MUMBAI METROPOLITAN REGION – ENVIRONMENT IMPROVEMENT SOCIETY

No. MMR-EIS/Study/Ensuring Availability of Basic Food Items in Urban MMR/2021

REQUEST FOR PROPOSAL

The Mumbai Metropolitan Region – Environment Improvement Society (MMR-EIS) has proposed to undertake the Project of Ensuring Availability of Basic Food Items in Urban Areas of MMR in all times, including during pandemics and natural disasters, in view of the need for taking up such project indicated by MMRDA, and which is also seen to be in the interest of developing an understanding of and applicability of the concept of Climate Proofing for MMR. Accordingly, the MMR-EIS invites sealed tenders/offers from Consultants fulfilling the eligibility criteria for the project.

Eligibility

The Consultants desirous of submitting proposals for the project are expected to satisfy the following eligibility criteria:

1. It should be an agency registered in India under appropriate statute enabling it to carry out the project and should have been actively working for the past at least 5 years.
2. It should have a local work space with adequate infrastructure in MMR and should have an annual turnover of a minimum Rs. 25 lakhs during the preceding 3 years.
3. It should have the experience of carrying out at least one study related to Climate Change Vulnerability and/or Climate Proofing and Food Supply Chain Management or Ecological Footprint for any geographical region consisting of urban and rural areas for any Govt. agency in India.
4. It should have a team of qualified staff having experience in Climate Change Vulnerability, including Sr. Environmental Expert, Agriculture, Animal Husbandry and Fisheries Scientists, Urban Planners, Computer Operators and Surveyors.

Arrangement for the Project

The MMR-EIS will first scrutinize the documents and proofs for ascertaining satisfaction of above eligibility criteria and shortlist the eligible Consultants, evaluate the eligible bids and select the Consultant, enter into an agreement with it for this purpose and will also supervise Consultant's work, reporting etc. and make payments to it as per the details specified in the Terms of Reference and this RFP. The period of engagement will be about 9 months.

Brief Scope of Work

The Consultant is expected to assess the current and future consumption requirement of various types of basic food items, including agricultural produce (e.g. grains, pulses, fruits, vegetables, edible oils etc.), milk and items produced from milk, fish and other sea food, poultry, meat etc. for population residing in various parts of MMR, production capacity for all such items within various areas of the region; identification and assessment of different elements of food supply chains, including periodical import of various items to satisfy the requirement in the region as well as export of such items produced in the region to outside

areas, identification of additional geographical areas for increasing local production and marketing of food items, including in urban areas, and suggesting ways for ensuring supply to and availability of all basic food items in urban areas in MMR during emergencies such as lockdowns and even otherwise in the interest of ensuring better local sufficiency and sustainability. The consultant would be required to examine the climate change vulnerability aspects, food wastage and losses, greening of food supply chains and suggest suitable mitigation measures.

Terms of Reference

The Terms of Reference indicating the scope of services is given in **Annexure-I**. The total time limit for the assignment and various outputs shall be as per **Annexure-II**.

Pre-bid Meeting

A pre-bid meeting will be held on 22nd February 2021, at 11 a.m. in the office of MMR-EIS, 6th Floor, MMRDA New Office, BKC, Bandra (E), Mumbai to clarify issues of prospective bidders, if any, related to the RFP and ToR. Interested parties are requested to attend. Any change in the schedule of the pre-bid meeting will be informed on MMR-EIS's web-site (www.mmreis.org.in).

Submission of Bids

Consultants should submit the following documents (one copy each) in separate sealed packages (together put in one sealed package):

1. Eligibility Note
2. Technical Proposal
3. Financial Proposal

Each envelope should specifically indicate type of proposal (technical or financial) / Eligibility Note, Name of Project, Name and Address of the Consultant etc. The common envelope should also indicate Name of Project, Name and Address of the Consultant etc. Successful bidders will be required to submit additional copies of Technical and Financial Proposal, if necessary, as desired by the MMR-EIS.

Contents of the Proposals

The Consultant is expected to submit the bid (and not as a joint venture) indicating the manpower proposed to be used for the assignment, which may include external manpower proposed to be hired and available for the project.

Eligibility Note:

1. Eligibility Note providing details, including in the format provided in **Annexure-III**, demonstrating with documentary proofs how the Consultant satisfies the Eligibility Criteria. The documents should include copies of registration certificates, work orders and/or contracts indicating scope of work and terms of reference and completion certificate for a completed assignment.

Technical Proposal:

1. General profile of the agency.
2. Information with documentary proofs indicating experience in carrying out studies related to Food Security or Food Supply Chain Management or Ecological Footprint involving assessment of human food consumption requirement and production capacity, for geographical regions consisting of urban and rural areas for any Govt. agency in India.
3. Approach and Methodology in carrying out Availability of Basic Food Items in Urban areas MMR project; and comments or suggestions on ToR, if any.
4. Contact details including details of Nodal Officer for the project.
5. The Proposed Team, their detailed CVs specifically indicating relevant experience and should be conclusive proof of eligibility and experience, and document of undertaking indicating their commitment for the project during its entire period.
6. Detailed tasks assignment based on individual area of experience and Manning Schedule.

It may be noted that the experience of individual members of proposed team should not be counted / claimed as experience of the agency and such experience can only be counted / claimed for particular individual. The documents specified above should include copies of registration certificates, work orders and/or contracts indicating scope of work and terms of reference, CVs of experts specifically indicating relevant experience and shall be conclusive proof of eligibility and experience. The key personnel expected to be made available for the project is given in **Annexure-IV**.

The Consultant will be required to make a presentation to the Sub Committee of MMR-EIS regarding Technical Proposal.

Financial Proposal:

The Consultants shall quote their lump sum all-inclusive offer (excluding GST) and also provide separate break up of cost for items specified in the table given below :

Sr. No.	**Particulars of Cost**	**Estimated Amount (Rs.)**
1.	<u>Remuneration to the Team</u> Team Leader / Sr. Environment Expert - 1 (manmonths X amount p.m.)	
	Agriculture, Animal Husbandry and Fisheries Scientist– 2 (manmonths X amount p.m.)	
	Climate Studies Expert / Environmental Engineer – 1 (manmonths X amount p.m.)	
	Urban Planner – 2 (manmonths X amount p.m.)	
	Surveyors – 14 (manmonths X amount p.m.)	

	Computer Operator – 2 (manmonths X amount p.m.)	
2.	Travel and Conveyance (lump sum)	
3.	Stationery (lump sum)	
4.	Software Use Charges (Climate Change Vulnerability and Mitigation) (lump sum)	
5.	Administration Overheads (lump sum)	
6.	Reporting Cost (Scanning, Digitising, Printing, Plotting & Colour-copy etc.)	
7.	Miscellaneous (as % of overall cost)	
	TOTAL	

The amount of incidence of Goods and Services Tax (GST) should be separately indicated.

Consultants shall not be entitled for getting any extra payment from MMR-EIS except on account of any increase in the scope of work or revision in the rate of applicable taxes. The MMR-EIS will consider making extra payment for above specified items if such claims are made by the Consultant and are found valid on scrutiny by the MMR-EIS. Payment for any additional task not specified in the ToR will be as per the terms to be mutually agreed in writing between the MMR-EIS and the Consultant.

Procedure for Opening of Bids and Evaluation of Proposals

Only the agencies, which qualify in Eligibility Criteria and which have submitted valid technical and financial proposals will be eligible to participate in the bid. Incomplete, invalid and delayed submission of bids will be summarily rejected by the MMR-EIS. Proposals if unsigned and incomplete, not responding to the TOR fully and properly and those with lesser validity period than that prescribed in the RFP will be summarily rejected as being non-responsive. The MMR-EIS reserves the right to accept or reject any proposal for consideration without assigning any reason thereof.

Evaluation Method

The proposals will be evaluated using Quality and Cost Based Selection (QCBS) method. Consultants fulfilling the Eligibility Criteria will only be considered for evaluation of Technical proposals. The Sub-Committee of the MMR-EIS will be the Evaluation Committee. Consultants scoring 75% of the total score of 70 assigned to technical criteria (75% of 70 = 52.50) will be considered for opening of financial proposal and for further evaluation. Suitability of such Consultants for awarding the project will be evaluated on the basis of their Technical and Financial proposals. The proposals will be evaluated based on the following criteria:

Sr. No.	Technical / Financial Criteria		Marks
I	Technical Criteria		
1	Relevant Experience of the Agency	i) General experience in Climate Vulnerability, Supply Chain Evaluation,	5

		ecology, agriculture and food supply sector	
		ii) No. of Govt. Climate Change Vulnerability / Food Supply Chain Management / Ecological Footprint studies	5
		ii) No. of Govt. Climate Vulnerability / Food Supply Chain Management / Ecological Footprint studies for urban areas	5
	Total		15
2	Approach to and Methodology in carrying out the project	i) Understanding of Food Production and Supply Management issues	5
		ii) Methodology in carrying out various tasks, including climate change vulnerability / proofing and food supply chains	10
		iii) Approach to collection of information from secondary sources, surveys etc. and in providing solutions	10
	Total		25
3	Edu. Qualifications & Exp. of Key Personnel	i) Team Leader/ Sr. Environmental Expert	10
		ii) Agriculture, Animal Husbandry & Fisheries Scientists	10
		iii) Climate Change Expert, Environmental Engineer & Urban Planners	10
	Total		30
	Total Technical Criteria		70
II	Financial Criteria		
1	Financial proposal	All-inclusive lump-sum cost	30
	Grand Total		100

The financial criteria score for the lowest proposal will be 30 and for other proposals it will be estimated on the basis of the following formula: (Cost of Lowest Proposal / Cost of Proposal) X 30.

The agency scoring the maximum points (out of 100) in a combined technical and financial score shall be considered as the preferred bidder followed by second and third preferred bidders depending on their scores. The technical information such as proposed team, schedule of outputs, detailed task assignment and manning schedule submitted by the preferred bidder will be scrutinized for suitability for the project. Improvements, if so required, will be suggested in the technical inputs proposed by such bidders, who will have to agree to carry out the same. Further, the project cost specified in the Financial Proposal may be negotiated with the Consultant, if so considered necessary by MMR-EIS. The preferred bidder, who does not agree to carry out improvements in technical inputs suggested by MMR-EIS and/or the negotiations about the cost of the project between the bidder and MMR-EIS fail, such bidder will no more be considered as the preferred bidder and, in such a case, bid with the next highest score will be considered as the preferred bidder.

Other Instructions and Conditions

1. If during the bid validity period, the bidder withdraws any of his bid/s, the bidder may be disqualified from bidding for further works of MMR-EIS.

Additional Technical Information for each Bid

The Consultant shall enclose following documents:

1. Details of technical personnel on the roll of Consultant to be deployed on this project.
2. Details of technical personnel (visiting consultants from outside etc.) to be engaged by the consultant.

Financial Proposal

1. The cost of the project as reflected in the financial proposal of the selected Consultant may be further negotiated with the Consultant, if MMR-EIS considers it necessary. On successful negotiations, the negotiated cost will be considered as final.
2. The validity of the offer shall be 180 days from the date of opening of the offer unless and until it is withdrawn by notice in writing duly addressed to Secretary, MMR-EIS by the bidder. Withdrawal of the offer shall be effective from such date of receipt of written notice by the MMR-EIS.
3. The offer of the Consultant shall be treated as unconditional. Additional and/or hidden conditions, if any, shall be treated as null and void. No claim for additional payment shall be entertained on account of such conditions.
4. The Consultant shall enclose a separate break-up of the fees according to the tasks as referred to in the Terms of Reference. The Agency shall note that if, at a later stage, it is found that the Agency has not carried out a particular task to the satisfaction of the MMR-EIS, the MMR-EIS will be at liberty to deduct fees as indicated in the said break-up for that particular task. The decision of President, MMR-EIS shall be final and binding on the Consultant in such case.
5. The Consultant shall further note that if any task as enlisted in the Terms of Reference is found to be not necessary at a later stage, the MMR-EIS shall be at liberty to delete the same from the scope of the Consultant and, in such case, the part of the fees as indicated in the above break-up, shall not be payable to the Consultant.
6. The payment to the Consultant shall be done in stages as per **Annexure-V**.
7. Bank Guarantee: The selected Consultant will be required to submit Bank Guarantee for an amount equal to the amount of first installment payable to the Consultant on execution of agreement.

Payment of Stamp Duty

The selected Consultant shall have to execute an agreement with the MMR-EIS and shall be responsible for payment of applicable Stamp Duty as per the related rules. The Consultant shall bear any other related charges towards execution of the agreement.

Miscellaneous

1. The project will need coordination and liaison with various urban and rural local Govt. agencies in MMR / Other Govt. agencies, if any, as well as with MMR-EIS. The Consultant shall be responsible for all such duties.

2. The Consultant shall nominate their nodal officer / liaisoning officer for the project. The said officer shall not be replaced during the operative period of contract. Telephone numbers/Mobile phone numbers of such representative shall be communicated to the MMR-EIS.
3. It will be binding on the part of Consultant to visit the Office of the MMR-EIS and the project sites as and when called for any clarifications, presentations, meetings etc.
4. The assignment shall be carried out as per the requirements specified in the RFP and ToR.
5. MMR-EIS Support: The Consultant will be provided available documents / support as specified in the ToR.

How to apply

Interested Consultants are requested to submit detailed proposals to the office of the Secretary, MMR – Environment Improvement Society, 6rd Floor, New MMRDA Building, Bandra-Kurla Complex, Bandra (E), Mumbai 400 051, Tel No. 26594092 on or before 8th March, 2021, 5 p.m. Bids received after due time and date shall not be considered. In case of any clarification, the Secretary, MMR-EIS may be contacted at the above mentioned address.

Annexure-I

Terms of Reference
For the Project of Ensuring Availability of Basic Food Items in Urban areas of MMR

The Mumbai Metropolitan Region - Environment Improvement Society (MMR - EIS), with a view to assess the consumption requirement of various types of basic food items in various areas of MMR vis-à-vis production capacity and different elements of supply chains for all such items within various areas of the region and identify additional geographical areas for increasing local production and marketing of food items, including in urban areas, desires to appoint a Consultant to comprehensively study and suggest solutions for ensuring supply to, and availability of all basic food items at all times in, urban areas in Mumbai Metropolitan Region (MMR).

Background of the Project

The process of urbanization entails conversion of use of agricultural land to non-agricultural purposes, and the urban areas, more so the large cities like Mumbai, have to depend on surrounding areas and even farther regions for meeting the requirements of various types of basic food items, including agricultural produce (e.g. grains, pulses, fruits, vegetables, edible oils etc.), milk and items produced from milk, fish and other sea food, poultry, meat etc. required for consumption by its population. The current population of MMR (excluding portion added in 2019) is expected to be in excess of 25 million, mostly residing in urban areas covering about two thirds of the geographical area of MMR. The balance about one third area is rural in character, with predominance of agriculture and other primary sector activities. Further, large scale fishing activities are also carried out along the coasts of MMR, and the fish is landed in MMR.

It is well recognized that adverse impacts of climate change not only affect the production of food but also affect other elements of food supply chains. The entire account of how much proportion of various food items consumed in MMR is produced in MMR, how much is brought from outside and how different elements of various food supply chains operate is currently not known. Despite substantial land being used for agriculture and located relatively near urban areas, and substantial fishing activities carried out in MMR, during the lockdown imposed due to Covid-19 pandemic, disruptions in the supply of food items to urban areas and various areas within urban centres were witnessed, mainly on account of ineffective working of different elements of food supply chains including, processing, storage, transport and neighbourhood level markets easily accessible to people locally. In this context, wastage and losses of food is also emerging as a growing problem in urban areas. Such situations of pandemics, and also natural disasters caused by extreme climate variations, can take place in future disrupting the supplies of basic food items thereby jeopardizing the existence of such a large population. It is necessary to avoid such situations in future, and find strategies and solutions to make the systems of making available basic food items in urban areas at all times more sustainable.

Though no geographical area, either urban or rural in character, can aim to achieve complete self-sufficiency in meeting all needs of its population, efforts can be made to achieve better

environmental sustainability by applying the concept of Ecological Footprint (EF) and assessing and comparing it with bio-capacity at the level of MMR with a view to avoid depletion of natural capital. Developed by William Rees and Mathis Wackernagel in 1996, Ecological Footprint is a comprehensive policy and decision making tool, which provides an accounting framework for the biophysical services that a given economy requires from nature. It is calculated by estimating the land area, in various categories, necessary to sustain the current level of consumption by the people in that economy, using the prevailing technology. An economy's complete Ecological Footprint would comprise of all the land whose services this economy utilizes from all over the globe to provide essential resource inputs and assimilate corresponding waste outputs. As per the EF Model suggested by William Rees, the EF considers following six components, which comprise of five components of resources and one component of waste:

Resources

1. Crop land consisting of the area required to produce the crops that an individual consumes,
2. Pasture land consisting of the land required to produce necessary animal products,
3. Forest land consisting of the land required to produce forest products such as paper and wood,
4. Sea space consisting of the area of the sea required to produce marine and sea food; and
5. Built area required to accommodate housing and infrastructure

Waste

1. Area of forest that would be required to absorb carbon dioxide emissions.

The Ecological Footprint is calculated using different sets of variables related to population, consumption, energy, biologically productive land etc. A formula is developed to calculate Ecological Footprint (EF) and Bio-Capacity (BC) and an ecological balance is calculated by subtracting EF from BC. If EF exceeds BC, an ecological deficit exists and the system is considered unsustainable regionally. Conversely, a system is considered sustainable, if there is an ecological reserve (footprintnetwork.org/our-work/ecological-footprint). While the general concept to Ecological Footprint is much wider, this will be used in a limited manner restricting the assessment to only food items for the purpose of this project.

The regions like MMR are likely to be ecologically deficient, and during the periods of pandemic or natural disasters, the supplies of basic food items from within and outside the region are likely to be disrupted, and it will also be difficult to reach the supplies, which may be somehow transported during such periods, to the local level. Such situations can be better faced if resources related to food items can be locally produced to the extent feasible and if locally produced and imported resources could be made accessible to people near their residences through local markets. For this purpose, it is necessary to make detailed assessment of all areas, including urban areas for identifying lands / spaces suitable for such activities and consider ways in which these can be effectively used.

In view of the importance of ensuring availability of basic food items to the population residing in urban areas of MMR at all times, including during pandemics and natural

disasters, and to assess the ecological footprint of MMR from the perspective of food consumed by humans, and for this purpose, find ways to achieve better environmental sustainability, it is desirable to undertake this project. The project also aims to examine the climate change vulnerabilities related to food items in MMR using standard analytical and software tools and suggest mitigation measures.

Broader issues of Climate Vulnerability, Food Chain Management and Ecological Footprint

Climate Vulnerability

The gradual warming of the world's mean temperature and the increased frequency of extreme weather in the form of droughts, floods, heat waves and other extreme events is expected to have a major impact on food supply chain performance and food security. Climate risks impacting the agricultural sector are direct risks to the food supply chain. For instance, increased frequency and intensity directly threaten food productivity and soil health, leading to severe food shortages. The production of food, its delivery to markets, and its use by consumers depends on the proper functioning of numerous supply chains and critical infrastructure networks, many of which are threatened by accelerated climate variability. Food system resilience (also known as food supply chain resilience) is defined by Global Food Security (GFS2018) as the system's capacity to maintain a desired state of food security when exposed to stresses and shocks caused by the effects of changing climate.

Food Supply Chains

The concept of food supply chain can be subdivided into a number of sectors. While agriculture, horticulture, fisheries and aquaculture come in the primary-producers category, the manufacturers, who process the food for ready-to-cook or eat format, along with the packaging companies come in the intermediate stage. The retailers, wholesalers and caterers comprise the last part of supply chain. In the food supply chain, food moves from producer to consumer via the processes of production, processing, distribution, retailing and consumpt ion; thus, food moves from farmer to consumer in a domino-like fashion. At each stage, value is expected to be added by the new ownership such as processors, distributors, packers, etc., and the cost and profits are part of the business. The food items can go to the final consumer from any of the three stages— from farmers in the form of fresh produce, to the caterers directly from the manufacturer, and finally from the retailer to the consumer. In the case of the agricultural sector, India's supply chain is one of the most fragmented and inefficient ones in the world resulting in wastage of large quantities of food grains, vegetables and fruits.

Ecological Footprint

Promoted by the Global Footprint Network, the concept of ecological footprint can help individuals understand their consumption and impact on the planet; countries improve sustainability and well-being, and local leaders optimize investments for public projects. The ecological footprint is a metric that measures human demand on natural capital or the quantity of nature it takes to support a given population or economy. The ecological footprint is the demand on and the supply of nature. The demand side measures the ecological assets a population needs to produce the natural resources it consumes and to absorb its carbon emissions and other waste. These natural resources include livestock and

fish products, timber, plant-based food, and fiber products. The supply side of the ecological footprint, a given population's bio-capacity, represents the productivity of its ecological assets. Bio-capacity is the capacity of a given biologically productive area to generate a supply of renewable resources and to absorb its wastes. The ecological footprint and bio-capacity are expressed in global hectares. Global hectares are comparable and standardized with world average productivity.

The world-average ecological footprint was 2.75 global hectares per person (22.6 billion total) and the average bio-capacity was 1.63 global hectares. This means there is a global deficit of 1.1 global hectares per person. Ecological footprints and bio-capacities vary greatly between countries. A country's footprint and bio-capacity depend on several factors including its geography, population size, and environmental policies. The information based on data from 1961 to 2013 from the Global Footprint Network's National Footprint Accounts published in 2016 indicates that India's ecological footprint per capita is 1.16 and its bio-capacity per capita is 0.45 hectares. India's total ecological deficit is -878.05 hectares. India represents about 6% of the world's ecological footprint. India, like China, has a population of over 1 billion people. While India's ecological footprint is relatively low, its bio-capacity is much lower, leading to its large deficit (worldpopulationreview/country-rankings/ecological-footprint-by-country).

Coverage for the Project

The MMR (excluding portion added in 2019) had a total population of 22.80 million in 2011 (projected to grow to 26.52 million in 2021 as per Draft Mumbai Metropolitan Regional Plan, 2016-2036), out of which 22.32 million (98%) was urban constituting population in 8 Municipal Corporations, 9 Municipal Councils, 7 Special Planning Authority (SPA) areas and 35 Census Towns. The urban areas covered 2,820.69 sq.km. (66.31%) of total area of 4,253.48 sq.km. of MMR. The balance 1,432.79 sq.km. (33.69%) was covered by 959 villages with a population of 0.48 million. The summary of distribution of geographical areas, 2011 census population and projected population for 2021 and 2036 for various urban and rural areas of MMR is as follows:

(Population in Million)

Sr. No.	Part of MMR	Area (Sq.Km.)	Population	Projected Population	
			2011	2021	2031
1	Municipal Corporations	1168.91	19.90	22.68	24.48
2	Municipal Councils	145.05	0.80	1.12	1.48
3	SPA Areas	1466.93	1.55	2.10	2.67
4	Census Towns	39.80	0.07	0.09	0.11
5	Rural Areas	1432.79	0.48	0.53	0.58
	Total	**4253.48**	**22.80**	**26.52**	**29.32**

Source: Draft Mumbai Metropolitan Regional Plan, 2016-2036

Subsequently, Panvel Municipal Council, including certain adjoining areas, has become a Municipal Corporation, a new Khalapur Nagar Panchayat has been constituted, the number of Census Towns has reduced to 31 and total villages to 919. As regards land use, most of the

rural area (30.32% of MMR area) is used for agriculture and other primary sector activities. Fishing is also an important economic activity in MMR, which provides sea food.

In 2019, the boundaries of MMR have been extended to cover balance parts of Palghar and Vasai tehsils of Palghar district and balance parts of Alibag, Khalapur, Panvel and Pen tehsils of Raigad district. This has resulted in addition of 2,205.52 sq.km. of area and 0.79 million population (2011) residing in 1 Municipal Council (Palghar), 13 Census Towns and 475 villages in MMR. While information related to land use, population growth, demography, economy, infrastructure etc. is available with MMRDA for the erstwhile MMR area, such information for extended portion is not readily available and collecting and compiling such information for this project itself will become a substantial task. Given the nature of the project, it is proposed to restrict the coverage of the project to the erstwhile MMR for which Draft Regional Plan 2016-2036 is prepared.

The geographical coverage of the project will thus include the following areas and in the manner described below:

Sr. No.	Part of MMR	No. of Units	Remarks
1	Municipal Corporations	9	Urban centres to be primarily considered as areas consuming food items and producing sea food and other items as may be applicable.
2	Municipal Councils	8	Urban centres to be primarily considered as areas consuming food items and producing sea food and other items as may be applicable.
3	Nagar Panchayat	1	Urban centre to be primarily considered as areas consuming food items and producing sea food and other items as may be applicable.
4	SPA Areas	8	Include 528 villages, which need to be considered as food items consuming as well as producing areas to be aggregated at the level of 8 SPA areas.
5	Census Towns	31	Urban centres to be primarily considered as areas consuming food items and producing sea food and other items as may be applicable.
6	Rural Areas	391	Villages to be primarily considered as areas producing food items and also consuming them as may be applicable.

While some areas are predominantly food items consuming areas and some other are primarily food items producing areas, the assessment of all areas for consumption and production of food items will have to be made. In the Draft Mumbai Metropolitan Regional

Plan, 2016-2036, lands under command areas of irrigation projects are identified and included in G-2 Zone, implying their protection from urban development activities. In the Development Control Regulations of the draft Regional Plan, horticulture layouts are encouraged in G-1 Zone and common areas for storage, processing and marketing are made mandatory in horticulture layouts. Proposals for establishing Local Development Centres for clusters of villages, which will facilitate production as well as marketing, are also included. Further, ways of increasing production by employing new technologies for increasing cropped areas, double cropping etc. and promoting economically more viable options such as organic farming can be explored. Food supply chains in different forms such as conventional (e.g. involving *Adatis*, APMCs etc.) and non-conventional (e.g. involving producers' or consumers' Cooperatives, App-based aggregators etc.) need to be studied. Potential for urban agriculture and local marketing of food items in urban areas is also required to be assessed and lands (e.g. Govt.-owned, in foothills, below HT power lines, along roads, river banks and community ponds, incidental open spaces and green belts etc.) suitable for this purpose need to be identified.

The food items will include all types of items consumed by human beings as basic food directly or indirectly (raw, processed and edible items used in processing). The non-basic items such as liquor, soft drinks, packaged fruit juices, ice creams, dry fruits, various types of packaged items of snacks such as potato and banana chips, *farsan* and ready-mixes for preparation of snacks (e.g. noodles), soups etc. will not be considered in the assessment. The various types of basic food items to be considered for the project can be broadly categories as follows:

Sr. No.	Category	Examples of Items
1	Agricultural Produce	
a	Primary Food	Wheat, Rice, Other Coarse Grains, Pulses etc.
b	Secondary Food	Various types of Seeds and Nuts, processed items such as *Rava, Sabudana, Pohe* etc.
c	Supplementary Food	Vegetables, Fruits, various types of Edible Oils, Salt, Sugar, various types of spices, Tea, Coffee etc.
2	Dairy Products	Milk and various types of milk products
3	Sea Food	Various types of Fish, Crabs, Prawns etc.
4	Poultry and Animals	Chicken, Eggs, various types of meats etc.
5	Basic Natural Resource	Water

It is expected that the requirement of quantities of various basic food items for human consumption will be assessed for various geographical areas (units of administrations / planning) for a particular time period (either daily, monthly or yearly, which is suitable for comparison) for the current (2021) and projected (2036) population. Similarly, assessment of current (2021) and future (2036) production of all such food items, its periodicity and geographical distribution in MMR will have to be made. Further, it will be necessary to qualitatively examine climate vulnerability (with focus on food item mass balance) and wastage and losses of food and study different elements of various food supply chains for various food items consumed in urban areas of MMR to assess what proportion of

consumption is produced in MMR and how much is brought from outside and how much of that produced in MMR is exported outside the region for consumption, and how to green the supply chains. These assessments will have to be based on secondary information as well as primary surveys for particular type of information not available through secondary sources.

Objectives of the Project

The broad objective of the project is to assess the consumption requirement and production capacity and different elements of supply chains of various types of basic food items in various areas of MMR, their climate vulnerability, food wastages and losses, and identify additional geographical areas and better practices for increasing local production and marketing of food items in MMR, including in urban areas for ensuring supply to and availability of all basic food items in all times in urban areas in MMR. The specific objectives of the project are as follows:

1. To assess the current (2021) and projected (2036) requirement of consumption of basic food items and also the current (2021) and projected (2036) production of such basic food items for various urban and rural areas of MMR for specific periodicity.
2. To study various conventional and non-conventional food supply chains operated by different stakeholders and different elements of such chains (such as storage, processing, transport, marketing) to assess proportion of different types of basic food items consumed in various areas of MMR that is produced in different parts of MMR and is imported from outside MMR, and also assess proportion of different food items produced in various parts of MMR that is exported for consumption outside MMR. Based on such assessment, estimate the ecological footprint, restricted to basic food items, of MMR with particular focus on urban areas and estimate deficits and reserves.
3. To qualitatively examine the climate change vulnerability related to food items in MMR, assess wastage and losses of food and suggest mitigation measures., including those for how to green the food supply chains.
4. To identify variety of measures (including those related to land, technology, production practices etc.) to increase existing production capacity in MMR, including identification of additional geographical areas for increasing local production and marketing of food items in urban areas (through urban agriculture, identification of suitable lands, e.g. Govt. lands, those cannot be used for normal urban activities etc.), and suggest ways for ensuring supply to and availability of all basic food items in urban areas during emergencies such as lockdowns, natural disasters, and even otherwise in the interest of ensuring better local sufficiency and sustainability.

The above objectives are further broken down into different stages, tasks and outputs.

Scope of Work and Tasks

The scope of work and particular tasks to be carried out are as follows:

Stage 1: Assessment of Population, and Consumption and Production of Food Items

- Review literature on climate change vulnerability, food supply chain management, ecological footprint and bio-capacity and any other topic related to the project and study disruptions faced in the supply of basic food items to urban areas in general

and those in MMR in particular, during the lockdowns imposed due to Covid-19 pandemic and those faced during natural disasters on account of inadequate local production, lack of storage, processing and transport facilities as well as local market places, if any, and understand the lessons learnt in this regard.

- Estimate the current (2021) population of various administrative and planning units in urban and rural areas of MMR and carry out population projections for 2036 for them.
- Identify the basic food items generally consumed by population residing in various areas of MMR and assess the consumption requirement of their quantities for current (2021) and projected (2036) population of various parts of MMR for appropriate period comparable with production.
- Assess the current (2021) and projected (2036) production of various types of basic food items in different parts of MMR for appropriate period comparable with consumption.

Stage 2: Assessment of Climate Change Vulnerabilities, Food Supply Chains and Ecological Deficit / Reserve

- Study the current (2021) situation of various conventional and non-conventional food supply chains operated by different stakeholders in MMR and different elements of such chains (such as storage, processing, transport, marketing) and estimate how much quantity of different basic food items consumed in various parts of MMR is produced in MMR and is imported from outside MMR, and how much quantity of different basic food items produced in various parts of MMR is exported for consumption outside MMR.
- Qualitatively examine the climate change vulnerabilities related to production of food items (with focus on food item mass balance) and those related to food supply chains in MMR using standard analytical and software tools, assess wastage and losses of food.
- Estimate the current (2021) and projected (2036) gap in the consumption and production of different basic food items in various parts of MMR, and in case of deficit, estimate how much of such deficit can be met if certain quantities currently exported are diverted for local consumption and how much deficit will have to met by import from outside MMR alone.
- Estimate the current (2021) and projected (2036) ecological footprint and bio-capacity in the context of basic food items for MMR with particular focus on urban areas and assess the ecological deficits / reserves.

Stage 3: Solutions for Improving Food Supply Sustainability and Uninterrupted Availability of Basic Food Items in Urban Localities

- Taking into account the basic food supply deficits and ecological deficits in MMR as a whole, and urban areas in particular, projected for 2036, suggest appropriate measures with regard to :
    - Preventing depletion of natural resources, which lead to reduction in production of various basic food items in various parts of MMR
    - Identifying additional natural and other resources, including land, for use in production, and improving productivity of basic food items in MMR through better technology, production practices etc., and their supply to urban areas of MMR.

    - Mitigation measures for climate change vulnerabilities, including those for how to green the food supply chains.
    - Diversion of currently exported basic food items for local consumption
    - Measures required removing existing bottlenecks and facilitating storage, processing, transport and marketing of basic food items to urban areas.
- Study sanctioned Development Plans or proposed Development Plans (yet to be sanctioned) or any other land use plans (where any type of Development Plans do not exist) for assessing existing and proposed land use for various urban areas and identify lands owned by Govt. or public agencies and lands not suitable for use for urban activities such as in foothills, below HT power lines, along roads, river banks and community ponds, incidental open spaces and green belts etc. that may be suitable for production and marketing of basic food items in various localities and also survey such identified sites for ascertaining their feasibility for such use.
- Based on the study of various factors causing disruptions of supply of basic food items in urban areas during pandemics and natural disasters, and study of feasibility of use of urban lands for production and marketing, suggest the following :
    - Identify and map lands / sites suitable for only temporary use during emergencies for production and marketing of basic food items in different urban areas along with identified conditions and measures for putting them to actual use.
    - Identify lands / sites suitable for permanent use for production and marketing of basic food items in different urban areas along with identified conditions and measures for putting them to actual use.

Approach and Methodology

The Project of Ensuring Availability of Basic Food Items in Urban areas of MMR involves activities related to consultation with concerned Stake Holders and reporting to MMR-EIS, Desk Research, Field Studies, Data Analysis and Presentations and Preparation of Reports.

Consultation with Stake Holders and reporting to MMR-EIS involves but is not limited to obtaining various documents / information from and consulting concerned Stake Holders involved in production, storage, processing, marketing and supply of basic food items, Govt. authorities, planning authorities, urban local bodies etc. on information to be collected, conducting site visits etc. Consulting MMR-EIS on devising formats for data and reporting, method of presentation, periodical reporting of progress of project etc. and also active communication with and holding and attending meetings with MMR-EIS.

Desk Research involves but is not limited to review of literature on food security, food supply chains, ecological footprint etc., review of Development Plans of urban areas, data collection from secondary sources, development of methodology for collection of data through primary sources etc.

Field Studies involve but are not limited to site visits for collection of information, preparing checklists and assessing feasibility, training of investigators, conducting various types of surveys etc.

Data Analysis involves but is not limited to tabulation and compilation of collected data, preparation of maps and preparation of schedules etc.

Preparation of Reports involves but is not limited to preparation of progress reports, Stage-wise output reports and draft and final report of the project and their submission to MMR-EIS by incorporating suggestions given by it. This shall also involve making presentations of findings etc.

The project requires application of scientific and appropriate methodology in dealing with the following issues:

1. Distribution of various areas of MMR into different urban and rural units and levels of aggregation for analysis and outputs.
2. Definition and preparation of exhaustive list of basic food items of human consumption.
3. Estimation of current (2021) and projected (2036) population, consumption and production and choice of appropriate periods for comparative analysis.
4. Methodology for thematic qualitative assessment of climate change vulnerabilities, and wastage and losses of food.
5. Methodology for study of food supply chains and its different elements, and assessment of import and export of basic food items.
6. Estimation of values of ecological footprint and bio-capacity.
7. Methodology for assessment of suitability of urban land parcels for temporary and permanent production of basic food items and their local marketing.

Support by MMR-EIS

The MMR-EIS will provide the following documents or provide support in obtaining certain information and carrying out certain tasks:

a. Available literature / documents and specific data, if any.
b. Introduction / reference letters for various stakeholders
c. Consultation and review of outputs produced by Consultants

Annexure-II

Time Limits for the Assignment

The total period of engagement will be for 9 months. The time allocation for main milestones identified for each project would be as follows:

Task Details	Completion time from the date of Commencement
To review literature and study disruption in supply of basic food items to urban areas caused by pandemics and disasters	15 days
To collect data related to current population and consumption and production of basic food items from secondary and primary sources, as may be necessary, and carry out projections	120 days
To study food supply chains, import and export of food items and assess gaps in consumption and production, examine climate change vulnerabilities, food wastage and losses, and estimate ecological footprints and bio-capacities	180 days
To suggest solutions and measures for improving food supply sustainability in urban areas including mitigation measures for climate change vulnerability.	210 days
To prepare draft project report for ensuring availability of basic food items in urban areas of MMR	240 days
To revise the draft report based on comments of MMR-EIS	270 days

Note: The Consultant shall submit progress reports as may be sought by MMR-EIS.

The MMR-EIS will review the progress and performance and convey its comments and suggestions, if any, which shall be adhered and incorporated in subsequent actions. The documents / reports required to be submitted by the Consultant shall be prepared in English and shall use SI units in mathematical, engineering and statistical data analysis. All documents, reports databases etc. should be submitted to the MMR-EIS in soft and hard formats.

Outputs for the Assignment

The details of documents to be submitted, schedule of submission and copies to be submitted are as follows:

Documents	Schedule of Submission from the date of Commencement	No. of Hard Copies and CDs for Soft Copies
Stage-1 : Report on Assessment of Population and Consumption and Production of Food Items	125 days	5 and 2 CDs
Stage-2 : Report on Assessment of Climate Change Vulnerabilities, Food Supply Chains and Ecological Deficit / Reserve	185 days	5 and 2 CDs
Stage-3: Report on Solutions for Improving Food Supply Sustainability and Uninterrupted Availability of Basic Food Items in Urban Localities	215 days	5 and 2 CDs
Draft Report	240 days	5 and 2 CDs
Final Report	270 days	5 and 2 CDs

Annexure-III

Format for Details on Fulfillment of Eligibility Criteria

Sr. No.	Eligibility Criteria	Description	Documentary Proofs provided	Page No.
1	It should be an agency registered in India under appropriate statute enabling it to carry out the project and should have been actively working for the past at least 5 years.	(Registered under what statute and when, and some of the assignments carried out at least during past 5 years)		
2	It should have a local work space with adequate infrastructure in MMR and should have an annual turnover of a minimum Rs. 25 lakhs during the preceding 3 years.	(Office location, amenities available, financial statements for past 3 years)		
3	It should have the experience of carrying out at least one study related to Food Security or Food Supply Chain Management or Ecological Footprint involving assessment of human food consumption requirement and production capacity, for any geographical region consisting of urban and rural areas for any Govt. agency in India.	(Specific details of actual tasks, name of the study / project, name of the Govt. agency, year of completion of assignment)		
4	It should have a team of qualified staff having experience in Climate Change Vulnerability, including Sr. Environmental Expert, Agriculture, Animal Husbandry and Fisheries Scientists, Urban Planners, Computer Operators and Surveyors.	(Names of specific persons and their details)		

Annexure-IV

Expected Key Personnel

The Consultant will operate principally from MMR. Given the scale of the project, it is envisaged that the Consultant will work in close partnership with officials from the concerned Stake Holders, and as may be necessary, from MMR-EIS.

Composition of the Team

The Consultant should propose appropriate team for various parts of MMR (depending on man-month requirement of specific experts) for this project. Experts with appropriate qualification and experience in the following disciplines are necessary in the team:

- Team Leader / Sr. Environmental Expert with appropriate educational qualifications (Post Graduation in Environmental Engineering or Environmental Planning or Environmental Sciences) and actual experience of carrying out studies related to climate change vulnerability and food supply for a period of minimum 7 years.
- Agriculture, Animal Husbandry and Fisheries Scientists with appropriate educational qualifications (Post Graduation in Agriculture or related appropriate field) and knowledge and experience in carrying out studies related to production and consumption of food items for a period of minimum 3 years.
- Climate Studies Expert / Environmental Engineer with appropriate educational qualifications (Post Graduation in Environmental Engineering or Environmental Planning or Environmental Sciences) and knowledge and experience in carrying out studies related to climate change vulnerability for a period of minimum 3 years.
- Urban Planners with appropriate educational qualifications (Post graduation in Urban and Regional Planning) with experience in land use surveys, urban planning etc. for a minimum period of 3 years.
- Computer Operators, Surveyors etc.

The team shall be led by an experienced and qualified senior environment expert and the Consultant will be responsible for managing all the staff working on the project.

The estimated number of key experts and their man-month inputs expected to be required for the project are as follows:

Sr. No.	Expert	Number	Total Man-months
1	Team Leader / Sr. Environmental Expert	1	4
2	Agriculture, Animal Husbandry and	2	8

	Fisheries Scientists		
3	Climate Studies Expert / Environmental Engineer – 1	1	4
4	Urban Planners	2	8

Annexure-V

Schedule of Payment

Task Details	Fee as % of Accepted Cost	Cumulative % of Fee Payable
On execution of Agreement	10%	10%
On submission and approval of Stage-1 : Report on Assessment of Population and Consumption and Production of Food Items	25%	35%
On submission and approval of Stage-2 : Report on Assessment of Climate Change Vulnerability, Food Supply Chains and Ecological Deficit / Reserve	20%	55%
On submission and approval of Stage-3 : Report on Solutions for Improving Food Supply Sustainability and Uninterrupted Availability of Basic Food Items in Urban Localities	20%	75%
On submission and approval of Draft S&WLM Report	15%	90%
On submission and approval of Final S&WLM Report	10%	100%