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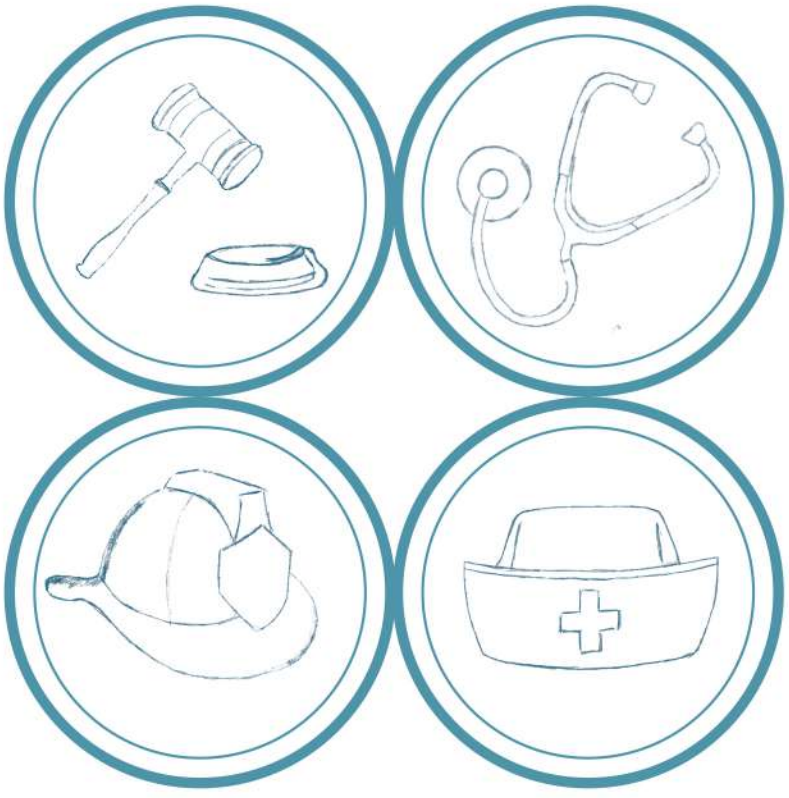
Benefit-Cost Analysis

Education Solutions: Vocational and Civics



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Haïti Priorise
Un plan de développement alternatif

Education Solutions: Vocational and Civics

Haïti Priorise

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Academic abstract

The paper uses earnings data from the 2012 Haiti ECVMAS household survey and internationally derived parameters to conduct a cost-benefit analysis of three education-related interventions: Investment in vocational education, civics education and a gap year combining vocational and civics education. At a 5% social discount rate, the benefit-cost ratio of investing in vocational education is about 2, vs. 5 for civics and 4 for a gap year of vocational and civics. Given the lack of basic education indicators in Haiti, these results have to be qualified by the fact they are based on a series of assumptions regarding the structure of education costs and benefits in the country.

JEL I22, I25, I26

Policy abstract

With a per capita income of under $800, Haiti is one of the poorest countries in the World. The policy question is how local and international aid resources that have been pouring to the country can be used in the most effective way to improve the standard of living of its people.

According to conventional wisdom, education is a locomotive for development. This paper deals with three possible education interventions:

a) Civic education in lower secondary school, 2 years duration

b) Vocational education, 3 years duration after lower secondary

c) A gap year of civic and vocational education, after lower secondary

Based on human capital theory and very scarce Haiti-specific data, the paper conducts a cost-benefit analysis of alternative education interventions in the country.

The data used in the analysis are based on graduate earnings reported by employed people in the 2012 ECVMAS survey. The resource costs of education are derived from the 2003 ECVH survey and the international literature. The benefits of a particular level of education are defined relative to those of a control group of graduates with a lower level of education.

The benefit-cost ratio of investing in vocational education is 2.0, for civics 4.9 and for the gap year of vocational and civics 3.7 at a 5% discount rate. Given the many non-market benefits of education, the actual values could be double.

The policy implication of the findings is that in any new allocation of resources to education, between the three types of education considered in this paper, priority should be given to improving civics, followed by civics combined with vocational education. However, regarding the allocation of resources to education as a whole and other sectors of the economy will depend on the results of cost-benefit analysis in these sectors.

As a word of caution, implementing changes in the allocation of a budget for education is not easy. In most countries of the world, resources to education are allocated by inertia, i.e., same line budget amounts, perhaps adjusted for inflation.

There are two reasons for such paucity. First, there are competing demands in other sectors of the economy. Second, and foremost in our case, is that education is an investment that its returns materialize over a very long time. This clashes with political expediency for immediate visible results, such as a new road or a bridge.

Overview

The market-based costs and benefits of three possible education interventions in Haiti have been assessed as in Table A.

Considering unmeasured non-market benefits of education, the benefit-cost ratios reported below could be easily doubled.

Table A. Benefits and costs per one extra graduate by type of education

Education intervention	Benefit ($US)	Cost ($US)	Benefit-cost ratio	Quality of evidence
Vocational	13,033	6,376	2.0	Good
Civics	1,381	284	4.9	Fair
Gap year of vocational and civics	3,801	1,040	3.7	Fair

Source: Excel spreadsheet accompanying this paper
Note: Based on a 5% discount rate

Table B reports the absolute benefits, costs and net gain from three hypothetical interventions.

Table B. Total benefits, costs and net gain of illustrative program interventions

Education intervention	Benefit ($US)	Cost ($US)	Net gain ($US)
1000 vocational graduates	13,033,000	6,376,000	6,657,003
1000 civics graduates	1,381,000	284,000	10,967,161
2000 graduates of vocational and civics gap year	5,190,291	2,079,200	3,111,091

Source: Excel spreadsheet accompanying this paper
Note: Based on a 5% discount rate

1. Introduction

Haiti has one of the most underdeveloped educational systems in the world. With a score of 0.483, compared to a world mean of 0.711, UNDP (2015) ranks it 163 out of 188 countries in its human development index. With an adult illiteracy rate of over 50%, it compares to the poorest countries in sub-Saharan Africa. On average, people have 4.9 years of schooling. Moreover, 200,000 children are out of school and one out of four children aged 5-14 are in child labor (World Bank, 2015a; UNDP, 2016).

In this context, the purpose of this paper is to assess priorities for investment in education in Haiti with emphasis on vocational and civics. The paper assesses the costs and benefits associated with three possible education interventions:

a) Civic education in lower secondary school, 2 years duration

b) Vocational education, 3 years duration after lower secondary

c) A gap year of civic and vocational education, after lower secondary

The paper is organized in seven sections. The section below sets the stage by considering the education system as a whole without reference to the two subtopics of the paper. This is followed by sections on vocational, civics and a gap year after lower secondary education. Each section covers the theory behind a given intervention, empirical findings on the topic as found in the wider literature, and an application to Haiti. The final section draws policy conclusions based on this and related international research.

2. Setting the stage

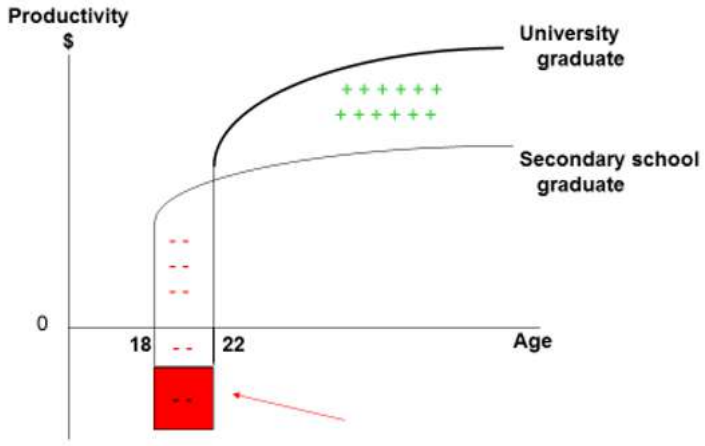
2.1. Theory

The theory for assessing the economic case for an education intervention is that of human capital (Becker, 1964). Education expenditure is a form of investment during the period of schooling that yields returns over the lifetime of the individual.

The cost of education has two components: (a) The direct or resource cost of keeping a student in school, and (b) the indirect or opportunity cost of the student's foregone production while in school. The benefit of education is measured by the difference of what the graduate produces and that of a counterfactual or control group of graduates with a lower level of education.

As an example, this is depicted in Figure 1 regarding costs and benefits associated with a 4-year university degree.

Figure 1. Stylized age-earnings profiles



Since costs and benefits take place at different points in time, discounting is used to assess either the net present value of the investment or its internal rate of return,

$$\sum_{t=1}^{n} \frac{(Y_s - Y_{s-1})_t}{(1+r)^t} = \sum_{t=1}^{n} (Y_{s-1} + C_s)_t (1+r)^t$$

where *Y* is the earnings of graduates with the subscripted educational level *S, S-1* is the previous education level used as a control group, C_s is the direct cost of education, *n* on the benefits side is the length of the working life of a graduate of level *S,* and *n* on the costs side the length of educational cycle *S*. The discount rate *r* that equates the costs and benefits is the rate of return on the investment.

In empirical applications of human capital theory, earnings have been used as a proxy of graduate productivity, and rates of return has been the dominant mode of reporting results (Psacharopoulos, 1995).

2.2. Empirical literature

Thousands of cost-benefit analyses of education have taken place in the last 60 years. Table 1 gives a summary of the social returns to education in low-income countries.

Table 1. Social returns to investment in education in low-income countries (%)

Educational level		
Primary	Secondary	Higher
21.3	15.7	11.2

Source: Psacharopoulos and Patrinos (2004)

Montenegro and Patrinos (2014) report a 9.7% average private rate of return to investment in one year of schooling in Latin American and Caribbean countries.

Recently, the Education Commission (2016) reported global evidence on the costs and benefits of education investment in low-income countries by augmenting the benefits of education by its effects on health.

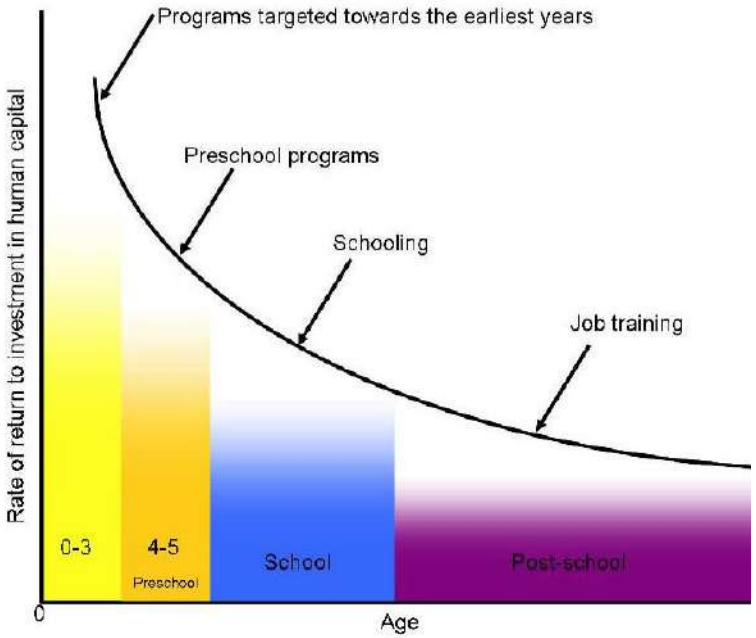
Table 2. Benefit-cost ratios of investing in one extra year of schooling in low-income countries

Benefits definition	B-C ratio
Market earnings	5
Market earnings plus education-induced health benefits*	10

Source: Based on Education Commission (2016)
*/ Health benefits are based on reductions in under-five and adult mortality

Overall priorities for education investment have been most lucidly illustrated by Nobel Laureate James Heckman's (2008) famous Figure 2. Mastering empirical evidence from hundreds of cost-benefit studies estimating the returns to investment in education, spending on early ages and levels of schooling is more cost-effective than spending on higher levels, and least for spending on training skills.

Figure 2. A grand summary of priorities in investing in education



Source: (Heckman (2008)

2.3. Haiti application

While there are many descriptive accounts of Haiti's educational system, while analytical work is scarce. The reason for this paucity is lack of statistics. Even elementary indicators such as enrollment ratios by level of education or education expenditure appear as blank fields in international databases (World Bank, 2016; Unesco, 2016a).

Nevertheless, there has been a rare USAID (1987) study, based on very limited data, confirming the literature's education investment priorities (Table 3).

Table 3. Rates of returns to education in Haiti, mid-1980s

Educational level	Rate of return (%)	
	Private	Social
Primary	16	12
Lower secondary	17	16
Vocational	9	9

Source: Based on USAID (1987), p. 2-142, average values

According to this evidence, investment in the lower levels of education would pass a cost-benefit test even at a 12% discount rate. But not so vocational education.

The 2012 ECVMAS household survey ("*Enquête sur les Conditions de Vie des Ménages Après Seisme"*) was used to establish a link between education and earnings of the 2256 persons who reported earnings from employment.

To get a general sense of the returns to investment in education, a Mincerian earnings function has been estimated,

$$\ln Y_i = \alpha + \beta S_i + \gamma_1 EX_i + \gamma_2 EX_i^2$$

where *LnY* is the log of wages of individual *i*, *S* the person's years of schooling and *EX* the years of potential labor market experience, defined as *AGE – S – 6*, in a school system starting at age 6 (Mincer, 1974).

In this semi-log specification, the coefficient on years of schooling can be interpreted as the average rate of return to one additional year of schooling regardless of the educational level this year of schooling refers to. The earnings of a worker with one additional year of schooling (*S,* vs. *S-1*) can be expressed as

$$Y_s = Y_{s-1} + r\, Y_{s-1}, \text{ or } (Y_s / Y_{s-1}) = (1 + r)$$

where r is the private rate of return on one year of foregone earnings . Taking logs of both sides of this expression results to $\ln Y_s - \ln Y_{s-1} \simeq r$, that is given by the β coefficient of the earnings function.

As reported in Table 4, the 9.3% private rate of return is right on the spot compared to the vast international literature on the subject (Montenegro and Patrinos, 2014).

Table 4. Mincerian earnings function, Haiti 2012

Variable	Coefficient	t-ratio
Constant	6.268	46.1
Years of schooling, S	.093	12.1
Years of experience, EX	.067	8.8
Years of experience squared, EX^2	-.001	-8.1

Dependent variable: Logarithm of earnings
N = 2256 , R^2 = 0.08

The Mincerian function estimates only private returns as the only cost of the investment is foregone earnings. It is not possible to incorporate the direct cost of education when using this estimation method that, because of its easiness, is the most popular in the literature.

To get a sense of the social rate of return, based on international evidence the social returns should be about two percentage points lower, i.e., of the order of 7%. Adding the wider social benefits of education à la Education Commission (2016) reported above, a social rate of return of about 14% seems reasonable.

This rate translates to a benefit-cost ratio higher than one using 3%, 5% or 12% discount rate.

3. Vocational education

3.1. Theory

The theory behind providing vocational education is very simple. If students learn a particular trade, they would be able to exercise this trade after graduation. Since any economy needs plumbers, carpenters and electricians, the school system should facilitate by teaching such skills. This logic led to the so-called manpower requirements approach in educational planning that dominated in the 1960s and 1970s in most countries.

3.2. Empirical literature

No matter how counter-intuitive it sounds, many studies have documented that such planning did not work (Ahamad and Blaug, 1973). According to many studies that have assessed the returns to vocational vs. general education in both high-income and developing countries, spending on vocational education does not pass the cost-benefit test. (Psacharopoulos,1987; Blattman, 2015).

In many countries, the wage returns to academic qualifications are significantly higher than the returns to vocational qualifications, government training programs and adult skills training (Blundell, Dearden and Sianesi, 2005; Dearden et al., 2002; Dickerson, 2005; Carneiro and Heckman, 2003).

In a large World Bank follow-up study of students in the technical-vocational curriculum stream of secondary education in Colombia and Tanzania, it was found that the graduates did not seek or find employment in the sector they studied. Within levels of education, and counter-intuitively, general secondary education was found to be more profitable than vocational education. The reason is that whereas general and vocational secondary school graduates have more or less equal earnings after graduation, the vocational track of secondary schools costs about twice that of the general track (Psacharopoulos and Loxley, 1985). It was such finding that made the World Bank change its lending portfolio as late as the 1990s away from secondary vocational schools, an activity the institution had been engaged nearly exclusively since its inception.

Table 5. Social returns to investment in upper secondary school streams, Tanzania

Curriculum type	Rate of return (%)
Academic	6.3
Technical	1.7

Source: Psacharopoulos (1985).

Lower returns to secondary vocational relative to general education have been found in Egypt, with the gap increasing over time (Said and El-Hamidi, 2008). The same finding has been reported for Indonesia (Newhouse and Suryadarma, 2011). Another study reported higher returns to general upper secondary relative to vocational in Egypt and Iran (Salehi-Isfahani, 2009). A more recent study on Egypt found that the returns to vocational secondary education for recent graduates are near zero, concluding that formal vocational secondary education is not the best route to employable skills and higher wages (Kraft, 2013). Two studies have found private returns to vocational schooling similar to general in South Africa (Pugatch, 2012) or higher in Thailand (Moenjak and Worswick, 2003). Given the resource cost of vocational schooling is higher than the academic, the returns to the latter must have been higher.

An OECD report on the subject concluded that it is an open question whether it is worthwhile to invest in vocational and technical education (Hoeckel, 2008).

3.3. Haiti application

Based on the ECVMAS 2012 survey, the mean earnings structure by level and type of education appear in Table 6. Vocational education in the survey is defined as "*Formation Professionnelle*". Survey earnings have been converted to $US for later comparison with costs using a 2012 exchange rate of 43 HTG to the dollar (Focus Economics, 2016). Vocational education graduates

earn about 50% more than their primary education counterparts. This premium was obtained by following a vocational curriculum.

Table 6. Mean earnings by level of education, Haiti 2012

Educational level	Annual earnings ($US)	Earnings index (Primary = 100)
Primary	1,573	100
Lower secondary	1,834	117
Vocational	2,334	148

Source: Based on ECVMAS (2012) and 43 exchange rate

The direct cost per student is based on the 2001 living conditions survey (ECVH) that comprises tuition, uniforms, school materials and 30% of food (Wong, 2016).

We have no information on the resource cost of education in Haiti. But we do know from international evidence that a technical/vocational secondary school curriculum is more expensive than the general/academic track. A World Bank evaluation study on vocational vs. general secondary education revealed that in five developing countries the vocational track was about 50% more expensive than the general track (Psacharopoulos, 1987), the reason being that the vocational curriculum requires laboratories and specialty teachers.

Table 7. Direct education unit cost/year ($US)

Educational level	Cost	Source
Lower secondary	306	Wong (2016)
Vocational	459	Assuming 50% higher than lower secondary

All analyses assume a working age from 15 to 55 if considering no education, primary or lower secondary. For vocational education, the working age is 18 to 55.

Vocational education in Haiti occurs over three years from ages 15 to 17 inclusive. This involves opportunity cost of wages at the lower secondary rate. We are assuming a 2.7% real growth in wages.

Estimating the costs and benefits using alternative discount rates gave the benefit-cost ratios reported in Table 8.

Table 8. Benefits and costs per one vocational education graduate

Discount rate	3%	5%	12%
PV Benefit ($US)	19,519	13,033	4,494
PV Cost ($US)	6,625	6,376	5,618
B-C ratio	2.9	2.0	0.8

Source: Spreadsheet accompanying this paper

4. Civics education

4.1. Theory

Civics has been a late addition and extension to the human capital theory outlined above (Coleman, 1988; Putman, 1993, Teachman et al., 1997). Building civic behavior contributes to the formation of social capital that is expected to have economic returns as that of other forms of capital. In the aftermath of an earthquake, for example, there might be less looting if people behave in a civilized way. Or it may facilitate the establishment of a social contract between the State and its citizens that now does not exist (World Bank, 2015b).

The theoretical mechanism by which civics works is that it promotes social cohesion and trust (Dee, 2003, 2010; Heyneman, 2003). Civics cultivates interpersonal skills to tolerate others that, among other things, promote social and economic stability, conflict resolution, voting participation, democracy and better governance (Østby and Urdal, 2010; Whiteley, 2000, Gallego, 2010; Temple, 2001; Temple and Johnson, 1988). A higher level of trust in a society facilitates investment and lowers the cost of market transactions (Sequeira et al., 2011; Stanely and Smeltzer, 2003; Rupasinga, 2000).

4.2. Empirical literature

Given the difficulty of measuring intangible social capital, there are only a handful of empirical papers on how civics may translate to economic outcomes.

Civics behavior is not only built by a civics curriculum. There is plenty of evidence that education in general, not specifically civics, enhances civic behavior (Oreopoulos and Salvanes, 2011; Callego, 2010; Temple, 2001; Temple and Johnson, 1998).

In the empirical literature the operational proxies for measuring social capital are participation in social groups and trust. Trust is measured by replies to survey questions such as, "*Would you say that most people can be trusted, or that you can't be too careful in dealing with people?"(* World Value Survey, 2016).

One of the most documented effects of education on civic behavior is that on criminality (Lochner and Moretti, 2004). Since invariably education increases earnings, more educated people face a higher opportunity cost if arrested. In the United States, for example, there is a sharp drop in the probability of imprisonment of blacks who have completed secondary education vs, high school dropouts. A one year increase in years of schooling in a State reduces arrests by 11%. A 10 percentage points increase in secondary school graduation rates reduces arrest rates by 7%. A follow-up of the High/Scope Perry preschool program that followed children to adult life found that by age 40 the fraction arrested was reduced by 10 percentage points. A Syracuse preschool program reduced participants who have been placed on probation to 6% relative to 22% of the control group (Lochner, 2011).

In Italy, 75% of the convicted persons had not completed high school. A 10 percentage point increase in high school reduces property crimes by 4% and total crime rates by about 3% (Lochner, 2011).

In the UK those without an education qualification had an eight times higher probability to be convicted. A one-year increase in the average years of schooling reduces arrests for property crimes by about 25%. Educational subsidies for coursework completion reduced burglary rates from 22% to 6%. In England and Wales a one-year increase in average schooling levels reduces conviction rates for property crime by 20 to 30% and violent crime by roughly one-third to one-half (Lochner, 2011).

In the United States, individuals with more schooling are more likely to report having voted in the last election. While only 52% of US high school dropouts report voting, this percentage increases to 67% for high school graduates, 74% for individuals with some college and 84% for college graduates (Milligan, Moretti and Oreopoulos, 2004).

In a cross-section of 100 countries, the number of years of primary schooling was found to be a significant predictor of democracy in terms of electoral rights and civil liberties (Barro, 1999).

Moreover, education reduces conflict (Thyne, 2006). In a cross-section of 120 countries Fearon and Laitin (2003) find a strong association between education and lower conflict risk (Zak and Knack, 2001).

The World Bank reports a strong correlation between trust and measures of governance.

Table 9. Correlation between trust and governance dimensions

Governance	Correlation
Rule of law	0.51
Corruption control	0.52
Governance efficiency	0.48

Source: World Bank (2006)

In another cross-country study, Knack and Keefer (1997) find that controlling for per capita income, the trust variable is the only significant determinant of government performance. Each two-percentage-point rise in trust is associated with a rise in confidence to the government of about one percentage point. A 10% increase in their measure of trust translates to a 0.8 percentage point increase in the rate of economic growth.

A qualitative World Bank report on poverty in Haiti contains a good description of the state of social capital in the country (White et al, 1998). Although it does not contain any number that could be used in this paper, it calls for legal, regulatory and fiscal reforms to facilitate the formation of social groups and civil society.

Urwin et al. (2008) using group participation as a measure of social capital found that civics education in the UK enhances earnings by 1% to 6%, a finding that may not apply in a developing country such as Haiti. However, lacking any other evidence on the subject, we assume a 3% boost of earnings due to civics education in the simulations below.

4.3. Haiti application

It is assumed that civics education would be offered during the first two years of secondary school. It would not be effective if offered later or out of school because it is difficult to change a person's character and attitudes at a later age.

It is also assumed that adding a civics course to the curriculum would entail an increase of the unit cost of secondary education by one half of the cost of general education, i.e., $US306.

No opportunity costs are involved in his case because we are comparing the extra cost of civics to the extra benefits of graduates.

Table 10. Benefits and costs of civics education per one graduate

Discount rate	3%	5%	12%
PV Benefit ($US)	2,062	1,381	495
PV Cost ($US)	293	284	259
B-C ratio	7.0	4.9	1.9

Source: Spreadsheet accompanying this paper

5. Gap year of vocational and civics

The rational for this intervention is the high rate of unemployment of lower school graduates who do not proceed to further study. In this gap year youth that were not going on to further study - i.e. upper secondary or vocational would be compelled to have a gap year to take civics and vocational training.

There is no prior literature in any country on such combined one-year curriculum.

Because this occurs at age 15, it involves an opportunity cost equal to the earnings of those who have obtained lower secondary multiplied by their labor force participation rate, assumed 40%.

The direct cost of study during the gap year is assumed to be a weighted average of 50-50 the cost of vocational education and civics education.

Table 11. Benefits and costs per one graduate of one gap year of vocational and civics education

Discount rate	3%	5%	12%
PV Benefit ($US)	3,801	2,595	992
PV Cost ($US)	1,040	1,040	1,040
B-C ratio	3.7	2.5	1.0

Source: Spreadsheet accompanying this paper

6. Illustrative scaling up of interventions

Table 12 gives the absolute costs and benefits associated with producing 1000 extra vocational graduates, 1000 secondary school graduates subjected to a civics-enhanced curriculum, or 2000 gap year graduates. All interventions generate a considerable net gain that could be further scaled up to another target number of graduates.

Table 12. Total benefits, costs and net gain of illustrative program interventions

Education intervention	Benefit ($US)	Cost ($US)	Net gain ($US)
1000 vocational graduates	13,033,000	6,376,000	6,657,003
1000 civics graduates	1,381,000	284,000	10,967,161
2000 graduates of vocational and civics gap year	5,190,291	2,079,200	3,111,091

Source: Excel spreadsheet accompanying this paper
Note: Based on a 5% discount rate

7. Policy implications

To put in perspective any policy implications for Haiti based on this and international research, let us recap some key statistics of education in the country (Adelman and Evans, 2016; World Bank, Undated):

- Children typically start primary school two years late
- Fewer than 60 percent ever reach the last grade of the primary school
- Children who remain in school, particularly poor children, learn little
- Only 10 percent of primary school teachers pass a French examination
- Nearly one-half of the adult population have never attended school.

In a country with a level of human development as low as that of Haiti, investment in education is bound to be beneficial. However, some levels or types of education might be more cost-effective than others might. Given typical financing constraints, investment priorities have to be established.

This paper considered three types of education, vocational, civics and a combination of the two. Based on cost-benefit analysis, all interventions are associated with benefit-cost ratios in excess of 1 at a 5% discount rate. Based on these findings and bearing in mind the data caveats, if a policy choice had to be made between these types of education, civics should receive priority.

However, increasing the supply of school places is not a sufficient condition that the places would be filled. One has to consider the demand side. Those out of school have a shadow wage,

in home production or in the child labor market higher than the expected benefits of attending school. Coupled with a high poverty and family discount rate for cash, school places may remain empty. In such case, interventions could include incentives, such as conditional cash transfers for children attending school. Such transfers have been applied with great success in Honduras, Jamaica, Mexico, Nicaragua, and Colombia (Rawlins and Rubio, 2005, Fiszbein et al,. 2009).

In the case of vocational education, one possible policy is to adopt a variant of the German dual training system in which students spend time in a firm that sponsors them sharing the cost of their education (Hamburg Chamber of Commerce, 2012). However, such system presupposes the existence of firms willing to do this that would be a challenge in Haiti.

Any training for specific skills should take place closer to the firm, by combining on-the-job and classroom training in specialized vocational schools. Encourage apprenticeship, flexible working time arrangements and on-the-job training provided by firms. Learning at work is a more effective way of ensuring the development of skills useful to the employer than public vocational schools.

Before jumping on the vocational education wagon, one has to consider the findings of a flood of recent rigorous literature on the subject. Counter-intuitively, basic education might be the best route to the acquisition of vocational skills later in life, preferably by training on the job. The new skills sought after by today's employers are soft skills, such as language, communication, and team work (Murnane and Levy, 1996; Heckman and Kautz, 2012). Possession of general skills make workers easily trainable for unforeseen occupations in the future.

Give priority to the general rather than vocational curricula and training. The reason is that a good foundation of general education facilitates later specialization and training. In addition, employers today want trainable employees with soft communication skills who could learn on the job, rather than narrow specialists (World Bank, 2013).

Schools should teach and make sure students master the three R's (reading, writing and arithmetic), before streaming them into welding or carpentry. Schools should teach communication and social skills above any courses leading to specific occupations. Specialized training could be provided in dedicated vocational schools, away from the Ministry of Education. In addition, incentives should be given to firms for providing training on the job.

The Box below summarizes verbatim the World Bank's position on the subject, based on its long experience with technical and vocational education projects.

Box. Fundamentals of a skills-for-jobs strategy

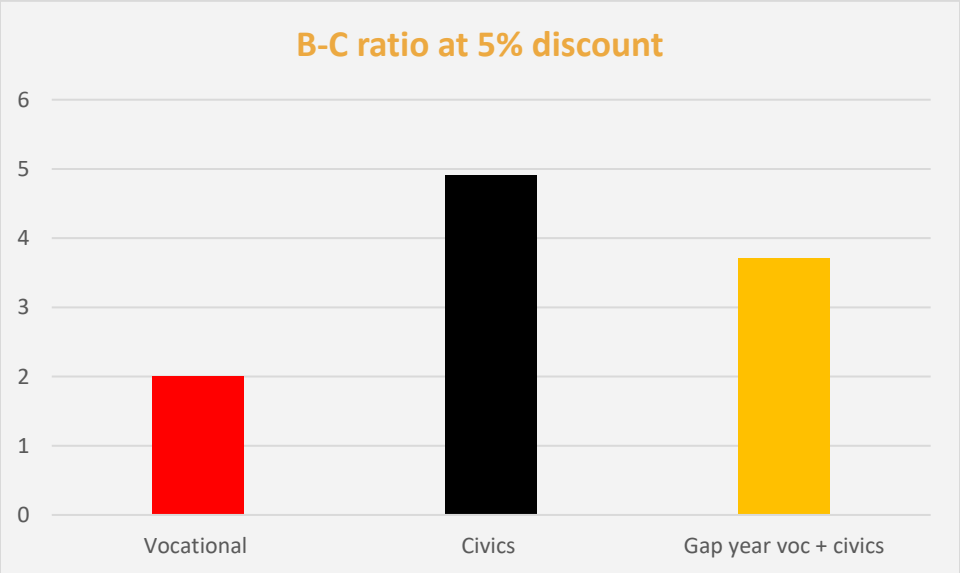
A skills strategy should not just look at technical and vocational education and training and university education. Critical thinking skills or team work are learned much earlier - in preschool, primary and secondary education. Technical and vocational education and training, and universities need to provide technicians and engineers with the theoretical and practical skills they need in their jobs. But that is not enough. What young people learn, or fail to learn, in general education is important to employers.

Source: Adapted from World Bank (2012b).

In a country with education characteristics as those listed above, it is difficult to prioritize vocational education over, for example, bringing more girls to school, retaining them, and improving their learning.

Lastly, an intervention that might have the highest long-term payoff is the establishment of an Education Management Information System (EMIS, Abdul-Hamid, 2014). Public policy cannot be cannot be made with the kind of data that were available for this study. Haiti cannot continue to appear with three dots, blanks, or "m" for missing in education databases.

Summary Infographic



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For modernised professional education in Haiti

Haiti Priorise

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Since the 1960s in Latin America, the concept of vocational training evokes, in the words of Marcel Gabaud (2015) *"structures established by the authorities to meet the need of producing a skilled workforce outside the formal education system*". Vocational training should be understood as programs geared towards the needs of the labor market and in line with the current dynamic of economic and social development.

According to the prescriptions of the Haitian legal system, whose first legislation dates back to 1973, technical and vocational training is entrusted to the National Institute of Vocational Training (INFP) and the Pilot Center for Vocational Training (CPFP). Although Haiti, according to Marcel Gabaud's conclusions, does not yet have a national vocational training system (SNFP), which must be "*A platform for valuing skills for employment, standardizing and recognizing the training and certifications delivered in the system, improving access to and quality of training, defining a training that adequately meets the real needs of the labor market, promoting the continuing training of workers of all categories and finally, implementing a program of validating experience, all in agreement with sectoral ministries involved, the main actors and partners of the SNFP",* the main challenge remains how to provide this country with a modern vocational training system that responds to the demands of rapid changes from a professional world that is changing rapidly to digital technology.

Digital technology concerns all of us!

Nowadays, the pace at which digital technology advances in all areas is leading us to wonder whether today's professional will not be the digital illiterate of tomorrow. The propensity in digital technology to deliver rapid results, to propose applications that respond quickly to the needs of the professionals imposes a reconsideration on the need to orient vocational training in Haiti towards the modernity by integrating the methods of training and work at a highly adaptive professional level to the dynamics of change.

Indeed, modern companies are increasingly sophisticated and are increasingly using digital technology. The level of requirements imposed on professionals will obviously be higher and higher. The professional who does not master or manipulate the supports of the digital tools will find themselves in great difficulty or, more specifically, "lagging behind" in relation to the norm. Hence, in order to maintain the orientation of vocational training towards the needs of the labor market, it is necessary to take account of this new dynamic imposed by digital technology.

In the text "Digital technology forces us to rethink vocational training", Marcel Gabaud (2017) gives an overview on the difficult reality of taking into account digital technology in the work of the professional:

"*The culture of enterprise software leans towards high-performance software developed to handle all the needs of the trades. The specifications are often too wide and interminable. The main reason for this model is that it does not facilitate iterations and changes from one version to another. The consequence is a lack of adaptability to the constant evolution of the business problems. There is even a shift between the original need and the response as soon as the solution is available. In contrast, Apps from the private sphere are updated very regularly and are evolving rapidly. There is a technology gap between the private sector and the public sector, although the supports are usually the same (Laptop, Smartphone, Tablet).*

The digital transformation really comes from the private sector. However, I think that this transformation is done with new tools/software. When one sees the number of applications used in the private sector as compared to the public sector, the difference is blatant. It is the access to new technologies that provokes a demand on the part of professionals. If there are no tools or technological opportunities, it becomes difficult to project! »

State of the art in the perspective of modernity

A study by Haitian Observatory Groupe URD (2014), which examines new urban trades in the post-earthquake environment, provides an analysis of the formal and informal employment market and presents the configuration of vocational training (VT) in Port-au-Prince and in the metropolitan area. The observation: "[...]*; lack of links between training centers, companies and regulators in this sector; difficulties in accessing training; poor quality of the curricula and their inconsistency with business needs*". These are major potential if not complete constraints, to the development of a system of vocational training that does not articulate with modernity and even less with the demands of digital technology.

Since the earthquake in 2010, efforts to modernize vocational education in Haiti by the Professors of the "Jules Verne" mission to restructure vocational training in the building trades are a serious, though sectoral, initiative to move in the direction of the modernity of a vocational training system. The signed cooperation agreement on July 1, 2010 by the Haitian and French Ministers of Education, together with the co-signatories of the Schneider Foundation, Schneider, Quisqueya University and the NGO "Aide et Action", aims to accompany the modernization of vocational education in Haiti and to support the National Institute of Vocational Training (INFP) and the State Secretariat for Vocational Training, in their efforts to restructure training in vocational building. The aim of the two Ministries is to be able to rapidly inject well-trained citizens into the labor market every year who can participate professionally and competently in the reconstruction of the country and quickly become economically independent.

According to a source on the Haiti Libre website, "*Since August 2010, the professors of the "Jules Verne" mission have assured all the program's logistics and the coordination of interventions in*

Haiti, the Aide et Action center in Paris, responsible for collecting funds and support from companies and institutional partners. "According to the same source," *At the same time, INFP specialists are redeveloping curricula and certification procedures so that people and businesses can call upon well-trained and skilled craftsmen. It is in this spirit that the INFP is currently experimenting in two vocational training centers in the metropolitan area with refurbished and refocused curricula that allow young, motivated apprentices to obtain a Certificat d'Aptitudes Professionnelles (CAP) in four months [500 hours of training], and on the other hand, that companies or individuals can use well trained young people who have already been able to practice their craft at school and undergo regular practical examinations.* »

The need for adequate support for public authorities

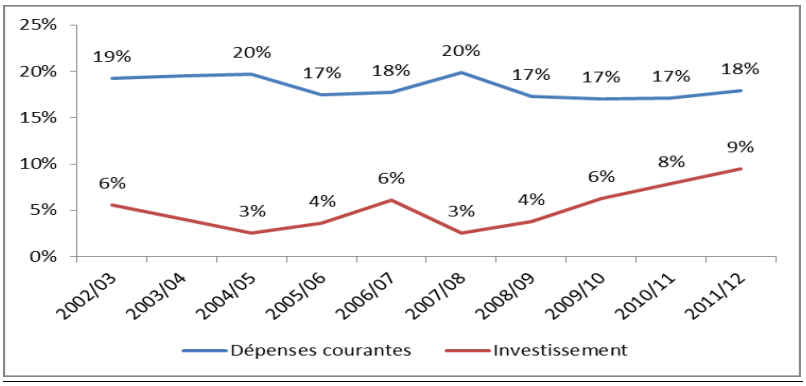
First of all, it is essential that this modernity discussed in this paper is likely to generate serious budgetary needs for the Haitian political authorities. The implications of interventions in modern vocational training are numerous for the public authorities of the country of Haiti. This would require a redefinition of the objectives of public policies in terms of the provision of vocational training not only in order to adapt to the modernity of these interventions, but above all in order to have the capacity to ensure their follow-up and continuity once the aid funds are exhausted. It is clear that the budgetary resources allocated to education should be revised upwards to allow the leaders to ensure the continuation of this new dynamic in the field.

We would like to draw attention to the fact that, in addition to the positive effects that interventions in the field of vocational training can have on the country of Haiti, in particular, on professionals who will see their value increase, can provide social and political stability, insofar as behavioral change among young people has a vital value in enabling the revival of the country's progress and development. Although there are extensive efforts to attract foreign investment into the country, the political instability in the country of Haiti is fueled by popular repulsive behaviors related to these investments. Hence the country of Haiti would gain even more in political stability than in foreign investments attracted. This means that foreign investors would truly recognize that "*Haiti is open for business*".

To return to the budgetary requirements for the establishment and modernization of a vocational training system in Haiti, it is necessary to review the trend of Haitian government investment spending on education in Haiti in general terms. Indeed, graph 1 provides an idea of the distribution of the shares of the Haitian State budget devoted to Education. It is clear that the share devoted to investment in the field is seriously lacking, given that domestic resources are generally low (in relation to the US dollar) and that investment in education is largely only an investment in vocational training. The largest share of expenditures is to pay wages and other current expenses. As evidence, according to the document of the Program of Priority Interventions in Education (PIPE, 2013), "*Over the past ten years, although about 77% of the*

enrollment of pupils and students has been in the private sector, the State has devoted 18% of its current budget to education. This percentage relates to budget executions and not to appropriations. Later in the same document, "*For 2010/11, overall spending on education is estimated for all sources of funding, including family spending, at $ 600 million for current spending and $ 100 million for investment.* »

Chart 1: Evolution of the shares of the State's executed budget (Treasury fund) devoted to education



Blue: Current spending Red: Investments

Sources: Finance Laws and State Expenditurse, Ministry of Economy and Finance.

Analysis of the implementation of PIPE 2011/12, Ministry of Planning and External Cooperation.

Conclusion

From the above, it is commonly acknowledged that it is a difficult situation that invites more than one to an in-depth reflection on the establishment and modernization of a vocational training system in Haiti. The efforts already made in this direction are comendable but certainly insufficient. It is a fact that budgetary resources are limited, but public authorities must demonstrate their political will in order to take steps towards modernization. The stakes are simple: one adapts, or one falls behind!

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Cost-Benefit Analysis of Education Interventions

Haiti Priorise

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As part of the Haiti Priorise project to identify and promote effective solutions to Haiti's development challenges, four papers analyze the costs and benefits of eleven education interventions which have received much attention (and in some cases shown significant promise) in developing countries. The eleven analyzed interventions vary substantially – from expanding access to good quality early childhood education to providing secondary school scholarships to girls. However, all eleven are found to have benefit to cost ratios over 1.0 at reasonable discount rates, and could therefore be justified as promising interventions to pursue in Haiti. How should we interpret these results?

In this paper, I first provide a brief snapshot of the broader context of the Haitian educational system into which these interventions would be introduced, then synthesize the findings of the four papers and discuss how these findings compare with actual domestic and international investments in education. Finally, I argue that turning promise into outcomes relies heavily on the quality of implementation, and that these cost-benefit analyses should be combined with realistic assessments of implementation feasibility in order to prioritize investments.

Education context in Haiti, briefly

As is well-known, Haiti faces many challenges in achieving universal access to quality education at all levels. While about 90% of primary school-age children were enrolled at the last household survey in 2012, only about 50% of children actually complete primary school, and far fewer complete secondary or beyond. Moreover, since 2012, economic challenges and several key policy decisions have threatened the gains made during the 2000s, raising the possibility that enrollment and achievement rates may have actually declined in recent years.

Beyond the headline statistics mentioned above, there is important variation within Haiti as access to education depends greatly on urban/rural location, household wealth, gender, disability, and other factors. For example, regarding gender, while girls drop out at a faster rate than boys after age 14, this difference appears to be largely driven by the fact that girls progress through school more quickly than boys, as more 15-19 year old women than men have at least some secondary education (Cayemittes et al; World Bank 2014 and 2016).

In terms of education financing and provision, the public sector continues to play a minor role at all levels. Public schools only educate about 6% of pre-school students, 23% of primary school students, and 26% of secondary school students, while the rest attend a wide variety of religious, community-run, and for-profit schools. Relatedly, public resources are estimated to account for only about 30% of total spending on primary education, while households account for about 60%, and international donors the remainder (World Bank 2016). Vocational and technical education is also largely privately financed and provided; however, the Government does play a large role in providing university-level education.

Eleven promising interventions, in context

With this as the backdrop, we turn to considering the eleven interventions analyzed in the four papers by Damien Echevin, George Psacharopoulos, Antonu Rabbani, and Melissa Torchenaud. I leave aside a discussion on the justification for focusing on these interventions and not others, as well as the fact that the level of specification varies widely, from the very specific (e.g. "introduce a civics course in the lower secondary curriculum") to the very broad (e.g. "provide quality preschool education"). Instead, taking these interventions as described in their respective papers, the table below compares the estimated benefit-cost ratios at the 5% level.[1]

Based on these estimates, we could simply conclude that investments in early childhood education and in the quality of primary education are among the most promising for Haiti in terms of expected net benefits. Despite several shortcomings of the cost-benefit analysis in each paper, this conclusion in fact lines up well with a range of broader analyses, including Heckman's well-known investment curve and previous work done for the Copenhagen Consensus on the post-2015 development agenda (Glewwe and Kraft 2014).

How do these results compare to the actual distribution of education financing? This is not an easy question to answer given the limitations on existing data, but a 2014 analysis of international financing finds that roughly 80% is focused on primary education, with the remainder going to secondary (including vocational), pre-primary, and tertiary. Breaking down public spending by levels is even more difficult, and we are unable to say much beyond the fact that at least 30% (and likely much more) of the Ministry of Education's budget goes to primary, while very little (likely well under 10%) goes to pre-primary (World Bank 2016). In addition to being based on incomplete data, these estimates are also attempting to hit a moving target – international financing levels in particular fluctuate greatly over time, but domestic resources do as well, as priorities change across administrations. Despite these caveats, we can (guess-)estimate that the primary level receives the majority of public education financing, but that this financing continues to fall short of actual needs, while pre-primary receives very little public money relative to its potential returns.

However, moving from identifying broad priority areas to a plausible proposal for financing and implementing interventions is exactly where much development work breaks down. I provide two specific examples based on the analyzed interventions. First, early childhood education investments are widely considered to have the types of large returns assumed by Rabbani only if the service being provided is of reasonably good quality. In Haiti, the starting point is a system with widely varying but on average very low quality provision and almost no public financing or

[1] All of the papers consider a 3%, 5%, and 12% discount rate, and the conclusions are qualitatively similar across all three.

oversight.[2] While the average annual operating cost per student used by Rabbani of roughly 160 USD is reasonable based on known costs in Haiti, the start-up costs (both financial and political) of asserting public authority in the sector, developing both pedagogical and bureaucratic management capacity, and improving physical spaces for classes in order to reach a minimal level of quality are likely to be very high. Moreover, even with expected high returns, identifying a reliable and recurring public source of financing for early childhood investments is a difficult task in a context where primary and secondary education are underfunded.

Second, the discussion around interventions to improve the quality of primary education relies on the assumption that the majority of children are in school. While this was true in 2012 as mentioned above, because public financing for primary education has fallen in subsequent years, enrollment rates are also at risk. Therefore, the extent to which the government will finance primary education, and with what resources, should be resolved as a matter of priority over and above other interventions. Beyond this challenge, considering the two quality interventions with the highest estimated ratios – mother tongue instruction and teaching at the right level – several factors suggest that effective implementation in Haiti would be costlier and generally more resource-intensive than assumed. First, regarding mother tongue instruction, the Ministry of Education has already directed schools to begin teaching students to read and write in Haitian Creole, rather than French, but anecdotal evidence suggests that most schools do not comply. Many reasons lie behind this – including parents' preference for their children learning French and the lack of Ministerial authority over a largely private sector (Adelman et al 2015). These reasons imply that progress (which is being made) requires building consensus across stakeholders, developing new materials in Creole, and re-training teachers – all costly and time-consuming efforts that are not fully factored into the analysis. Beyond Haiti, most of the evidence from rigorous evaluations of interventions on education quality in developing countries (including on teaching to the right level) comes from interventions implemented by non-governmental actors, and efforts to scale up these interventions through government have met a range of difficult and sometimes unpredictable challenges, which entail substantial extra costs, effort, and time to overcome (Bold et al 2013; Kerwin and Thornton 2015; Banerjee et al 2016).

In addition to these examples, every other intervention analyzed across the four papers could (and should) be carefully considered for feasibility in light of the known challenges of the context. Regarding the conditional cash transfers analyzed by Rabbani and Torchenaud, a program would need to factor in the costs of not only setting up the basic systems effectively from scratch but also of achieving agreement on targeting, given that identity registration systems do not function and 70% of the population is either poor or vulnerable to falling into

[2] Very little reliable data exists on the ECE sector in Haiti, but field visits and anecdotal evidence point to classrooms of over 40 children with little to no materials as a common occurrence.

poverty (World Bank). Regarding vocational education, as rightly pointed out by Psacharopoulos, existing programs in Haiti and many other countries have run into the added costs of providing substantial remedial education because basic skills are so weak and of identifying labor demand because markets are largely informal and almost no labor market information exists (World Bank).

Table 1: Estimated Benefit-Cost Ratios across eleven education interventions

Education level targeted	Intervention	Author	Benefit-cost ratio at 5% discount rate
Pre-primary	Two-year early childhood interventions at the pre-primary phase	Rabbani	13.9
Primary	Teaching at the right level	Rabbani	8.8
	Mother tongue instruction	Echevin	7.4
	Training teachers	Echevin	4.4
	Private school subsidies	Echevin	3.3
	Free school uniforms	Echevin	2.0
Secondary	CCT for secondary school	Rabbani	5.0
	CCT for girls in secondary school	Torchenaud	6.9
Lower secondary	Adding a civics course to the secondary school curiculum	Psacharopoulos	4.9
Upper secondary	Providing 3-year vocational education program	Psacharopoulos	2.0
	Creating a gap year program of civics and vocational education	Psacharopoulos	2.5

Conclusions

Considering the findings of the four papers on potential education interventions in Haiti altogether, it is clear that in a context where attainment and learning are so low, almost any reasonable intervention could have substantial net benefits. More importantly, the results point to a focus on early childhood and primary education as most likely to provide the largest long-term benefits, consistent with the broader literature and other research on education in Haiti. However, what the papers do not address is how feasible it would be to implement any of the analyzed interventions, including a broader consideration of the costs and time required. This is where I very much hope the conversation will go, as Haiti's future will be shaped by the human capital it builds today.

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Haiti faces some of the most acute social and economic development challenges in the world. Despite an influx of aid in the aftermath of the 2010 earthquake, growth and progress continue to be minimal, at best. With so many actors and the wide breadth of challenges from food security and clean water access to health, education, environmental degradation, and infrastructure, what should the top priorities be for policy makers, international donors, NGOs and businesses? With limited resources and time, it is crucial that focus is informed by what will do the most good for each gourde spent. The Haïti Priorise project will work with stakeholders across the country to find, analyze, rank and disseminate the best solutions for the country. We engage Haitans from all parts of society, through readers of newspapers, along with NGOs, decision makers, sector experts and businesses to propose the best solutions. We have commissioned some of the best economists from Haiti and the world to calculate the social, environmental and economic costs and benefits of these proposals. This research will help set priorities for the country through a nationwide conversation about what the smart - and not-so-smart - solutions are for Haiti's future.

For more information visit www.HaitiPriorise.com

COPENHAGEN CONSENSUS CENTER

Copenhagen Consensus Center is a think tank that investigates and publishes the best policies and investment opportunities based on social good (measured in dollars, but also incorporating e.g. welfare, health and environmental protection) for every dollar spent. The Copenhagen Consensus was conceived to address a fundamental, but overlooked topic in international development: In a world with limited budgets and attention spans, we need to find effective ways to do the most good for the most people. The Copenhagen Consensus works with 300+ of the world's top economists including 7 Nobel Laureates to prioritize solutions to the world's biggest problems, on the basis of data and cost-benefit analysis.