

TERMS OF REFERENCE

Country: Ecuador

Technical Cooperation: EC-T1433

Inclusion of migrants into school system

1. Background and Justification

- 1.1.** The world is witnessing the highest levels of human displacement on record. An unprecedented 65.3 million people around the world have been forced from their homes, whereof over 21 million are refugees (UNHRC, 2018). Over half of the world's refugees are children of school-age. In 2014 alone, the school age refugee population grew by 30% across the world. On average, refugee children are five times less likely to attend school than other children. Additionally, where refugee children and young people do access education, the quality is often poor, putting their learning and well-being at risk (World Bank, 2018).
- 1.2.** The Venezuelan migrant crisis is a new challenge for Latin America and the Caribbean. By the end of 2018, the International Organization for Migration (IOM) reported that the number of Venezuelan migrants and refugees worldwide reached more than 3 million people, of which 80% are in other countries of the region¹. As of December 2018, 280,000 Venezuelans were registered in Ecuador². Around 20% of these migrants (approximately 50,000 people) are minors, needing access to schooling, whereof about 80% have not yet been assigned a seat in any Ecuadorian school. This influx of populations needing access to quality education is putting pressure on an already saturated Ecuadorian school system. Prior to the migration crisis, Ecuador had an approximate 50,000 out-of-school youth.
- 1.3.** There are numerous reasons for lack of access to schooling of vulnerable and migrant children. One reason is related to how the current Ecuadorian system of assignment of students works. Students are assigned to a nearby school based on the address of their electrical bill. However, government officials are aware that some parents game the system by getting electrical bills of acquaintances who reside in neighborhoods with more desirable public schools. This is more likely to be exploited by parents that likely have more objective knowledge about schools and more dense social networks (Schneider et al., 1998; Bell, 2009; Bosetti, 2004). Vulnerable and migrant families are in disadvantage in this system because they are more likely to be less well informed and connected.

2. Objectives

- 2.1.** The objective of the project is to provide support to the Government of Ecuador to improve quick response to inclusion of migrants and vulnerable populations in the school system by increasing the transparency, efficiency and equity of the student allocation system in Ecuador using artificial intelligence, machine learning, and behavioral insights (in particular *nudges*). This will largely benefit vulnerable and migrant populations by levelling the field in terms of access to information

¹ <http://www.un.org.ec/el-numero-de-refugiados-y-migrantes-de-venezuela-alcanza-los-3-millones/>

² This represents around 1.7% of the Ecuadorian population according to CELADE population estimates.

and opportunities to get a seat assigned in an Ecuadorian public school. Specifically:

- 2.1.1. A diagnostic study of how the current Ecuadorian system of allocation of students work.
- 2.1.2. Examine and simulate how the systems would work under different allocation rules
- 2.1.3. Provide technical assistance in the development of a platform and changes to the allocation algorithms (back-end technology)
- 2.1.4. Likewise, provide technical assistance in the development of the interface of the platform used for student allocation (front-end technology)
- 2.1.5. Provide technical assistance to conduct a pilot of the interface, implement a survey to understand parents and students' preferences for different types of schools and propose a methodology to evaluate the interface in terms of parent and student satisfaction with the school assigned.
- 2.1.6. Give relevant policy recommendations that are based on evidence and the specificities of the context.

3. Scope of Services

- 3.1.** Product 1 – Diagnosis of current allocation mechanisms for students: The firm will produce a detailed diagnosis of the results of the current student assignment system in Ecuador. This diagnosis will include: (i) an analysis of the rules and actual practices determining student allocation across schools; (ii) study the school supply and population density to define local educational markets; and, (iii) depending upon availability of resources, a survey to better understand family and teacher's preferences.
- 3.2.** Product 2 – Analyses of alternative allocation systems – literature review and simulations: The firm will conduct a literature review to identify effective nudges and informational interventions for the student allocation system in Ecuador, prioritizing vulnerable and migrant populations. The firm will also conduct simulations to make a comparison of the allocation results under the current system and under an alternative matching algorithm.
- 3.3.** Product 3 – Technical support in the development of back-end and front-end technologies. The back-end stage includes the development of a platform and changes to the allocation algorithms. The front-end stage focuses on improvements in the interface of allocation system including design and implementation of alerts and nudges. The front-end will include a survey to assess the satisfaction of applicants with the process.
- 3.4.** Product 4 – Evaluation of the effectiveness of the front-end technology for centralized allocation system of students: Based on the area that the government chooses to implement the back-end and front-end technologies, the firm will conduct an evaluation of the effectiveness of AI and nudges in improving equity and efficiency in the allocation of students across schools, with a focus on vulnerable and migrant populations. The results will be a key input for a policy analysis.

4. Key Activities

- 4.1.** Activities for Product 1 – Diagnosis of current allocation mechanisms for students in Ecuador:
 - 4.1.1. Analysis of the current allocation rules.
 - 4.1.2. Collection of administrative data for analysis of previous processes.
 - 4.1.3. Analysis of the data to identify main issues with the system and assess their transparency, efficiency, and equity.
 - 4.1.4. Analysis to define and identify education markets using population census data and geocoded data of students.
 - 4.1.5. Elaboration of reports and presenting main results.

- 4.2.** Activities for Product 2 – Analyses of alternative allocation systems; literature review and simulations:
 - 4.2.1. Collection of administrative data for analysis of previous processes.
 - 4.2.2. Feasibility analysis for the definition of priorities.
 - 4.2.3. Adapt different matching algorithms to the local context.
 - 4.2.4. Analyses and simulations of the current algorithm and a strategy-proof algorithm using data of previous processes.
 - 4.2.5. Elaboration of reports and presenting main results.

- 4.3.** Activities for Product 3 – Technical support in the development of back-end and front-end technologies in the Ecuadorian student assignment systems:
 - 4.3.1. Support in the creation of an information platform that supports applicants by providing them with relevant information using AI and Machine Learning. The platform will also include nudges to families to choose less demanded schools that are similar to their first option.
 - 4.3.2. Support in the design and implementation of a chatbot technology that suggests how to strengthen the application.
 - 4.3.3. Support in the design and implementation of a system of alerts, using AI and Machine Learning, when applicants apply to popular schools and face the risk of not being accepted.
 - 4.3.4. Support in the design and implementation of personalized recommendations to be sent by text messages.

5. Expected Outcome and Deliverables

- 5.1.** The deliverables will be requested and processed through a work order and will include reports, presentations, databases, do-files, and codes. With each work order, the firm will be expected to create a work plan that includes a start and end date, outline key processes needed to complete the work, and identify stakeholders, especially government counterparts, that will be contacted to complete the work.

6. Project Schedule and Milestones

- 6.1. Work plan including proposals for the design of the evaluation strategy: Within **one month** of signing the contract
- 6.2. Product 1: Diagnosis of current allocation mechanisms for students: Within **7 months** of signing the contract
- 6.3. Product 2: Analyses of alternative allocation systems; literature review and simulations: Within **7 months** of signing the contract
- 6.4. Product 3: Technical support in the development of back-end and front-end technologies in the teacher and student assignment systems: Within **19 months** of signing the contract

7. **Reporting Requirements**

- 7.1. The firm will be required to provide biweekly written updates on the progress of the work in addition to the report milestones specified in section 6.
- 7.2. All materials produced during and for this consultancy will:
 - 7.2.1. Be delivered in electronic copies.
 - 7.2.2. Be owned by the IDB (copyright), including the right to produce, distribute, disseminate and publish, notwithstanding the termination of the consultancy (except for the engagement content).

8. **Acceptance Criteria**

- 8.1. The firm is expected to deliver high-quality products that will be evaluated by the supervisors of the project for quality assurance. It is also expected the firm has the necessary infrastructure to fully comply with the activities proposed.

9. **Other Requirements**

- 9.1. The firm will provide technical support with the maintenance of the platform if required up to two years after the finalization of the contract.

10. **Supervision and Reporting**

- 10.1. The responsible for this project will be Anne Sofie Olsen, Specialist of the Division of Education (SCL/EDU). The firm will participate in meetings with the IDB team to plan and report on progress (the meetings will be weekly during critical periods of the consultancy).

11. **Schedule of Payments**

- 11.1. Payment terms will be based on the following table

Payment Schedule	
<i>Deliverable</i>	%
1. <i>Work Plan including proposals for the design of the evaluation strategy</i>	20%
2. <i>Product 1: Diagnosis of current allocation mechanisms for students</i>	35%
3. <i>Product 2: Analyses of alternative allocation systems: literature review and simulations</i>	35%
4. <i>Product 3: Technical support in the development of back-end and front-end technologies in the student assignment systems</i>	10%
TOTAL	100%

TERMS OF REFERENCE

Country: Ecuador

Technical Cooperation: EC-T1433

Inclusion of migrants into school system

12. Background and Justification

12.1. The world is witnessing the highest levels of human displacement on record. An unprecedented 65.3 million people around the world have been forced from their homes, whereof over 21 million are refugees (UNHRC, 2018). Over half of the world's refugees are children of school-age. In 2014 alone, the school age refugee population grew by 30% across the world. On average, refugee children are five times less likely to attend school than other children. Additionally, where refugee children and young people do access education, the quality is often poor, putting their learning and well-being at risk. Another great challenge for migrants and refugees is the process of integration and labor market assimilation. At the time of their arrival, they are on average at severe economic disadvantage compared to natives. They have lower employment rates, lower wages and lower occupational quality (World Bank, 2018).

12.2. The Venezuelan migrant crisis is a new challenge for Latin America and the Caribbean. By the end of 2018, the International Organization for Migration (IOM) reported that the number of Venezuelan migrants and refugees worldwide reached more than 3 million people, of which 80% are in other countries of the region³. As of December 2018, 280,000 Venezuelans were registered in Ecuador⁴. Around 20% of these migrants (approximately 50,000 people) are minors, needing access to schooling, whereof about 80% have not yet been assigned a seat in any Ecuadorian school. This influx of populations needing access to quality education is putting pressure on an already saturated Ecuadorian school system. Prior to the migration crisis, Ecuador had an approximate 50,000 out-of-school youth.

12.3. There are numerous reasons for lack of access to schooling of vulnerable and migrant children. One reason for the lack of access to schooling of migrant children is related to the critical teacher shortages faced by the Ecuadorian education system. In Ecuador, there is a deficit of circa 4,000 certified teachers to be able to incorporate all children (Ecuadorian and foreign children) in the education system. This generates lack of vacancies and waitlists in public schools. Migrants concentrate in more vulnerable areas, where the shortage of teachers is more severe. Indeed, UNICEF data shows that 25% of localities with greater shortage of teachers also have a higher share of foreigners in the education system. The vulnerable areas are where teachers have the greatest impact, the study in Ecuador "Cerrando Brechas" shows that the impact of a good teacher on student learning is significant, especially for disadvantaged children.

13. Objectives

³ <http://www.un.org.ec/el-numero-de-refugiados-y-migrantes-de-venezuela-alcanza-los-3-millones/>

⁴ This represents around 1.7% of the Ecuadorian population according to CELADE population estimates.

13.1. The objective of the project is to support the Government of Ecuador to increase access to schooling in vulnerable areas with significant concentration of migrants by including talented individuals to work as teachers in these areas. Specifically:

13.1.1. Recruit and rigorously select and train ten individuals from diverse backgrounds to become effective teachers in disadvantaged communities for at least two years.

13.1.2. Target the recruitment efforts among the Venezuelan migrant population. This will foster the economic integration of migrants and, furthermore, ease their assimilation to their host country.

13.1.3. Support the development of specific community action plans led by the teachers.

14. Scope of Services

14.1. Product 1 – Report of the training provided to the recruited individuals before they start to teach and during first semester.

14.2. Product 2 – Report of the training provided to the recruited individuals during the second semester of classes of the first year and the first semester of classes of the second year.

14.3. Product 3 – Report of the training provided to the recruited individuals during the second semester of classes of the second year.

14.4. Product 4 – Report of the community action plans led by teachers

15. Key Activities

15.1. Activities for Products 1 - 3 – Reports of the training provided to the recruited individuals

15.1.1. Description of the training plan, specifying the goals for each term.

15.1.2. Description of the attendance and participation of the individuals.

15.1.3. Analysis of the extent to which the goals were achieved.

15.1.4. Carry out surveys and/or interviews to gather feedback from the recruited individuals about the training provided; include the feedback in the report.

15.2. Activities for Product 4 – Report of the community action plans led by teachers

15.2.1. Justification for each of the community action plans chosen by teachers, stating the expected results. Expected results should include concrete statements of expected and recognizable results, quantified as much as possible, in order to avoid general objectives like “improving the living conditions of the communities”.

15.2.2. Description of all the stages of the elaboration of the community action plans.

16. Expected Outcome and Deliverables

- 16.1. The deliverables will be requested and processed through a work order and will include reports. With each work order, the firm will be expected to create a work plan that includes a start and end date and outline key processes needed to complete the work.

17. Project Schedule and Milestones

- 17.1. Work plan: Within **1 month** of signing the contract
- 17.2. Product 1: First report of the training provided: Within **8 months** of signing the contract
- 17.3. Product 2: Second report of the training provided: Within **20 months** of signing the contract
- 17.4. Product 3: Third report of the training provided: Within **26 months** of signing the contract
- 17.5. Product 4: Report of the community action plans: Within **26 months** of signing the contract

18. Reporting Requirements

- 18.1. T
The firm will be required to provide monthly written updates on the progress of the work in addition to the report milestones specified in section 6.
- 18.2. A
All materials produced during and for this consultancy will:
 - 18.2.1. B
be delivered in electronic copies.
 - 18.2.2. B
be owned by the IDB (copyright), including the right to produce, distribute, disseminate and publish, notwithstanding the termination of the consultancy (except for the engagement content).

19. Acceptance Criteria

- 19.1. The firm is expected to deliver high-quality products that will be evaluated by the supervisors of the project for quality assurance. It is also expected the firm has the necessary infrastructure to fully comply with the activities proposed.

20. Other Requirements

- 20.1. There are no other requirements.

21. Supervision and Reporting

21.1. The responsible for this project will be Anne Sofie Olsen, Specialist of the Division of Education (SCL/EDU). The firm will participate in meetings with the IDB team to plan and report on progress (the meetings will be weekly during critical periods of the consultancy).

22. Schedule of Payments

22.1. Payment terms will be based on the following table

Payment Schedule	
<i>Deliverable</i>	%
5. <i>Work Plan</i>	10%
6. <i>Product 1: First report of the training provided</i>	20%
7. <i>Product 2: Second report of the training provided</i>	20%
8. <i>Product 3: Third report of the training provided</i>	20%
9. <i>Product 4: Report of the community action plans</i>	30%
TOTAL	100%

Job Title: Consultancy to support migration education analysis

Background: The Inter-American development Bank works to improve lives in Latin America and the Caribbean. Through financial and technical support for countries working to reduce poverty and inequality, we help improve health and education, and advance infrastructure. Our aim is to achieve development in a sustainable, climate-friendly way. With a history dating back to 1959, today we are the leading source of development financing for Latin America and the Caribbean. We provide loans, grants, and technical assistance; and we conduct extensive research. We maintain a strong commitment to achieving measurable results and the highest standards of increased integrity, transparency, and accountability.

The Social Sector (SCL) is a multidisciplinary team convinced that investing in people is the way to improve lives and overcome the development challenges in Latin America and the Caribbean. Jointly with the countries in the region, the Social Sector formulates public policy solutions to reduce poverty and improve the delivery of education, work, social protection, and health services. The objective is to advance a more productive region, with equal opportunities for men and women, and greater inclusion of the most vulnerable groups.

The team: The Education Division supports education systems of Latin America and the Caribbean countries to reach five dimensions that will contribute to making them successful in promoting effective teaching and learning among all children and youth. The IDB's private sector window also finances projects to expand educational opportunities for low income students. We support Latin American and Caribbean countries to ensure that:

- 1) High expectations guide education services
- 2) Students entering the system are ready to learn
- 3) All students have access to effective teachers
- 4) All schools have adequate resources and are able to use them for learning
- 5) All graduates have the necessary skills to succeed in the labor market and contribute to society

The Education Division is constantly consolidating its ongoing research agenda on teacher quality. Moreover, the Education Division is currently implementing several interventions to support systems in the region to incorporate AI and behavioral strategies in centralized assignment systems for teachers and students, in order to improve allocation outcomes. This consultancy has the objective to support the work on the nexus between migration and education, specifically in the following activities: (i) research efforts related to teacher, student, and resource allocation, (ii) the development of back-end technology (database administration and matching algorithms based on assignment mechanisms) for students and teachers, (iii) the development of front-end technology, that is, the “client-side” interface where teachers and families view available choices and apply for vacancies, and (iv) the design, implementation, and evaluation of AI and behavioral science strategies to improve allocation outcomes. Additionally, the consultancy will support exchange of best practices between countries as well as prepare national and regional seminars.

What you'll do:

- Work on the research agenda of studies related to student and teacher allocation systems and resource allocation as well as mobility and migration.
- Support the design, implementation, and evaluation of AI and behavioral strategies in centralized assignment systems for students.
- Support data-analysis, further research and experimental evaluation, in particular related to mobility and education
- Support all related work-plans related to educational analysis and disseminations/workshops

What you'll need:

Citizenship:

- You are a citizen of one of our 48-member countries. We may offer assistance with relocation and visa applications for you and your eligible dependents.

Consanguinity: You have no family members (up to fourth degree of consanguinity and second degree of affinity, including spouse) working at the IDB Group.

Education: Master's degree in Economics, Public Policy, Public Administration, Education or in a similar field. PhD preferred.

Experience: Five (5) years of relevant professional experience, or the equivalent combination of education and experience

Languages: Fluent in English and Spanish

Core and Technical Competencies:

- Strong research background and strong analytical abilities, as demonstrated by academic and other professional achievements. The candidate should have the ability to understand and use theoretical and econometric tools of economic analysis.
- Extensive experience manipulating datasets using STATA or other equivalent software, and experience in evaluation techniques and methodologies.
- Knowledge of other program languages like Python, R and ArcGIS is desirable
- Algorithms and data structure skills desirable
- Ability to write academic papers, working independently and as part of a team
- Skills for planning and structuring meetings with authorities.

Opportunity Summary:

Type of contract: PEC

Length of contract: 6 months

Starting date: September 15th, 2019

Location: Ecuador or IDB Headquarters

Responsible person: Anne Sofie Westh Olsen, Education specialist (EDU/CEC)

Our culture: Our people are committed and passionate about improving lives in Latin-America and the Caribbean, and they get to do what they love in a diverse, collaborative and stimulating work environment.

We are the first Latin American and Caribbean development institution to be awarded the EDGE certification, recognizing our strong commitment to gender equality. As an employee you can be part of internal resource groups that connect our diverse community around common interests.

We encourage women, afro-descendants, people of indigenous origins, and persons with disabilities to apply.

About us: At the IDB, we're committed to improving lives. Since 1959, we've been a leading source of long-term financing for economic, social, and institutional development in Latin America and the Caribbean. We do more than lending though. We partner with our 48-member countries to provide Latin America and the Caribbean with cutting-edge research about relevant development issues, policy advice to inform their decisions, and technical assistance to improve on the planning and execution of projects. For this, we need people who not only have the right skills, but also are passionate about improving lives.

Our team in Human Resources carefully reviews all applications.

Job Title: Consultancy to support analysis about the Ecuadorian student allocation system
EC-T1433

Background: The Inter-American development Bank works to improve lives in Latin America and the Caribbean. Through financial and technical support for countries working to reduce poverty and inequality, we help improve health and education, and advance infrastructure. Our aim is to achieve development in a sustainable, climate-friendly way. With a history dating back to 1959, today we are the leading source of development financing for Latin America and the Caribbean. We provide loans, grants, and technical assistance; and we conduct extensive research. We maintain a strong commitment to achieving measurable results and the highest standards of increased integrity, transparency, and accountability.

The Social Sector (SCL) is a multidisciplinary team convinced that investing in people is the way to improve lives and overcome the development challenges in Latin America and the Caribbean. Jointly with the countries in the region, the Social Sector formulates public policy solutions to reduce poverty and improve the delivery of education, work, social protection, and health services. The objective is to advance a more productive region, with equal opportunities for men and women, and greater inclusion of the most vulnerable groups.

The team: The Education Division supports education systems of Latin America and the Caribbean countries to reach five dimensions that will contribute to making them successful in promoting effective teaching and learning among all children and youth. The IDB's private sector window also finances projects to expand educational opportunities for low income students.

We support Latin American and Caribbean countries to ensure that:

- 1) High expectations guide education services;
- 2) Students entering the system are ready to learn;
- 3) All students have access to effective teachers;
- 4) All schools have adequate resources and are able to use them for learning; and
- 5) All graduates have the necessary skills to succeed in the labor market and contribute to society.

Objective of this consultancy: The Education Division's team will provide support to the Government of Ecuador to improve quick response to inclusion of migrants and vulnerable populations in the school system, by increasing the transparency, efficiency and equity of the student allocation system in Ecuador using artificial intelligence (AI), machine learning (ML), and behavioral insights (in particular, *nudges*). The objective of the consultancy is to support these efforts through the collection and analysis of information about the allocation student system in Ecuador, and to assist in carrying out evaluations of the new allocation system.

What you'll do: The selected candidate will...

- Collect and clean databases
- Identify suitable strategies to evaluate each of the information and nudge interventions on the school choices of parents and students
- Analyze data and perform econometric analyses, including the implementation of the evaluation strategy, estimation of alternative econometric models and specifications, robustness checks, and analysis of the results
- Carry out a policy analysis based on the results of the evaluation and the local context

- Elaborate reports and presentations of main results
- Additional responsibilities, as necessary for the completion of above-mentioned tasks, are not precluded, which may become necessary and be approved by the supervisor.

Deliverables/Payments timeline:

	Deliverable Description	Est. Date of Delivery	% of Payment
#1	All required databases, including a description of them	February 1, 2020	25%
#2	Report with a detailed description of the strategies to evaluate the effectiveness of AI and nudges in improving equity and efficiency in the allocation of students across schools, with a focus on vulnerable and migrant populations	March 15, 2021	25%
#3	Reports and presentations of the main results	July 1, 2021	50%

Skills you'll need:

- Citizenship: You are a citizen of one of our 48-member countries.
- Consanguinity: You have no family members (up to fourth degree of consanguinity and second degree of affinity, including spouse) working at the IDB Group.
- Education: Master's Degree or Equivalent in Economics, Public Policy, Public Administration or in a similar field.
- Experience: Two (2) years of relevant professional experience, or the equivalent combination of education and experience
- Languages: Fluent in Spanish and English.

Core and Technical Competencies:

- Strong research background and analytical abilities especially in areas of economic policy, public policy, education policy, and political economy as demonstrated by academic and other professional achievements are required.
- Superior organizational, coordination and logistical skills, with ability to look ahead, address and prioritize a wide range of issues and activities for timely completion; a proven ability to take initiative and work independently, and to work in a dynamic fast-paced work environment.
- Proven ability to work effectively in complex, multi-disciplinary and multi-cultural teams; superior inter-personal skills, client-orientation, diplomatic skills, and mature judgment as well as sensitivity to social and cultural issues.
- A proven ability to write brief, clear and analytical reports and concise discussion notes and presentations.

Opportunity Summary:

- Type of contract: Product and External Services (PEC), Lump Sum
- Length of contract: 126 days over a period of 6 months
- Starting date: January 1, 2020
- Location: External
- Responsible person: Anne Sofie Olsen, Specialist of the Division of Education (CEC/EDU)

- Requirements: You must be a citizen of one of the [IDB's 48 member countries](#) and have no family members currently working at the IDB Group.
- Travel Requirement: Yes, travel will be required. See details below

Our culture: Our people are committed and passionate about improving lives in Latin-America and the Caribbean, and they get to do what they love in a diverse, collaborative and stimulating work environment. **We are the first Latin American and Caribbean development institution to be awarded the EDGE certification, recognizing our strong commitment to gender equality.** As an employee you can be part of internal resource groups that connect our diverse community around common interests.

We encourage women, afro-descendants, people of indigenous origins, and persons with disabilities to apply.

About us: At the IDB, we're committed to improving lives. Since 1959, we've been a leading source of long-term financing for economic, social, and institutional development in Latin America and the Caribbean. We do more than lending though. We partner with our 48-member countries to provide Latin America and the Caribbean with cutting-edge research about relevant development issues, policy advice to inform their decisions, and technical assistance to improve on the planning and execution of projects. For this, we need people who not only have the right skills, but also are passionate about improving lives.

Our team in Human Resources carefully reviews all applications.