TERMS OF REFERENCE
FOR INDIVIDUAL CONTRACT

POSITION TITLE: International Consultant - Predictive Analytics, Human Mobility and Urbanization

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 15 April 2022 – 31 December 2022, with a maximum of 80 working days

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 data and knowledge 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, a substantial increase on previous years. 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. 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. 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

Displacement risks – and decisions to move in general – derive, among others, from a complex interaction between social, political, economic, environmental and individual factors. Still, 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, along with significant losses and damages to human and environmental systems. Empirical research also shows that climate-related mobility most commonly occurs as long-distance internal migration, rather than cross-border or short-distance movements. This mobility is likely to feed into other patterns of migration and displacement, with most people moving to cities, often informal urban settlements, in search of livelihood opportunities and access to key services.

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

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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 blend predictive analytics and qualitative foresight to model how many people will move to select cities by 2050 accounting for the impact of climate change, and to evaluate what impact such in-migration will have across key social, political, economic, spatial, environmental and other variables in urban areas based on different scenarios and adaptive interventions. 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.

The results will inform anticipatory policy and programmatic recommendations and advice, enabling stakeholders to make evidence-based decisions about adaptive responses in ways that fully harness the developmental potential of such in-migration while also mitigation potential challenges.

2) OBJECTIVES OF THE ASSIGNMENT

The assignment focuses on Ho Chi Minh City/Viet Nam and Karachi/Pakistan, two 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 and displacement trends to be a function of the complex relationship between physical/environmental conditions, 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 two 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:

- 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;
- Develop two scenarios – one ‘positive’ scenario and one ‘negative’ scenario – to characterize the uncertainty in outcomes across alternative climate, demographic, socio-economic, political and other developments, including projections of losses and damages associated with climate change;
- Provide preliminary analysis of the scenarios, which will be subjected to a qualitative foresight exercise;
- Draw upon the results of the qualitative foresight exercise to further develop the model, re-run the analysis and produce the final report including recommendations.

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

Duration
From 15 April 2022 – 31 December 2022, with a maximum of 80 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

<table>
<thead>
<tr>
<th>Deliverables/ Outputs</th>
<th>Estimated Days to Complete</th>
<th>Target Due Dates</th>
<th>Review and Approvals Required</th>
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</table>
| • 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. | Max 30 days | 30 June 2022 | Regional Advisor, Recovery, Livelihoods & Human Mobility, UNDP Bangkok Regional Hub |
| • Develop two scenarios – one ‘positive’ scenario and one ‘negative’ scenario – to characterize the uncertainty in outcomes across alternative climate, demographic, socio-economic, political and other developments, including projections of losses and damages associated with climate change;  
• Provide preliminary analysis of the scenarios, which will be subjected to a qualitative foresight exercise. | Max 30 days | 30 September 2022 |
| • Draw upon the results of the qualitative foresight exercise to further develop the model, re-run the analysis and produce the final report including recommendations. | Max 20 days | 15 December 2022 |
| | Max 80 Days | |

### 6) PROVISION OF MONITORING AND PROGRESS CONTROLS

The consultant will report directly to the Regional Advisor, Recovery, Livelihoods & Human Mobility in 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 five years of experience in developing and working with complex 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 track record at least 1 of conducting predictive analytics and modelling components on mixed methods research projects. Previous work on projects that also involve qualitative foresight an advantage.

**Language requirements**

- Fluency in written and spoken English.

**Competencies**

- Ability to effectively plan, organize, monitor tasks and deliver high-quality outputs on time;
- Proactiveness, patience and attention to detail;
Candidates must send a financial proposal based on a 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 must do so using their own resources.

### 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:

1. Openness to change and ability to integrate feedback;
2. Cultural and gender sensitivity, including the ability to work with people from different backgrounds;
3. Ability to work independently and in a team.

#### REVIEW TIME REQUIRED

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

#### CONSULTANT PRESENCE REQUIRED ON DUTY STATION/UNDP PREMISES

NO

#### PAYMENT TERMS

Please indicate any special payment terms for the contract

- Lumpsum

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

<table>
<thead>
<tr>
<th>Deliverables/Instalments</th>
<th>Payment terms</th>
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<tbody>
<tr>
<td>Instalment 1 upon submission of the following deliverables</td>
<td>40%</td>
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<tr>
<td>- 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;</td>
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<tr>
<td>- 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.</td>
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<tr>
<td>Instalment 2 upon submission of the following deliverables</td>
<td>40%</td>
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<td>- Two scenarios – one ‘positive’ scenario and one ‘negative’ scenario – to characterize the uncertainty in outcomes across alternative climate, demographic, socio-economic, political and other developments, including projections of losses and damages associated with climate change, and with preliminary analysis of results incorporated.</td>
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<tr>
<td>Instalment 3 upon submission of the following deliverables</td>
<td>20%</td>
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<td>- Final model, results and analysis embedded in a report with recommendations, and drawing upon the results of the qualitative foresight exercise.</td>
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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.

<table>
<thead>
<tr>
<th>Evaluation criteria</th>
<th>Max points Obtainable</th>
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<tbody>
<tr>
<td>Criteria 1 Relevance of education (Minimum of Master’s degree in statistics, data science, computer science, geography, demography, economics, or related fields.)</td>
<td>20</td>
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<tr>
<td>Criteria 2 At least five years of experience in developing and working with complex socio-economic, demographic and/or climate-related models;</td>
<td>30</td>
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<tr>
<td>Criteria 3 At least three years of experience working on human mobility, i.e. migration and displacement, within and between countries;</td>
<td>25</td>
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<tr>
<td>Criteria 4 Demonstrated track record at least 1 of conducting predictive analytics and modelling components on mixed methods research projects.</td>
<td>20</td>
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<td>Criteria 5 Previous work on projects that also involve qualitative foresight and advantage</td>
<td>5</td>
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Total points Obtainable 100

**Only candidates obtaining a minimum of 70% or above in the technical evaluation will be considered for the financial evaluation.

Personal interviews 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:

- \[ p = y \left( \frac{\mu}{z} \right) \]
- \( p \) = points for the financial proposal being evaluated;
- \( y \) = maximum number of points for the financial proposal;
- \( \mu \) = 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 documents will be available.

Please group all your document into one (1) single PDF document as the application system only allows you to upload a 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: Consultants shall quote an all-inclusive fixed total contract price, supported by a breakdown of costs, as per the 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 consultant 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 an Reimbursable Loan Agreement (RLA), the offeror must indicate that 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 experiences from similar projects as well as the contact details (email and telephone number) of the candidate and at least three (3) professional references.

3. **At least one (1) sample of past modelling work**, ideally in areas similar to this assignment. If this cannot be submitted together with the application, please ensure that it can be accessed online (as part of the assessment of technical evaluation criteria 4 & 5).