

TERMS OF REFERENCE FOR INDIVIDUAL CONTRACT

POSITION TITLE:	Predictive Analytics Consultant
AGENCY/PROJECT NAME:	United Nations Development Programme (UNDP), Bangkok Regional Hub (BRH), Human Mobility team
COUNTRY OF ASSIGNMENT:	Home-based, with no travel required
Duration:	From 1 December 2021 – 30 April 2022, with maximum of 50 days worked

1) GENERAL BACKGROUND

Migration and displacement related to environmental change are as old as humanity itself. In the age of human-made climate change, however, extreme weather events and rising sea levels, among others, are having an increasing impact on communities and nations – and mobility of people within and between them. Many of these impacts pose serious threats to the achievement of the Sustainable Development Goals.

The ways in which climate events and change shape human mobility – whether forced or otherwise – are varied and complex, with gaps in knowledge and data widespread. What is known, however, is that the world is seeing more displacement because of disasters – both sudden- and slow-onset – than ever before. In 2020, of the 40.5 million internally displaced people, over three quarters – 30.7 million – were displaced by disasters.¹ This represents a substantial increase on previous years, with 2018 and 2019 seeing 17.2 million and 24.9 million new internal displacements due to disasters respectively.² Predictions about the impact of climate change on future human mobility vary significantly, with estimates ranging from 50 million to 1 billion ‘climate migrants’ by the end of the century.³ The World Bank’s *Groundswell* report suggests that – without significant action to address climate change – the world could see 143 million internal ‘climate migrants’ by 2050.⁴ More nuanced modelling predicts climate-related human mobility patterns at higher resolution and for specific contexts with more utility for policy formulation, but at present has only been conducted for areas in Central and Latin America and the US.⁵

While displacement risks – and decisions to move in general – derive from a complex interaction between social, political, economic, environmental, and individual factors, the emerging consensus suggests that climate change does exacerbate risks for millions of people around the world and will likely result in more climate-related migration and displacement in the future. Empirical research also shows that climate-related mobility most commonly occurs as long-distance internal migration, rather than international or short-distance movements.⁶ These movements are likely to feed into ongoing patterns of mobility, with most migrants and displaced people moving to cities, often informal urban settlements, in search of livelihood opportunities and access to key services. Without proactive, inclusive urban planning and development, such movements can put a strain on infrastructure and services, and lead to conflict and further exclusion of already marginalized populations.

¹ IDMC. (2021). *Global Report on Internal Displacement*. Geneva: IDMC.

² IDMC. (2020, 2019). *Global Report on Internal Displacement*. Geneva: IDMC.

³ Ferris, E. (2020). Research on climate change and migration: Where are we and where are we going? *Migration Studies*, 8(4), 612-625.

⁴ World Bank. (2018). *Groundswell: Preparing for Internal Climate Migration*. Washington, DC: World Bank.

⁵ E.g., Jones, B. (2020). *Modeling Climate Change-Induced Migration in Central America & Mexico. Methodological Report*. Retrieved from the ProPublica website <https://assets-c3.propublica.org/Climate-Migration-Modeling-Methodology.pdf>; or Poon, L. (2020, February 3). *Where America’s Climate Migrants Will Go As Sea Level Rises*. Retrieved from the Bloomberg CityLab website <https://www.bloomberg.com/news/articles/2020-02-03/mapping-migration-in-the-face-of-climate-change>.

⁶ Kaczan, J. & Orgil-Meyer, J. (2020). The impact of climate change on migration: A synthesis of recent empirical insights. *Climate Change*, 153(3), 281-300.

Given this reality, it is imperative that development actors consider how best to anticipate and prepare for future mobility patterns, especially into cities, to ensure that those who migrate – in part or entirely – due to environmental change have their human rights protected and are enabled to contribute meaningfully to the communities in which they arrive. Large movements of people – of the sort forecasted by many – require a rethink of interventions in spatial planning and development, resilience and adaptation, livelihoods and inclusive growth, social cohesion, and accessibility of key services in urban contexts.

The overall research seeks to model migratory patterns into select urban locations and to examine the anticipated impact of specific policy interventions in those areas. Anticipatory analysis such as this is aimed at mitigating further systemic risks and to better prepare UNDP and our partners for possible mid- and long-term future impacts. To achieve this, predictive analytics and qualitative foresight will be used to model how many people will move to select cities by 2050 accounting for the impact of climate change, and to evaluate what impact this will have across key social and economic variables in these places based on different scenarios. The Terms of Reference are for the predictive analytics work only, which must be closely coordinated with a separate undertaking using qualitative, participatory foresight methodologies to understand the likely outcomes of different potential adaptive interventions to these movements of people.

Based on the analysis, the research seeks to provide anticipatory policy and programmatic recommendations, enabling stakeholders to make informed decisions about adaptive responses to prepare for the potential influx of people in ways that ensure both incoming and host communities are able to contribute to inclusive development in the mid- and long-term.

2) OBJECTIVES OF THE ASSIGNMENT

The assignment focuses on Ho Chi Minh City/Viet Nam, Karachi/Pakistan and Honiara/Solomon Islands, three densely populated and fast-growing urban centers of the Asia-Pacific in some of the world's most impacted countries by climate change and events.

Building upon previous models (see, e.g., footnote 5), the objective of the assignment is to develop and apply an iterative, predictive analytics model estimating how many people will move to these cities within their respective countries by 2050 accounting for the impact of climate change.

Modelling should consider migration trends to be a function of the complex relationship between physical/environmental change, socioeconomic and demographic characteristics of populations, history and existing connections, political systems and stability, geographic characteristics, and others.

The assignment draws upon a scenario framework, illustrating different plausible, future development pathways. Initially, two scenarios are to be developed and subjected to a qualitative foresight exercise (*outside this assignment*) in each of the three cities/countries, whose results will feed back into modelling.

3) SCOPE OF WORK

In delivering on the above objectives, the consultant is expected to conduct the following activities:

- 1) Conduct a comprehensive literature review on modelling work of predicted, future migratory patterns, within countries and into cities and accounting for the impact of climate change;
- 2) Drawing upon the literature review, develop a model for the select cities/countries, ensuring that migratory patterns are conceived of as the result of the complex interplay between climate, demographic, socio-economic, political, historical and other factors, and considering data availability;
- 3) Develop two scenarios – one 'positive' scenario and one 'negative' scenario – to characterize the uncertainty in outcomes across alternative climate and socio-economic developments;
- 4) Provide the results of the scenarios including preliminary analysis, which will be subjected to a qualitative foresight exercise;
- 5) Draw upon the results of the qualitative foresight exercise to further develop the model, re-run the analysis and produce the final report.

4) DURATION OF ASSIGNMENT, DUTY STATION AND EXPECTED PLACES OF TRAVEL**Duration**

From 1 December 2021 – 30 April 2022, with maximum of 50 days worked.

Duty Station

Home-based. Telecommunication with UNDP staff, project partners and other relevant stakeholders is required.

Expected places of travel: None

5) Expected Deliverables

Deliverables/ Outputs	Estimated Days to Complete	Target Due Dates	Review and Approvals Required
<ul style="list-style-type: none"> Conduct a comprehensive literature review on modelling work of predicted, future migratory patterns, within countries and into cities and accounting for the impact of climate change. Drawing upon the literature review, develop a model for the select cities/countries, ensuring that migratory patterns are conceived of as the result of the complex interplay between climate, demographic, socio-economic, political, historical, and other factors, and considering data availability 	30 days	15 January 2022	Regional Advisor, Recovery, Livelihoods & Human Mobility, UNDP Bangkok Regional Hub Strategic Advisor (Foresight), UNDP Regional Bureau for Asia and the Pacific
<ul style="list-style-type: none"> Develop two scenarios – one ‘positive’ scenario and one ‘negative’ scenario – to characterize the uncertainty in outcomes across alternative climate and socio-economic developments. Provide the results of the scenarios including preliminary analysis, which will be subjected to a qualitative foresight exercise; 	10 days	15 February 2022	
<ul style="list-style-type: none"> Draw upon the results of the qualitative foresight exercise to further develop the model, re-run the analysis and produce the final report. 	10 days	15 April 2022	

6) PROVISION OF MONITORING AND PROGRESS CONTROLS

The consultant will report directly to the Regional Advisor, Recovery, Livelihoods & Human Mobility and the Strategic Advisor (Foresight) for Asia-Pacific, keeping updated relevant members of the Human Mobility team in the UNDP Bangkok Regional Hub.

7) DEGREE OF EXPERTISE AND QUALIFICATIONS**Education Background**

- Minimum of Master’s degree in statistics, data science, computer science, geography, demography, economics, or related fields.

Experience

- At least **ten** years of experience in developing and working with complex migration, socio-economic, demographic and/or climate-related models.
- At least **three** years of experience working on human mobility, i.e., migration and displacement, within and between countries;
- Demonstrated at least one track record of conducting predictive analytics and modelling components on **at least one** mixed methods research projects. Working on projects that also involve qualitative foresight an advantage.
- Demonstrable experience presenting policy implications of predictive analysis

Competencies

- Ability to effectively plan, organize, monitor tasks and deliver outputs;
- Proactiveness, patience and attention to details;
- Openness to change and ability to integrate feedback;
- Cultural and gender sensitivity; ability to work with people from different backgrounds;
- Ability to work independently and in a team; and to deliver high-quality work on time;

Language requirements

- Fluency in written and spoken English.

8) REVIEW TIME REQUIRED

The review and approval of payments will be made by the assigned supervisor(s) within 7 days of submission.

9) CONSULTANT PRESENCE REQUIRED ON DUTY STATION/UNDP PREMISES

- ☒ NONE
☐ PARTIAL
☐ INTERMITTENT
☐ FULL-TIME

10) PAYMENT TERMS

Please indicate any special payment terms for the contract.

- ☐ Daily
☒ Lumpsum

Payments shall be done on a lumpsum basis, upon verification of satisfactory delivery and of completion of deliverables and approval by the supervisor.

Deliverables/ Outputs	Payment term
Deliverable 1 upon submission of following outputs <ul style="list-style-type: none"> • A comprehensive literature review on modelling work of predicted, future migratory patterns, within countries and into cities and accounting for the impact of climate change; • A model for the select cities/countries, ensuring that migratory patterns are conceived of as the result of the complex interplay between climate, demographic, socio-economic, political, historical and other factors, and considering data availability; 	50%
Deliverable 2 upon submission of following output <ul style="list-style-type: none"> • Two scenarios – one ‘positive’ scenario and one ‘negative’ scenario – characterizing different trajectories across alternative climate and socio-economic developments, along with accompanying, preliminary analysis 	25%

Deliverable 3 upon submission of following output	25%
<ul style="list-style-type: none"> Final model and results embedded in a report, drawing upon the results of the qualitative foresight exercise 	

Candidates must send a financial proposal based on **Lumpsum Amount**. They shall quote an all-inclusive Daily Fee for the contract period. The term “all-inclusive” implies that all costs (professional fees, communications, consumables, etc.) that could be incurred by the successful candidate in completing the assignment are already factored into the daily fee submitted in the proposal. *Travel is not required.*

In the event of unforeseeable travel not anticipated in this TOR, payment of travel costs including tickets, lodging and terminal expenses should be agreed upon between the respective business unit and the consultant, prior to travel, and will be reimbursed. In general, UNDP shall not accept travel costs exceeding those of an economy class ticket. Should the consultant wish to travel on a higher class, they should do so using their own resources.

11) CRITERIA FOR SELECTION OF THE BEST OFFER

Evaluation Method and Criteria

Candidates will be evaluated based on cumulative analysis. The award of the contract shall be made to the candidate whose offer has been evaluated and determined as a) responsive/compliant/acceptable; and b) having received the highest score out of a set of weighted technical criteria (70%) and financial criteria (30%). The financial score shall be computed as a ratio of the proposal being evaluated and the lowest priced proposal received by UNDP for the assignment.

Evaluation criteria		Max points
Criteria 1	Relevance of education (at least Master’s in data science or related discipline)	15
Criteria 2	Experience developing and working with complex and related models (at least 10 years)	30
Criteria 3	Experience working on human mobility (at least 3 years)	25
Criteria 4	Experience working on mixed methods research projects, and experience working with Foresight advantageous	15
Criteria 5	Experience presenting policy implications of predictive analysis	15
Total points:		100

****Only candidates obtaining a minimum of 70% or above in the Technical evaluation would be considered for the Financial Evaluation.**

Personal interview may be required.

Financial Evaluation (30%)

Financial proposals from all technically qualified candidates will be scored out of 30 marks based on the formula provided below. The maximum marks (30) will be assigned to the lowest financial proposal.

All other proposals will receive points according to the following formula:

- $p = y (\mu/z).$

Where:

- p = points for the financial proposal being evaluated;
- y = maximum number of points for the financial proposal;
- μ = price of the lowest priced proposal;

z = price of the proposal being evaluated.

12) Application Procedure / Recommended presentation of offer

Instructions to Applicants: Click on the "Apply now" button. Input your information in the appropriate Sections: personal information, language proficiency, education, resume and motivation. Upon completion of the first page, please hit "submit application" tab at the end of the page then the uploading option for the required document will be available.

Please group all your document into one (1) single PDF document as the application system only allows to upload maximum one document.

Interested candidates must submit the following documents/information to demonstrate their qualifications. Please group them into one (1) single PDF document:

1. Letter of Confirmation of Interest and Availability with Financial Proposal (in USD) using the template provided as **Annex III**

[Financial proposal: Consultant shall quote an all-inclusive fixed total contract price, supported by a breakdown of costs, as per template provided for the entire assignment. The term "all-inclusive" implies that all costs (professional fees, communications, consumables, etc.) that could be incurred by the IC in completing the assignment are already factored into the proposed fee submitted in the proposal]

If an Offeror is employed by an organization/ company/ institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the Offeror must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

2. P11 / Personal CV, indicating all past experience from similar projects, as well as the contact details (email and telephone number) of the Candidate and at least three (3) professional references.

3. Sample of past modelling work, ideally in areas similar to this assignment. If not able to submit together with the application, please ensure that it can be accessed online. (As part of the assessment to criteria 4 &5)

13) APPROVAL

This TOR is approved by:

Signature: *Francisco Santos-Jara Padron*

Francisco Santos-Jara Padron, Regional Advisor, UNDP BRH
Regional Advisor, Recovery, Livelihoods & Human Mobility
Prosperity-Migration, UNDP, BRH