service provider and on its capabilities of achieving results is crucial.

The investor should be a venture philanthropist, someone with high proximity with the NGO and with the underlying cause of the DIB, educating young girls.

### 5.1.4. Outcome Evaluator

The more important feature of the outcome evaluator is its independency. The options for outcome evaluator would fall in the area of auditing firms who have the capability of providing unbiased results and show experience in the social area. Such examples would be KPMG, Deloitte or PWC. In addition, the branding associated to the size of these companies would be a positive factor to be associated with the DIB. According to the survey TOP100 companies in Mozambique for 2015, KPMG was the only auditing/consulting firm integrating this list, with total revenues, for the same year, amounting to 7 million of euros. Such penetration and knowledge in the market makes KPMG a strong(er) candidate to execute this role.

### 5.1.5. Intermediary/ Performance Manager

The intermediary role will be assumed by *Laboratório de Investimento Social* (LIS) from Lisbon. LIS has supported the development of the first SIB in Portugal and has a diverse experience with social finance, being an obvious choice for this DIB.

## 5.2. Interventions

### 5.2.1. Intervention design

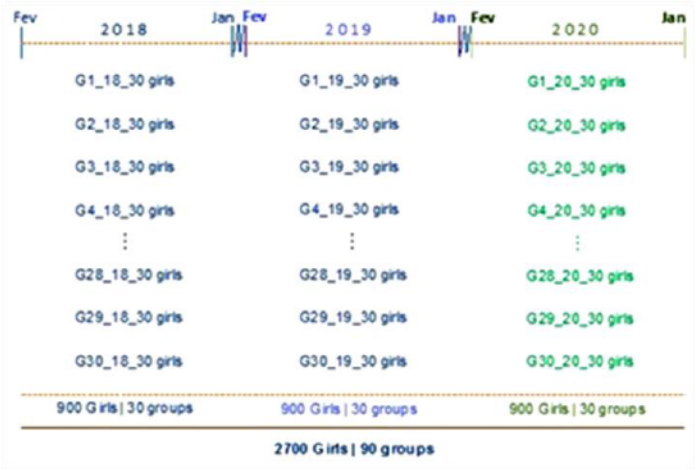



*Figure 18 Intervention Design*

The DIB intends to finance three interventions with a total of 2700 girls. The scheme in figure 18 illustrates how the interventions are planned. One intervention reaches 900 girls and has the duration of 12 months, starting in February 2018. In January of the following year, the intervention is concluded and a new sample of 900 girls will start to be assisted again in February 2019, so on and so forth. For each year the 900 supported girls are divided into 30 groups of 30 girls. The methodology of Safe Spaces is applied to each group and is coordinated by 1 Girl Mover and 3 Mwarusi mentors.

### 5.2.2. Intervention costs

The intervention costs will be the base to estimate the working capital needed for the service provider to execute its activities during duration of the program. Therefore, summing up the annual amounts of capital will lead to the total investment needed, from investors, in order for the DIB to be feasible.

The intervention costs are divided in two major groups, direct costs and indirect costs. Yearly costs were assumed to be constant, the variations occur in a monthly frequency [*appendix 6*]. Table 2 shows that the component with higher costs is the Personnel, which is explained by the number of people who intervene in the Mwarusi project. For instance, per intervention (year) there are involved 30 Girl Movers and 90 Mentors (1GM+ 3Mentors per 30 mwarusis,

as seen before), amounting to costs of 80.400€ (these yearly costs exclude the managing team from Girl Move) which is more than half the costs for personnel.

It is also important to highlight the payment seasonality of certain categories, such as "Safe spaces", which the total costs are incurred at the beginning of the project. This lead refers to the materials and maintenance of each safe space, which need to be 100% operational before each intervention. The same happens with "Equipment", referring to mobile phones for mentors in order to gather data.

Additionally, to the costs of the intervention is necessary to add expenses related to the development of the DIB. The contract with an Intermediary, Outcome Evaluator and other potential contract costs will incur extra 25.000€ per year.

Regarding the yearly costs, ie, direct costs plus indirect costs, for the first year these will amount to 248.621€, for the second and third year 267.103€ and for the fourth year 18.481€, this last value represents the costs for the month of January of 2021, which is the last month of the last intervention; the same logic is applied to the costs of the 1st year: because the first intervention only starts in February, there are still no costs for January 2018.

In a cost per intervention perspective, the costs are the same, amounting to 267.103€, which includes 900 girls. The cost per intervention of supporting one girl is equal to 297€, then the product 2700 girls (for the three interventions) with 297€ per girl will provide the total investment required. Therefore the total investment for the DIB will sum up to **801.309,96**€.

| Costs of DIB | | | | |
|---|---|---|---|---|
| (€) | 2018 | 2019 | 2020 | 2021 |
| **Direct Costs** | 187.065,63 | 202.223,96 | 202.223,96 | 15.158,33 |
| Personnel | 133.866,92 | 146.036,64 | 146.036,64 | 12.169,72 |
| Safe Spaces | 3.220,00 | 3.220,00 | 3.220,00 | - |
| Transportation | 6.475,00 | 6.600,00 | 6.600,00 | 125,00 |
| Content production | 3.420,63 | 3.503,96 | 3.503,96 | 83,33 |
| Training | 7.970,00 | 8.240,00 | 8.240,00 | 270,00 |
| Incentives | 27.613,08 | 30.123,36 | 30.123,36 | 2.510,28 |
| Equipement | 4.500,00 | 4.500,00 | 4.500,00 | - |
| **Indirect Costs** | 61.556,08 | 64.879,36 | 64.879,36 | 3.323,28 |
| Utilities and Services | 36.556,08 | 39.879,36 | 39.879,36 | 3.323,28 |
| Perfomance manager contracting | 10.000,00 | 10.000,00 | 10.000,00 | - |
| Outcome evaluator | 10.000,00 | 10.000,00 | 10.000,00 | - |
| Contract costs | 5.000,00 | 5.000,00 | 5.000,00 | - |
| Cost/mwarusi/ month | 23,02 | 24,73 | 24,73 | 1,71 |
| #mwarusis | 900,00 | 900,00 | 900,00 | 900,00 |
| Total costs/ month | 20.718,48 | 22.258,61 | 22.258,61 | 1.540,13 |
| Total costs/ year | 248.621,71 | 267.103,32 | 267.103,32 | 18.481,61 |
| **Total costs** | **801.309,96** | | | |

Source: Girl Move Yearly Report (2016)

Exchange rate: 60MET

*Table 2 DIB Costs per year*

## 5.3. Key performance indicators

As it was mentioned in Chapter 2, the establishment of KPIs is crucial to be able to evaluate if the intervention is being successful and that these can be set in four steps:

### *5.3.1.* Goals

The DIB aims to fight low school attainment for girls in Mozambique which, according the macro-research in section 4.1, showed a need for improvements on primary and secondary levels. In addition, the same chapter highlights the effects of additional years of education to girls in developing countries, Therefore the KPIs for this DIB will be the following:

- *KPI 1: Conclusion of primary school*

This indicator aims to measure the number of girls that successfully finish primary school, which implies having minimum grades to conclude the academic year plus passing the national exam. The data for the assessment will be the public official data.

- *KPI 2: Transition to secondary school*

This indicator intends to assess the number of girls that get registered in secondary school after concluding primary school. Such implies overcome girls' financial and cultural-social barriers, being these major causes for low school attainment, as seen on the problem tree. Because the intervention has only one year duration it will not be possible to assess the performance of girls in the secondary level.

The indicators were established considering a cycle of primary and secondary school, making them continual indicators and therefore the second depends on the first. This will have implications on the measurement of economic gains for KPI 2.

### 5.3.2. Impact baseline

The impact baseline will be established for both KPIs, Academic Approval and Transition to secondary, based on the reference values for the country of Mozambique.

### 5.3.3. Unitary economic gains

- *KPI 1: Conclusion of primary school*

As explained in the section 4.2.2., the assessment of the economic gains will be based on the average wage (a proxy for productivity) of girls who finish primary level compared to the ones who don't. The goal is to obtain the lifetime costs of girls abandoning primary school (independently of the level in primary school). The measurement of the economic gains for this KPI was already calculated in this same chapter, obtaining a value of 7019€.

- *KPI 2: Transition to secondary school*

The main difference on this indicator is that it does not represent the total life-time earnings differential for a girl concluding secondary school, but rather the gains that are originated merely from a girl getting registered in secondary. Therefore, the calculation will require a further step: after assessing the individual's life-time earnings differential for concluding secondary level, 6246€[7], this value must be adjusted to represent only the economic gains from a girl getting registered in secondary, by multiplying this value for the probability of a girl who enrolls in secondary level to actually conclude it. According to the World Bank, only 21.8%[8] of girls enrolling in secondary school ends up concluding the lower secondary level. Therefore, the economic gains previously obtained must be multiplied by 21.8%, taking into account that from all the girls registering only these 21.8% will be successful. Therefore, the economic value representing a girl that registers into secondary school is 1312€.

[7] Applied same methodology as in KPI 1
[8] Due lack of data the value used is for lower secondary and not for the entire secondary.

The establishment of KPIs and respective economic gains is the base to calculate the impact payment per successful intervention, ie, for each girl that was impacted by the DIB. This will be explored in the following section.

### 5.4. Payment Structure

To reach the total impact payment to be paid back to investors, this DIB will follow the following features:

- *Continuous Payment Methodology*

For the Girls' education DIB it was decided that payments should not be dependent on pre-established target results, which follows a logic of payments for intervals of outcomes, implying that, for example, impacting 100 girls could generate the same payment as 120 girls. In this DIB, the impact payment will be disbursed according to each unit of impact achieved, generating different disbursement values for investors if 100 or 120 girls are impacted. Again, the word "impacted" is key in this computation. As it was mentioned before, an *impacted girl* refers to a girl that would not have changed her status-quo situation if it were not for the DIB.

- *Payment cap*

The Total Impact Payment is capped at 801.310€, corresponding to the total costs of the program.

- *Incentive to service provider*

If the combination of results from indicators are high to the point of originating a total impact payment superior to intervention costs, investors do not receive any surplus, however the service provider may be rewarded for such achievement, receiving a proportion of the additional amount. The proportion will be the same as IRAC, so if IRAC equals to 8, they will receive a proportion of 8% over the difference of total impact payments and total initiative costs.

- *Foreign Exchange provision*

The capital allocation from the investor to the service provider will be made in euros.
The capital allocation from impact payers back to the investor will also be made in euros.

### 5.4.1. Potential Impact

In order to assess the variation of Impact Payments according to results, there were developed three scenarios of impact results: Low Impact Scenario, Moderate Impact and High Impact. For simplicity reasons this chapter will only analyze the Moderate Impact scenario, however the reasoning applied in this analysis is the same for the other scenarios.

| Impact Results (% and #) | | Academic Approval | | Transition to Secondary | |
|---|---|---|---|---|---|
| | | % | # | % | # |
| Intervention 1 | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *60%* | 540 | *40%* | 360 |
| | Impact | *15%* | 135 | *13%* | 117 |
| Intervention 2 | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *65%* | 585 | *43%* | 387 |
| | Impact | *20%* | 180 | *16%* | 144 |
| Intervention 3 | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *70%* | 630 | *46%* | 414 |
| | Impact | *25%* | 225 | *19%* | 171 |
| | Total Impact | 20% | 540 | 16% | 432 |
| | Efective Impact out of Potential Impact | 36% | | 22% | |

*Table 3 Moderate Impact Scenario*

The table shows the impact baseline for both KPIs, as defined in section 2.2.1.3. For the indicator of Academic Approval, in Mozambique 45% of the girls conclude primary school. As for secondary school, the value is quite lower, with only 27% of girls transiting to secondary school. These rates applied to the sample of one intervention, 900 Mwarusis, given the number of girls within the sample that would be expected to succeed without the development of the DIB. Therefore, only the results above the 405 girls will be considered in the total payment.

The row of outcomes provides the total results that the intervention achieved. If in the first intervention the outcomes would be 60%, then 540 girls would go to school. This value of outcomes, subtracted to the impact baseline, results in the impact created. In other words, because of the DIB, in a first intervention, 135 girls would be impacted. This is the number that will be held accountable to compute the IP.

After assessing the value of the three interventions, it can be concluded that a total of 1755 out of 2700 girls successfully finished primary school and 1161 out of 2700 transitioned to secondary school. For KPI1, the average of all impacts was 20% meaning that 540 additional changed status versus what would be expected without intervention. Regarding KPI2, the average impact for the three interventions was 15 %, a total of 432 girls were impacted.

Another valuable insight is to understand which percentage of impact was originated out of the *potential impact* for the whole intervention. Considering the status quo of 45%, the potential impact will be 55% or, in absolute values, 1485 out of 2700 girls. If the intervention impacts 540 girls (sum of impact of three interventions), then the ratio between 540 and 1485 would provide how much impact was achieved out the possible impact. In this case, 36% of the potential impact was reached for KPI1 and 22% for KPI2.

The average of both values will define if an intervention is "Low, Moderate or High" on impact. For a low impact intervention, we propose the ratio is below 25%; Moderate impact goes from 25% to 49% and High impact from 50% onwards.

In this case, the average of 36% and 22% is 29%, a Moderate Impact intervention as mentioned in the beginning of this chapter.

In order to proceed to the calculation of Total Impact Payment, the impact originated from each intervention must be taken into consideration, ie, for KPI1 540 girls and KPI2 432 girls.

### 5.4.2. Unitary Impact Payments' formula

The TIP formula was introduced in section 2.2.2., computing the total capital to be disbursed to investor(s). Via the same equation it is possible to obtain the UIP per KPI, which is the value, depending on the KPI, that must be paid for each girl that is impacted.

$$Unitary\ Impact\ payment\_KPI_n = PaymentRate \times (UnitaryEconomicGain\_KPI_n)$$

After defining the indicators and its economic values, in section 6.3, it is possible to replace the variables in the equation, obtaining an equation for each KPI:

***Payment Rate***, is the average of the relative TI of both indicators. Therefore, 20% and 16%, equaling 18%.

***Unitary Economic Gain*** is the value, in euros, added to the economy by impacting one girl. This definition is in section 2.2.1.4.

- $Unitary\ Economic\ Gain_C = 7019€$ : For each extra girl finishing primary school, the economy will have a gain of 7019€.

- $Unitary\ Economic\ Gain_T = 1312$ € : For each extra girl transiting to secondary school, the economy will have a gain of 1312€.

***KPI 1***

$Unitary\ Impact\ payment_C = 18\%[(7019$ )= **1263.42€**

***KPI 2***

$Unitary\ Impact\ payment_T = 18\%(1312$ )=**236.16€**

***Unitary Impact Payment per***$KPI$ is the value, in euros, that outcome payers must disburse per unit of impact, ie, impacted girl.

- $Unitary\ Impact\ Payment\ _C = \mathbf{1263.42}$€: For each extra girl finishing primary school, outcome payers will pay 1263.42€.
- $Unitary\ Impact\ Payment\ _T = \mathbf{236.16}$€: For each extra girl transiting to secondary school, outcome payers will pay 236.16€.

### 5.4.3. Impact Payment Scenarios

To estimate a potential TIP to investors, it will be used the previous example scenario of "Moderate Impact".

$$
\begin{aligned}
Total\ Impact\ payment &= PaymentRate \times \Sigma(EconomicGain_{KPI_n} \times Impact_{KPI_n}) \\
&= 18\% \times \left[(7019_{KPI_1} \times Impact_{KPI_1}) + (1312_{KPI_2} \times Impact_{KPI_2})\right] \\
&= \left(1263.42_{KPI_1} \times Impact_{KPI_1}\right) + (236.16_{KPI_2} \times Impact_{KPI_2}) \\
&= (1263.42_{KPI_1} \times 540_{KPI_1}) + (236.16_{KPI_2} \times 432_{KPI_2}) \\
&= \mathbf{784.267}€
\end{aligned}
$$

| Impact Payments: Moderate Impact | | |
|---|---|---|
| € | KPI1: Academic Approval | KPI2: Transition to secondary |
| Impact Baseline | 45% | 27% |
| Outcomes | 65% | 43% |
| **Impact** | **20%** | **16%** |
| Economic Gain | € 3.790.260 | € 566.784 |
| **Total Economic Gain** | **€ 4.357.044** | € - |
| *Payment Rate* | *18%* | |
| Impact Payment | € 682.246,80 | € 102.021,12 |
| Total Impact Payment | **€ 784.267,92** | |

*Table 4 Impact Payments- Moderate Impact Scenario*

Because 540 additional girls finished primary school, the country of Mozambique benefited from EGs in the order of €3.790.260, in terms of life-time earnings. Furthermore, 432 of these girls proceeded to the next level of studies and got registered in secondary school, adding extra value to the country, this time in the order of €566.360. In total, the existence of the DIB created to the economy a TEG of €4.357.044, in terms of life-time earnings.

After applying the payment rate to each EG, it is obtained the IP of each indicator. Under this scenario, it is concluded that impact payers must disburse a total of €784.267 back to investors.

| Results | |
|---|---|
| Intervention Costs Covered | 98% |
| IRAC | 5,56 |
| Incentive Service provider | € - |

*Table 5 Moderate Impact Scenario*

The total amount disbursed in this scenario will cover 98% of intervention costs, and as an IRAC of 5,56, indicating that for one euro disbursed (by outcome payers) it created in return 5,56€ of impact. Considering that the total impact payment did not exceed the total intervention costs, there is no incentive for the service provider.

In *appendix 7* and *8* can be found the other two scenarios for low and high impact.

## 5.5. Capital's flows and timings

In the last sections, it was assessed the total value of the project, or in other words, of the three interventions together, enabling to understand the reasoning behind the computation of the total impact value. However, as previously mentioned, the flows capital will not be disbursed at a single moment in time.

The payments to Girl Move will be made one month before starting the intervention, every January, independently of the results attained. Such decision can be interpreted as risky, however the impact historic of this foundation has granted this right. In addition, the payment must be made every January in order to fund the same intervention.

| | Outcome Metric | *Impact (#)* | Total Impact Payment | Impact Measurement Time | Impact Payment Time |
|---|---|---|---|---|---|
| **Intervention 1** | **Academic Approval** | 135 | € 170.562 | dez-18 | mai-19 |
| | **Transition to secundary** | 117 | € 27.631 | mar-19 | mai-19 |
| **Intervention 2** | **Academic Approval** | 180 | € 227.416 | dez-19 | mai-20 |
| | **Transition to secundary** | 144 | € 34.007 | mar-20 | mai-20 |
| **Intervention 3** | **Academic Approval** | 225 | € 284.270 | dez-20 | mai-21 |
| | **Transition to secundary** | 171 | € 40.383 | mar-21 | mai-21 |

*Table 6 Impact Payments and timings*

Regarding the flows of capital from impact payers to investors, these will depend on the impact generated after each intervention. Therefore, there will be a period when the outcome evaluator will assess which level of impact was reached for both indicators. However, for the indicator of Academic Approval, the evaluation period will be in December, corresponding to the timing when schools release the grades from the academic year; as for Transitioning to secondary the assessment will be done only in March, 3 months later, since girls will have to make the national exam and wait for the results, which are released in the month of March. After all results are released from the respective national bodies, the outcome evaluator will make its unbiased valuation, which is expected to be released in May, an average of 2 months duration. Only then the IP can be made accordingly to the impact created. Despite the different timings of indicators, there will be only one payment per intervention, taking into account the results of both interventions.

The following graphic shows the flows of capital from the investor(s) to Girl Move (in blue) and later on, according the scenario developed, the repayment from impact payers to investors.

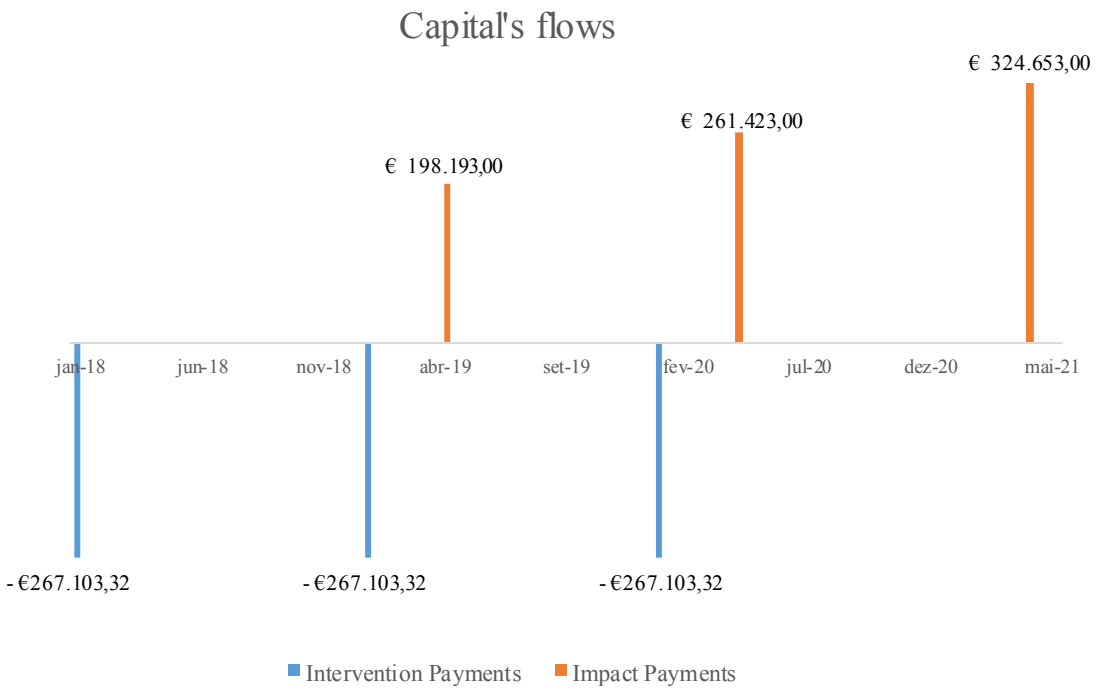



*Figure 19 Cashflows Impact Payments*

Therefore, under this DIB there will be 3 flows of capital from investor(s) to Girl Move, referring to intervention payments, and three flows of impact payments from impact payers to investors.

The first intervention payment is made in January 2018, amounting to 267.103€, as the two remaining intervention payments. If these three values are summed up, the result will be the Total Costs, 801.309€.

The impact payments, under this scenario, will be disbursed starting in April 19, implying that investors will receive their first payment one year and four months after their first allocation of capital. This flow of capital will amount to €198.193, which according to the table 7, is the payment of impacting 135 girls to finish primary school and, from these 135 girls, 117 going to secondary school. The two remaining impact payments will be paid back to investors in April 2020 and April 2021. The sum of these values will generate a total Impact Payment of €783.267.

## 6. Conclusion

This dissertation aimed to fulfill two different goals: At a first stage, the low activity within the Development Impact Bond market raised a red flag on why such a small number of DIB's was in the market, while SIBs experienced a different reality. The first aim was thus to explain the difficulties in adopting the DIB instrument and to propose a re-designed model of DIB. The second task, which ended up complementing the first, aimed to develop a DIB for a specific country and NGO.

The analysis was from the very beginning oriented to the fact that in a DIB governments are not the outcome payers, and that such structural change can deeply influence the principles of this mechanism.

To counter interact the potential issues originated by not having a governmental entity, two adjustments are suggested in this thesis (Chapter 2):

*i.* The impact originated from a DIB can no longer be measured in terms of financial gains (savings) for the government. A potential new measure for impact could be the gains that were brought for the economy due the DIB.

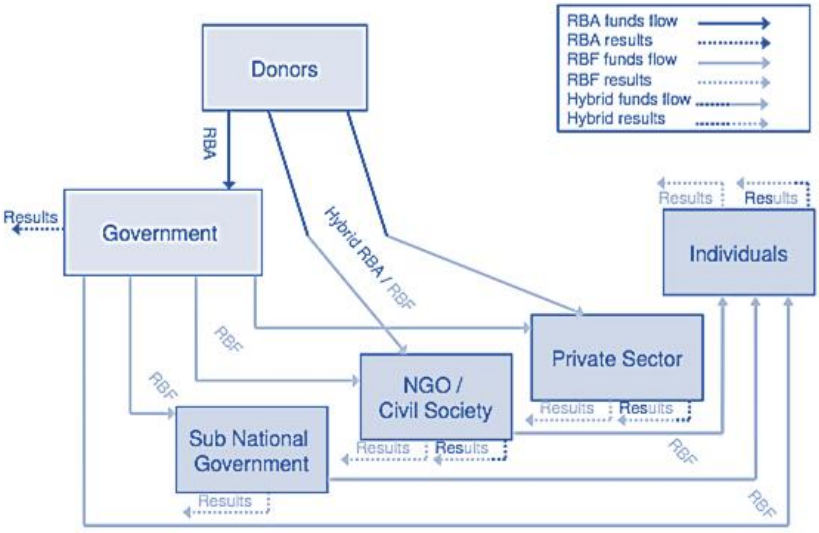
ii. Outcome payers will have to finance the principal plus return, which might raise difficulties on finding donor agencies willing to pay the return component. The solution is finding entities for the investor role who are willing to abdicate returns and therefore perceive a DIB as way to expedite their budget and therefore leverage other investment opportunities.

As a result, in Chapter 5, the new DIB model is applied to a specific case: Girl Move, an NGO that operates in Mozambique to fight low school attainment for girls.

The total value of DIB is 801.309€, it targets 2700 girls and in a "moderate impact scenario" it is forecasted to impact 540 girls. This means that, without the DIB, 540 girls would have not been able to finish primary school and 432 would not have registered for secondary school. Because one of the principles of this model is to measure the impact of the DIB in terms of economic gains, these girls translate a total of €4.357.044 of macroeconomic gains for the Mozambican country which in a status quo (without the DIB) would not have existed. In contrast to the considerable value added, this model proposes an impact payment of €783.267, with an IRAC of 5,56. The interpretation of this value is the following: for every euro paid by impact payers, 5,56€ worth of economic gains were originated for Mozambique.

# 7. Appendixes

## APPENDIX 1: TYPES OF PBRS MODELS




Results based aid (RBA)

As the name indicates, the funding is made in the form of aid implicating that capital is provided by a donor. The social provider, that can be a national or sub-national government body of the partner country (Pearson 2011; Pearson / Johnson / Ellison 2010; Klingebiel 2012), will fund its' own activities. The donor disburses the funds once the service provider has achieved the results that have been defined in a contract beforehand and after the achievement of results has been verified by the outcome evaluator.

Results based finance (RBF)

The World Bank defines RBF as "any program that rewards the delivery of one or more outputs or outcomes by one or more incentives, financial or otherwise," after the outcome payer has verified that the service provider has delivered the agreed-upon results (Musgrove 2010). The outcome payer is a national or sub-national government body. The service provider, that again funds its activities, can be a private non-profit organization, a private for-profit provider or a sub-national government level in the case of a performance-based financing approach (Pearson 2011). RBF may be funded by domestic funds, by donor funds or by a combination of both (Klingebiel 2012).

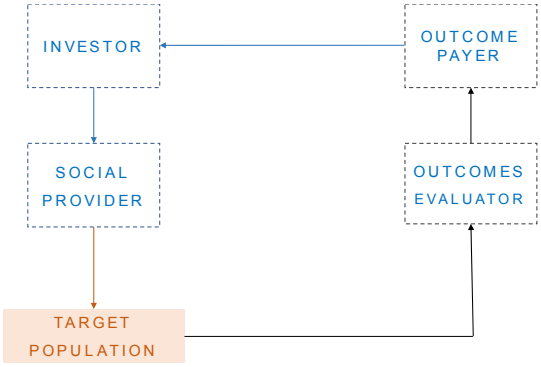
Hybrid results based aid/financing (HRB)

Financing hybrids combine aspects of both RBF and RBA and use aid funds to contract local or international NGOs or private sector providers directly.

## APPENDIX 2: TYPES OF STRUCTURE

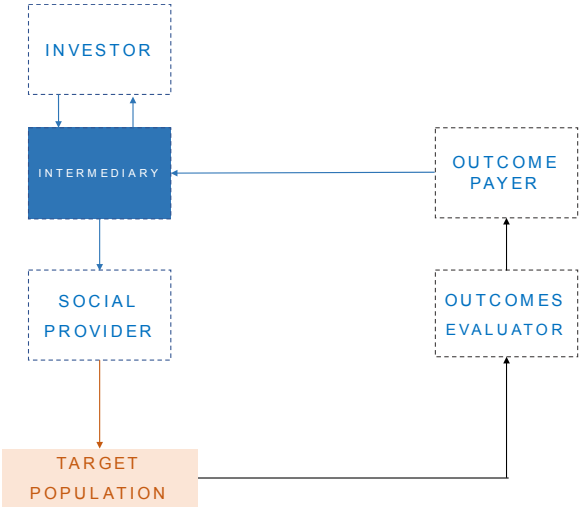
- **Direct Contracting between impact payers and service providers**

Does not include the presence of an intermediary, meaning that the negotiations and capital flows are made directly between investor, service provider and outcome payer.




- **Indirect Contracting- via an intermediary**

When there is an intermediary involved its' role is to manage the negotiations and capital flows. In this case, the intermediary will hold the capital provenient from investors and then allocate it to the service provider. If in the end of the intervention capital disbursed, the intermediary will receive it from outcome payers and only them transfer back to investors.



## APPENDIX 3: IMPACT PAYMENT AND UNITARY IMPACT PAYMENT

To obtain how much must be paid per indicator it is computed the *Impact Payments*.

$$Impact\ payment\_KPI_n = PaymentRate \times (UnitaryEconomicGain\_KPI_n \times Impact\_KPI_n)$$

Via the same equation it is possible to obtain the *Unitary Impact Payment* per KPI, simply by excluding the variable $Impact\_KPI_n$. Such value adds extra value for continuous models, where no target results are established and the only option to compute a value for *potential impact payment* is to speculate a variety of scenarios for impact results.

$$Unitary\ Impact\ payment\_KPI_n = PaymentRate \times (UnitaryEconomicGain\_KPI_n)$$

When applying these formulas to a practical example:
If

$$Impact\ payment_{KPI_n} = PaymentRate \times (\text{Unitary}EconomicGain_{KPI_n} \times Impact_{KPI_n})$$

$= 20\%(3000 \times 150\ )$=9000€

The KPI1 would create economic gains to society estimated in €450.000 (Unitary Economic Gain times the number of impacted individuals) and lead to an impact payment of €90.000.
As for the unitary impact payment of KPI1 it equals €600, ie, per every unit of impact associated to KPI1 the payment is €600. If we multiply this value for the value of impact, 150, it will result in the same €90.000.

After applying these same computations to KPI 2, the sum of Impact Payments of both KPIs would result in the Total Impact Payment.

## APPENDIX 4 : SCHOOL ATTAINMENT IN MOZAMBIQUE

The Mozambican government has put education as a first priority. On a sectorial perspective, education was found to be the largest piece on the state budget (19%) when compared with the other priority sectors, followed by the infrastructure sector. An analysis from 2004 until 2013 shows a steady trend of expenditure on education as a percentage of total government expenditure, with 18% and 19% for each respective year. The year of 2005 contrasts with the others where spending reached 22.7%. (UNICEF, 2015) This considerable upward variation coincides with the, at the date, new policy of abolition of school fees and provision of direct support to schools and free textbooks. (The World Bank, 2009) As for the expenditure on education on the rest of Sub-Saharan Africa (SSA, all income levels), it has been recorded an average spending of 16.5%.

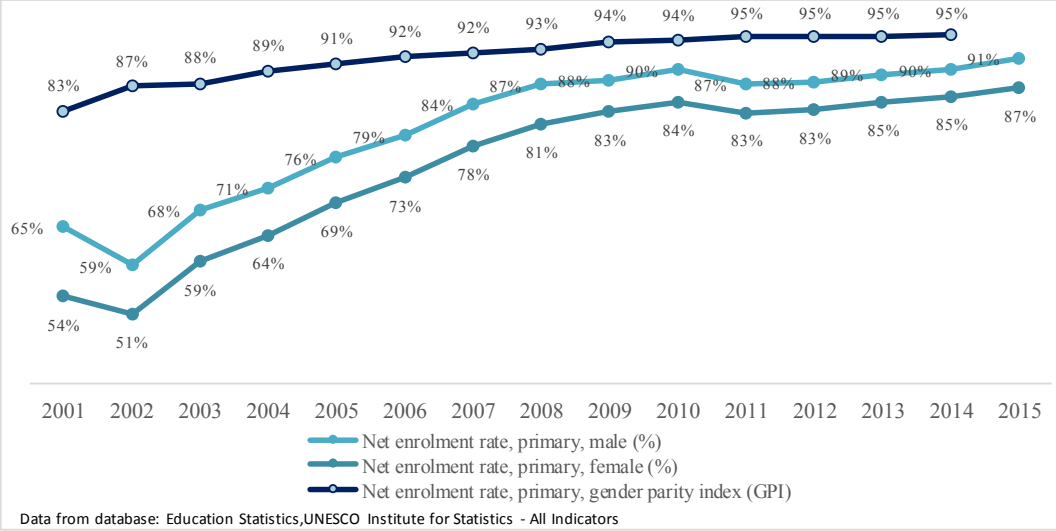
But how much of education spending is originated from internal resources, such as taxes, tariffs, duties, and credit and external resources, like external aid?

Worldwide, between 2010 and 2013, the total aid provided showed an increase in social sectors such as health, which experienced an accelerated growth. The opposite happened to education, considering that aid allocated to education fell by 9 percent (Steer & Smith, 2015). Mozambique has presented opposite trends to the ones just presented, showing steady increase of external funding to the education sector. For the year of 2013, €65.72M of euros and €84.68M for 2015 (UNICEF, 2015).

Mozambique's distribution of expenditure between levels of education was found to be quite imbalanced, with primary schooling absorbing 49% of the total funds spent on education, while secondary 30.6% (World Bank,2015). As such, several changes have been observed on education variables as enrollment and completion rates, and especially on gender equality.

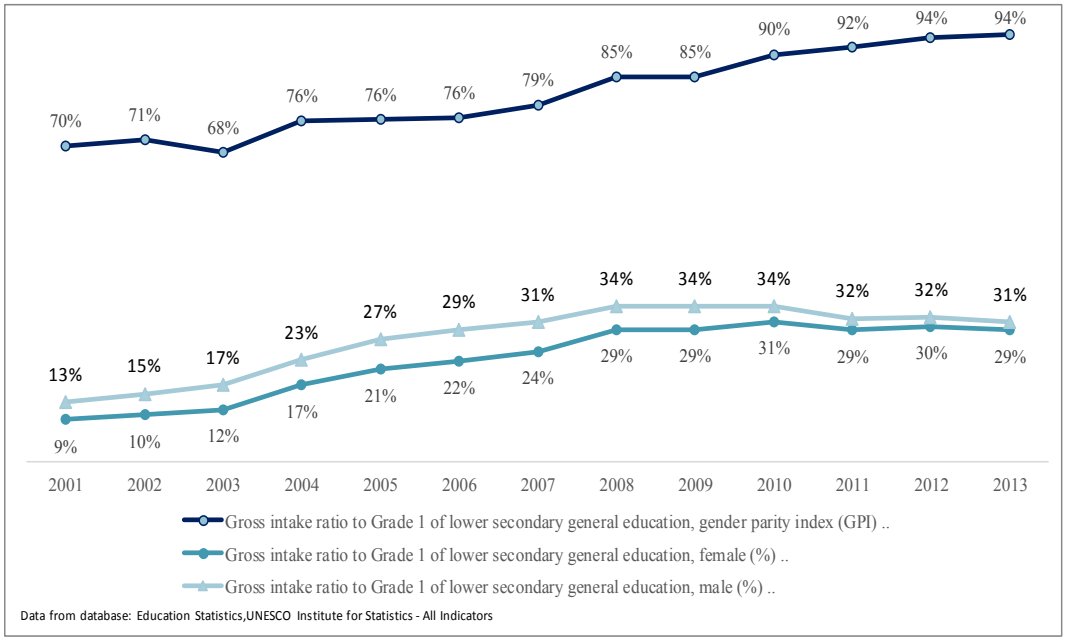
Net enrolment rate of primary[9] education confirms a substantial increase from 2004 to 2009, both for girls and boys. For female students, it rose from 64% in 2004 to 83%, while for males 71% to 88%. However, from 2009 forward the enrollment rate growth decreases for both genders. Therefore, in 2009 the gender inequality for primary enrollment was 5 p.p, favoring boys. For 2014, this indicator was relatively the same. (World Bank: Education Statistics, 2017)

[9] Divide the total number of female/male students enrolled who are of the official age group for primary education by the female/male population for the same age group and multiply the result by 100.




*Net Enrolment- Female and Male (%)*

On the secondary school level, the gross intake ratio[10] (2013) for boys and girls is again distinctive: the percentage of new male entrants on this school level (31%) is again superior to girls, but only for 1,8 p.p of difference. [11]




*Gross Intake Ratio to Lower Secondary- Female, Male, GPI*

The existing data allows to realize how low school attainment either for boys and girls is, and evaluate the existing gender gaps. All of the education variables (Net enrolment rate of primary education, the rate of students

[10] Total number of new female entrants in the first grade of lower secondary education, regardless of age, expressed as a percentage of the population at the official lower secondary school-entrance age.
[11] Due the lack of data for net enrollment rates, gross enrollment rates were used.

enrolled in the last year of primary school and intake on secondary level) presented lower values for females than boys.

Subsequently to the macro analysis, it's going to be applied the Impact framework to break down the social issue into causes and effects.

## APPENDIX 5: SAFE SPACES CHARACTERISTICS

1. **Leadership and empowerment of women and girls** A safe space should be women and girl-led and offer an inclusive and empowering environment for them. Women and girls should be included in project planning, implementation, and monitoring and evaluation of the space to ensure relevance and ownership11. There should be regular exchanges with them about how the space is to be run and managed. Women and girls should decide the opening hours, as well as the types of activities to be undertaken. They should feel a sense of ownership with the space, rather than considering it a center being run for them by an external source

2. **Client/survivor centered** The design of the safe space, the activities and services it offers, and the discussions it organizes should prioritize the safety and confidentiality of women and girls accessing the center. Any case files, documentation of services, and client data kept at the center should be properly secured. The center should be open to all women and girls, and their wishes, choices, rights, and dignity should be respected. They should be provided with information about available services and options. The staff should be extensively trained on the principle of non-discrimination12

3. **Safe and accessible**
   The safe space should be located in an area that is conveniently accessible to women and girls, and assures safety and privacy. The decision on where to locate the safe space should be led by women and girls. If that is not feasible, they should at minimum be consulted. Accessibility should also consider timings and days that work best for them. If possible, consideration must be made to support the transportation costs to and from the space. The WGSS should ensure that a Code of Conduct is adopted and all staff is trained on it.

4. **Community involvement** While the safe space should be a space meant for and run by women and girls, its sustainability will require the input and support of many stakeholders. Husbands, parents, and community leaders have a lot of influence over the ability of women and girls to participate in programmes. It is, therefore, essential to understand the perspectives of these individuals while setting up a safe space, and to mobilize community support for the WGSS so that women and girls are able to safely participate in all activities. Ultimately, women and girls spaces should not be isolated units, but an extension of broader community life. Men and boys have an important role in ensuring the success of safe spaces. Engaging them to ensure they understand the purpose, location and benefits of the safe spaces will enable the participation of a larger number of women and girls. Ensuring the involvement

of and buy-in from the community for sustainability of the initiative, is vital to the success of the safe space.

5. **Coordinated and multi-sectorial** The safe space should take into consideration, the varying needs and experiences of women and girls. It should deliver services that respond to their life cycle, including issues related to GBV prevention and response13. The range of possible activities is rather vast and should be decided with the involvement of women and girls, and according to the specific situation. In some cases, a center may host a range of services from sexual and reproductive health, to psychosocial support, to legal services; at other times, some of these services will be available elsewhere. A clear internal and external referral system, should be in place and staff and volunteers should be able to activate it safely and confidentially, It would be useful to be part of the wider GBV coordination network and standard operating procedure process for an effective referral mechanism.

6. **Tailored** A safe space should be inviting enough for women and girls to feel welcomed and engaged. It is important to maintain balance between structured activities, services, and times to socialize. Activities and approaches need to be culturally and age appropriate as the needs and interests of a 16 year-old girl are bound to be different from those of a 35 year-old woman. A safe space should also take into consideration, the special needs of women and girls living with disabilities.

## APPENDIX 6: MONTHLY COSTS PER YEAR

| Costs of DIB | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (€) | Feb-18 | Mar-18 | Apr-18 | May-18 | Jun-18 | Jul-18 | Aug-18 | Sep-18 | Oct-18 | Nov-18 | Dec-18 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| **Direct Costs** | 35.482,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 |
| Personnel | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 |
| Safe Spaces | 3.220,00 | - | - | - | - | - | - | - | - | - | - |
| Transportation | 5.225,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 |
| Content production | 2.587,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 |
| Training | 5.270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 |
| Incentives | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 |
| Equipement | 4.500,00 | - | - | - | - | - | - | - | - | - | - |
| **Indirect Costs** | 28.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 |
| Utilities and Services | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 |
| Perfomance manager contracting | 10.000,00 | | | | | | | | | | |
| Outcome evaluator | 10.000,00 | | | | | | | | | | |
| Contract costs | 5.000,00 | | | | | | | | | | |
| Cost/mwarusi/ month | 70,90 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 |
| #mwarusis | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 |
| Total costs/ month | 63.805,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 |
| Total costs/ year | 248.621,71 | | | | | | | | | | |
| Total costs | 801.309,96 | | | | | | | | | | |

| Costs of DIB | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (€) | Jan-19 | Feb-19 | Mar-19 | Apr-19 | May-19 | Jun-19 | Jul-19 | Aug-19 | Sep-19 | Oct-19 | Nov-19 | Dec-19 |
| | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| **Direct Costs** | 15.158,33 | 35.482,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 |
| Personnel | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 |
| Safe Spaces | - | 3.220,00 | - | - | - | - | - | - | - | - | - | - |
| Transportation | 125,00 | 5.225,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 |
| Content produc | 83,33 | 2.587,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 |
| Training | 270,00 | 5.270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 |
| Incentives | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 |
| Equipement | - | 4.500,00 | - | - | - | - | - | - | - | - | - | - |
| **Indirect Costs** | 3.323,28 | 28.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 |
| Utilities and Se | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 |
| Perfomance manager contract | | 10.000,00 | | | | | | | | | | |
| Outcome evaluator | | 10.000,00 | | | | | | | | | | |
| Contract costs | | 5.000,00 | | | | | | | | | | |
| Cost/mwarusi/ | 20,54 | 70,90 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 |
| #mwarusis | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 |
| Total costs/ m | 18.481,61 | 63.805,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 |
| Total costs/ ye | 267.103,32 | | | | | | | | | | | |

| Costs of DIB | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (€) | Jan-20 | Feb-20 | Mar-20 | Apr-20 | May-20 | Jun-20 | Jul-20 | Aug-20 | Sep-20 | Oct-20 | Nov-20 | Dec-20 | Jan-21 |
| | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
| **Direct Costs** | 15.158,33 | 35.482,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 | 15.158,33 |
| Personnel | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 | 12.169,72 |
| Safe Spaces | - | 3.220,00 | - | - | - | - | - | - | - | - | - | - | - |
| Transportation | 125,00 | 5.225,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 | 125,00 |
| Content production | 83,33 | 2.587,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 | 83,33 |
| Training | 270,00 | 5.270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 | 270,00 |
| Incentives | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 | 2.510,28 |
| Equipement | - | 4.500,00 | - | - | - | - | - | - | - | - | - | - | - |
| **Indirect Costs** | 3.323,28 | 28.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 |
| Utilities and Services | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 | 3.323,28 |
| Perfomance manager contracting | | 10.000,00 | | | | | | | | | | | |
| Outcome evaluator | | 10.000,00 | | | | | | | | | | | |
| Contract costs | | 5.000,00 | | | | | | | | | | | |
| Cost/mwarusi/ month | 20,54 | 70,90 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 | 20,54 |
| #mwarusis | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 | 900,00 |
| Total costs/ month | 18.481,61 | 63.805,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 | 18.481,61 |
| Total costs/ year | 267.103,32 | | | | | | | | | | | | 18.481,61 |

## APPENDIX 7: IMPACT PAYMENTS: LOW IMPACT

| Impact Results (% and #) | | Academic Approval | | Transition to Secondary | |
|---|---|---|---|---|---|
| | | % | # | % | # |
| **Intervention 1** | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *50%* | 450 | *30%* | 270 |
| | Impact | *5%* | 45 | *3%* | 27 |
| **Intervention 2** | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *55%* | 495 | *33%* | 297 |
| | Impact | *10%* | 90 | *6%* | 54 |
| **Intervention 3** | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *60%* | 540 | *36%* | 324 |
| | Impact | *15%* | 135 | *9%* | 81 |
| | Total Impact | 10% | 270 | 6% | 162 |
| | Efective Impact out of Potential Impact | 18% | | 8% | |

| Impact Payments Intervention 1 (€) | | |
|---|---|---|
| | KPI1: Academic Approval | KPI2: Transition to secondary |
| Impact Baseline | 45% | 27% |
| Outcomes | 55% | 33% |
| **Impact** | **10%** | **6%** |
| Economic Gain | € 1.895.130,00 | € 212.544,00 |
| **Total Economic Gain** | € **2.107.674,00** | |
| *Payment Rate* | *13%* | |
| Impact Payment | € 246.366,90 | € 27.630,72 |
| Total Impact Payment | € **273.997,62** | |

| IRAC | 7,69 |
|---|---|

| Results | |
|---|---|
| Intervention Costs Covered | 34% |
| IRAC | 7,69 |
| Incentive Service provider | € - |

## APPENDIX 8: IMPACT PAYMENTS: HIGH IMPACT

The results for High Impact scenario illustrate a case where the Total Impact Payment is 2.809.016, due a 33% payment rate. However, this DIB has as definition a cap equal to the intervention costs, allowing impact investors to only disburse €801.309. Nonetheless, because the originated impact was high enough to generate a Total Impact Payment superior to the intervention costs. Service providers would receive the differential of €2.501.571,6k and €801.309, times the IRAC, in percentual terms, 3.03%, resulting in a small amount of 51.517€. If considering the amount actually allocated, €801.309, then IRAC is 10.62.

| Impact Results (% and #) | | Academic Approval | | Transition to Secondary | |
|---|---|---|---|---|---|
| | | % | # | % | # |
| **Intervention 1** | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *80%* | 720 | *50%* | 450 |
| | Impact | *35%* | 315 | *23%* | 207 |
| **Intervention 2** | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *85%* | 765 | *55%* | 495 |
| | Impact | *40%* | 360 | *28%* | 252 |
| **Intervention 3** | Impact Baseline | *45%* | 405 | *27%* | 243 |
| | Outcomes | *90%* | 810 | *55%* | 495 |
| | Impact | *45%* | 405 | *28%* | 252 |
| | Total Impact | 40,00% | 1080 | 26,33% | 711 |
| | Efective Impact out of Potential Impact | 73% | | 36,1% | |

| Impact Payments Intervention 1 (€) | | |
|---|---|---|
| | KPI1: Academic Approval | KPI2: Transition to secondary |
| Impact Baseline | 45% | 27% |
| Outcomes | 85,0% | 53,3% |
| **Impact** | **40,00%** | **26,30%** |
| Economic Gain | € 7.580.520 | € 931.651 |
| **Total Economic Gain** | **€ 8.512.171** | € - |
| *Payment Rate* | *33%* | |
| Impact Payment | € 2.501.571,60 | € 307.444,83 |
| Total Impact Payment | **€ 2.809.016,43** | |

| | |
|---|---|
| IRAC | 3,03 |
| IRAC' | 10,62 |

| Results | |
|---|---|
| Intervention Costs Covered | 351% |
| IRAC | 3,03 |
| Incentive Service provider | € 51.517,93 |

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