

**Ulaanbaatar Clean Air Project**

**City Greening Demonstration Project**

**Environmental Management Plan**

**Ulaanbaatar Greening Project**  
**Feasibility of Demonstration Project**

**Revisited tables related to environmental and social safeguards following the comments of the World Bank**

**Table 1 – Mitigation**

Issue	Mitigating Measure	Cost of Mitigation (if substantial)	Responsibility
<b>Construction Phase (until October 2014)</b>			
Use of pesticides	None. Use of pesticides <b>strictly forbidden</b> (specified in the bidding documents [Contractor])	No additional cost	Contractor
Acceptance by residents and visitors	Survey (already completed). Contractor will meet with district and local authorities before the construction works start. Neighbouring religious establishments (monks and visitors) will be informed about the major activities prior to their implementation	No substantial additional cost	Contractor
Use of chemical fertilizers	Organism amendment to be preferred to chemical fertilizers. In principle, the use of chemical fertilizers is <b>not compatible with the botanic method proposed</b> . These amendments will content neither urban sludge nor fermentable fraction of domestic waste.	No substantial additional cost	Contractor
Noise pollution	Construction works (except planting) will take place during the day time and not before 7:00 am and after 11:00pm. Usually there are no noise and vibration measurements for greening projects in Ulaanbaatar. Emission of noise by engines and vehicles during the construction work is considered to be negligible due to the limited depths of excavations and to the few major construction works and their nature (lighting, path walk, water storage tank, container hut) and very temporary. Since there is no Mongolian standards for noise and vibration for vehicles, Use of vehicles and equipment will meet the Mongolian national noise control and emission standards MNS 4585:2007 Air Quality. (60dbA during day time (7:00 am – 11:00 pm [measured on the A scale])).  To minimize noise and nuisances caused by truck traffic, construction traffic	No substantial additional cost	Contractor

Issue	Mitigating Measure	Cost of Mitigation (if substantial)	Responsibility
	<p>routes will be defined in cooperation with MUB and traffic police</p> <p>Engines or vehicles must be stopped when parked on the site unless necessary for the construction (excavations)</p>		
Ambiant dust	Watering the excavation sites will limit dust emission.	No substantial additional cost	Contractor
Construction, green and other solid waste	No dumping of construction or green waste (clearing). All solid waste should be transported to the public dumping site of Narangiin Enger Disposal Site, of which management is placed under the Governor's Office. Dumping will not request the Contractor to pay fees. The truck transporting wastes will receive a ticket attesting dumping after weighting and scaling the wastes (in tons) on the dumping site. Dumping on Narangjin will not request permission.	No substantial additional cost	Contractor
Other pollutions	<p>Vehicles should be in a good condition and no vehicles affected by oil or petrol leaks should be allowed on the site. Repairing vehicles on the site is prohibited. Trucks, plant and equipment will be washed out of the sites and in the area used by the Contractor and where it parks its vehicles for repair.</p> <p>No fuel storage on site</p>	No substantial additional cost	Contractor
Protection of religious items	<p>Excavations works will not threaten the stability of the Ovoo. No major excavation more than 1m- deep is planned within 2m around the Ovoo in order to secure its stability. No damage on neighbouring religious establishments.</p> <p>No items of the significant height may be located less than 1m from the base of the Ovoo to limit the risk of fall of any item on this later.</p> <p>Contractor's staff must be explained the value of Ovoo to prevent any damage due to their work on Site 1. Consultants together with a municipal officer, preferably from the Department of Culture, will be in charge of these explanations, to be provided (one awareness 1h session) just before the start of construction.</p> <p>The Ovoo will not be damaged or moved during construction works. In case of paint works (not expected), the Contractor will protect the Ovoo from paints hurls with a plastic during the hours of works.</p> <p>Any worker removing stones from the Ovoo will be dismissed and the</p>	No substantial additional cost	Contractor and consultants for awareness of workers and managers of contracting company involved in the construction

Issue	Mitigating Measure	Cost of Mitigation (if substantial)	Responsibility
	responsibility of the Contractor engaged if photos of the Ovoo during the construction period suggest that its shape has modified (due to removal of stones) or if its circumference at its basis is not the same (destabilization).		
Access to religious sites	Visitors' access to the site will be "guided" during construction works for safety reasons. A temporary pathway will be set to enable people to visit the Ovoo during construction works. Once the civil works completed, and the planned pathway terminated visitors will enjoy safe access to the Ovoo. In case of the presence of engines at work at a distance less than 2m of the limits of this temporary pathway, a staff of the Contractor will guide eventual visitors in order to walk safe and away from the engines. According to the highest ranked Monk of Tuvdunpeljeel Temple, there will be no religious ceremony and events during the construction.	No substantial additional cost	Contractor
Chance finding	<p>Should an archaeological site or artefact, or some paleontological remains be found, work will be stopped immediately, the site sealed/fenced off and the EGDA will be notified, and the following steps will be taken:</p> <ul style="list-style-type: none"> <li>- EGDA immediately informs the Mongolian Academy of Sciences or MAS (depending on the case): Paleontological Laboratory and Museum, Institute of Archeology, Institute of History, to assess the site or artefact or remains</li> <li>- Document and photograph the findings and adjacent areas</li> <li>- When advised and as directed by the MAS experts, excavate and remove the items(s)</li> </ul> <p>Only after receiving documented notification that the findings are of minor archaeological value can the contractor resume construction.</p> <p>Any worker removing anything known or suspected of being significant will be dismissed and any other person caught likewise will be prosecuted to the full extent of Mongolian law</p>	The contractor should be compensated by MUB if the construction works were being stopped due to chance finding	Contractor / EGDA
Safety at work	<p>Safety equipment for workers as listed in the technical specifications and inserted below.</p> <p><b>Table: Equipment required for staff on site</b></p>	No substantial additional cost	Contractor

Issue	Mitigating Measure			Cost of Mitigation (if substantial)	Responsibility
	Equipment required** or recommended*	Staff concerned	Purpose		
	Helmets*	Workers	Public works only		
	Cut resistant gloves**	Workers	Prevent injuries, especially during mowing or prevent burning by compost		
	Safety shoes**	Workers			
	Safety light jackets (visibility/road traffic)**	All staff at work on the Revolution road	Staff should be visible to car drivers		
	Other : anti-tetanus vaccination*	Workers	Various injuries		
	Other: first aid kit*	All	Various injuries		
Safety of visitors (site 1)	Signs to warn pedestrians about on-going construction works and about excavations exceeding 50cm-deep.			No substantial additional cost	Contractor
Safety of pedestrians (site 2)	Signs to warn pedestrians about on-going construction works.			No substantial additional cost	Contractor
<b>Operation Phase (until September 2015)</b>					
Use of pesticides	None. No use of pesticides is allowed. Pesticides are <b>strictly forbidden</b> (specified in the bidding documents).			No cost	O&M companies
Use of chemical fertilizers	Use of natural compost as substitute to chemical fertilizers. In principle, the use of chemical fertilizers is <b>not compatible with the botanic method proposed</b> .			No substantial additional cost	O&M companies
Ordinary and green waste	Trash bins will be installed for the visitors' use. Green waste will be collected by the O&M company. All solid waste collected on the site should be			Collection costs to be estimated by	O&M companies

Issue	Mitigating Measure	Cost of Mitigation (if substantial)	Responsibility															
	transported to an appropriate public dumping site or recycled (composting of organic waste) off-site.	the bidders in their proposal																
Protection of religious items	O&M companies' staff need to be explained the value of Owoo to prevent any damage due to their work on Site 1. Consultants together with a municipal officer, preferably from the Department of Culture, will be in charge of these explanations, to be provided (one awareness 1h session) just before the start of O&M, estimated today (it will depend on meteorological conditions) in April 2015.	No substantial additional cost	O&M companies and consultants for awareness of workers and managers of the company involved in the O&M															
Safety at work	<p>Safety equipment for workers as listed below:</p> <table border="1"> <thead> <tr> <th>Equipment required** or recommended*</th> <th>Staff concerned</th> <th>Purpose</th> </tr> </thead> <tbody> <tr> <td>Cut resistant gloves**</td> <td>Workers</td> <td>Prevent injuries, especially during mowing or prevent burning by compost</td> </tr> <tr> <td>Safety light jackets (visibility/road traffic)**</td> <td>All staff at work on the Revolution road</td> <td>Staff should be visible to car drivers</td> </tr> <tr> <td>Other : anti-tetanus vaccination*</td> <td>Workers</td> <td>Various injuries</td> </tr> <tr> <td>Other: first aid kit*</td> <td>All</td> <td>Various injuries</td> </tr> </tbody> </table>	Equipment required** or recommended*	Staff concerned	Purpose	Cut resistant gloves**	Workers	Prevent injuries, especially during mowing or prevent burning by compost	Safety light jackets (visibility/road traffic)**	All staff at work on the Revolution road	Staff should be visible to car drivers	Other : anti-tetanus vaccination*	Workers	Various injuries	Other: first aid kit*	All	Various injuries	No substantial additional cost This equipment will be required in the specifications for O&M.	O&M companies
Equipment required** or recommended*	Staff concerned	Purpose																
Cut resistant gloves**	Workers	Prevent injuries, especially during mowing or prevent burning by compost																
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Other: first aid kit*	All	Various injuries																

**Table 2 – Environmental Monitoring Plan**

<b>What</b>	<b>Where</b>	<b>How</b>	<b>When</b>	<b>Monitoring Cost</b>	<b>Responsibility</b>
<i>What parameter is monitored?</i>	<i>Where is the parameter monitored?</i>	<i>How is the parameter monitored/ type of monitoring equipment?</i>	<i>When is the parameter monitored-frequency of measurement?</i>	<i>What is the cost of equipment or contractor charges to perform monitoring</i>	<i>Who is in charge of monitoring?</i>
<b>Construction Phase (until October 2014)</b>					
Acceptance by residents and visitors	<b>Site 1</b> 1.7ha  <b>Site 2</b> 500m x 1.0m green lane	Number of complaints received by Chingeltei district, EGDA and MUB. Working Group meetings.	Monthly all along the construction phase	No substantial additional cost	Responsibility: Contractor Monitoring: EGDA assisted by Consultants
Use of chemical fertilizers		On-site observations + quality-check of fertilizers used by the Contractor. In principle, the use of chemical fertilizers is not compatible with the botanic method proposed.	Regular site visits by the monitoring Consultants all along the construction phase	No substantial additional cost.	Responsibility: Contractor Monitoring: Consultants, under EGDA's supervision
Noise level and ambient dust		Complaints from residents received by Chingeltei district (1) + visits on site and interview of residents by consultant during construction works (2)	Monthly reports by Chingeltei district to EGDA (1). Approximately 8 planned or unannounced site visits by the monitoring Consultants (2)	Optional: measures of dust emissions by air quality monitoring vehicle of the Air Quality Agency on the site (3 months) – To be decided by EGDA. Cost assumed by MUB.	Responsibility: Contractor  Monitoring: Consultants (optional excluded) under EGDA supervision  Option air quality monitoring :

What	Where	How	When	Monitoring Cost	Responsibility
Green waste and ordinary solid waste (visitors)		<p>During sites visits, MUB and consultants will check that the vehicles and engines parked or at work on the sites are duly certified.</p> <p>Consider recycling of green waste (composting and mulching) according to the success of greening. Check that bins are regularly emptied by O&amp;M company. The Contractor will be required to attest monthly (signed and stamped; document to be addressed to EGDA) that all the wastes have been transported to Narangiin Enger Disposal Site and original or copies of tickets obtained from the dumping sites employees attached to the attestation. Consistence between quantities of wastes transported to the dumping site and the scale and nature of the construction works will be checked by both EGDA and Consultants. Possibly interviews of drivers and dump site employees will be conducted under EGDA's authority</p>	Visits of consultants on sites and discussions between EGDA – Contractor to ensure appropriate waste collection and disposal/ recycling	No substantial additional cost	<p>implementation by MUB Air Quality Agency</p> <p>Inquiries related to certificates for engines and to transportation of wastes: EGDA</p>
Use of pesticides and fertilizers		<p>Since no use of pesticides is allowed, the consultants will check the absence of pesticides by selecting samples of plants and soils to check in laboratory</p> <p>Similar analysis will check if fertilizers have been used</p>	Up to four weeks after planting has started	2000\$ for analysis	Consultants for control. MUB to finance the cost of analysis
Other pollutions		Formal declaration of the Contractor (before construction starts) regarding condition of its vehicles, repairing and storage of inflammable matters on the sites	Visits of consultants on sites during working hours	No substantial additional cost	Responsibility: Contractor
Protection of religious items		No major excavation (more than 1m- deep) within 2m around the Ovoo in order to secure its stability. No damage on	8 planned or unannounced spot visits paid by consultants on sites during	No substantial additional cost	Monitoring: Consultants (optional excluded) under EGDA supervision



What	Where	How	When	Monitoring Cost	Responsibility
	<p><b>Site 1</b> 1.7ha</p> <p><b>Site 2</b> 500m x 1.0m green lane</p>	<p>neighbouring religious establishments. Briefings organized by the Contractor for its staff to make it aware of the religious value of Ovoo and Tasganii place</p> <p>During each visit paid by consultant on the Site 1, the Ovoo will be photographed during the visits on site (4 photos, from North, West, South and West angles). And the diameter of its basis measured and noted? Visual consultant's observation of the Ovoo will also enable checking that no construction items (pieces of metal, soil and eventually paint has dirtied the Ovoo. MUB will also mandate a staff of the Governor's office to join 2 of these visits to check that the Ovoo has not been affected by the Construction works.</p> <p>Interview of contractor's staff by consultants on site during visits.</p> <p>Eventual damages on neighbouring religious establishments recorded by the districts, EGDA or MUB agencies (directly: phone call, visit, letter, through their website) upon complaints of visitors and religious authorities to clarify if these damages were or not caused by the Contractor.</p>	<p>construction phase (est. 12 weeks, so 1 every 10 days on average) + according to complaints of visitors and religious authorities</p>		

What	Where	How	When	Monitoring Cost	Responsibility
Access to religious sites		Site visits by consultants according to complaints of visitors and religious authorities recorded by the districts, EGDA or MUB agencies (directly: phone call, visit, letter, through their website)	8 planned or unannounced spot visits paid by consultants on sites during construction phase (est. 12 weeks, so 1 every 10 days on average) + according to complaints of visitors and religious authorities	No substantial additional cost	
Chance finding		Immediate declaration of the Contactor to the EGDA	No specific monitoring unless chance finding (to be determined with the appropriate MAS institutes)	The Contractor should be compensated by the MUB if the construction works are stopped due to chance finding	Responsibility: Contractor Monitoring: EGDA and MAS upon request. MCST to be informed
Safety at work		Immediate declaration of the contactor and workers in case of accident + interviews of staff (by consultants) + observation on site	No specific monitoring unless an accident occurs. EGDA will visit the site every week in such a case	Equipment required in the bidding documents (Contractor)	Responsibility: Contractor
Safety of visitors and pedestrians (Site 2)	<b>Site 1</b> 1.7ha <b>Site 2</b> 500m x 1.0m green lane	Police or hospital reports. Construction will be stopped in case of severe injury and resume after investigations and safety measures have been taken by MUB	8 planned or unannounced spot visits paid by consultants on sites during construction phase (est. 12 weeks, so 1 every 10 days on average)	Preventive measures mentioned in the bidding documents (Contractor)	Monitoring: Consultants under EGDA supervision Monitoring safety at work: EGDA
<b>Operation Phase (until September 2015)</b>					
Prevention of chemical fertilizers use and check that no pesticides have been used		Advice of consultants to O&M companies to intensify use of composting method. Quality of fertilizers checked by consultants. Since no use of pesticides is allowed, the consultants will check by selecting samples of plants and soils to	Regular meetings between the O&M companies and EGDA. 6 site visits by Consultants between April and Sept. 2015. Analysis: 1 in the middle	Included in the budget for consulting assignment Except: 2000\$ for analysis	Responsibility: O&M companies Monitoring and training: Consultants under EGDA supervision MUB to finance the cost

What	Where	How	When	Monitoring Cost	Responsibility	
	<b>Site 1</b> 1.7ha	check the absence of pesticides in laboratory Similar analysis will check if fertilizers have been used	of the O&M period.		of analysis	
Ordinary waste and green waste	<b>Site 2</b> 500m x 1.0m green lane	Site visits by the Consultants. Complaints from residents if the place is dirty.	Estimated: 6 visits of Consultants to the sites from April to Sept. 2015. Discussions EGDA – Contractor to ensure appropriate waste collection and disposal / recycling	No substantial additional cost	Responsibility: O&M companies Monitoring: Consultants under EGDA supervision	
Limit excessive use of water		Source: O&M company's watering plan + maintenance of hoses. Monitoring: m <sup>3</sup> of water effectively charged to the O&M companies by UB City Corporation + interviews of staff + observation on site	Monitoring frequency: Monthly along the period	None		
Safety at work		Immediate declaration of the O&M company and workers	No specific monitoring unless an accident occurs, EGDA will visit the site every week in such a case	Equipment to be required in the bidding documents (O&M companies)		Responsibility: O&M companies Monitoring; EGDA
Social acceptance		<b>Site 1</b> 1.7ha	Satisfaction level among a sample of 100 visitors: number of visits, opinion about beautification of the site and greening, accessibility, etc.	Survey to take place early 2015 (during New Year Sunshine)		Cost of survey estimated at 2,000\$ to be assumed by MUB
Growth of plants	<b>Site 2</b> 500m x 1.0m green lane	Performance of greening Biomass evaluation Soil analysis	All along construction and operation phases until September 2015 (see table below: greening	Included in the budget for consulting assignment	Monitoring: Consultants under EGDA supervision	

What	Where	How	When	Monitoring Cost	Responsibility
Organic matter and nitrogen (soil)			performance indicators** established by Consultants)		

**\*\*Table: Proposed greening performance indicators**

Appropriate quality of (soil and topsoil): organic matters and nitrogen, etc.

Evolution of the quality of top soil between the two years

Quality of seeds (grass seed germination) and seedlings; Germination rate for grass: Minimum rate of 90% for first quality grass seeds

Mortality rate per adult tree and shrub species planted

No rate but a rate 20% is estimated normal)

Nb of sound trees and shrubs / Nb of trees / shrubs affected by disease per year (analysis species by species)

Quantity and quality of compost / use of fertilizers

Quantities and types of chemical fertilizers used per year and per plot

Water consumption (quantities)

Watering practice performance with regard to expected results of planting

Watering system performance: pressure in the pipe, leakage, characteristics of sprinkling

Dusts on leaves and grass to assess impacts of wind breaks

**Table 3 – Actions and Responsibilities for the Project Implementation**

<b>Actions</b>	<b>Responsibility</b>
Collection of data related to construction	Contractor
Interpretation of data related to greening and environment	Consultants under EGDA's supervision
Awareness of workers and their managers to the value of the Ovoo	MUB and Consultants
<p>Environmental reporting* preparation</p> <ul style="list-style-type: none"> <li>- Inception monitoring report (Monitoring plan as accepted by the Project Manager) at the end of August 2014</li> <li>- 1 notice on mid October</li> <li>- Mid-term monitoring report: 1 in March 2015</li> <li>- 1 notice 1 month after the O&amp;M starts</li> <li>- 1 notice in the mid term of O&amp;M period (estim. early August 2015)</li> <li>- Final monitoring report in September 2015</li> </ul>	Consultants under EGDA's supervision
Analysis to check absence of pesticides and fertilizers used	Possibly consultants (Institute of Geoecology) under EGDA's supervision, or any other laboratory appointed by the EGDA
Analysis of data related to civil works and aspects non directly related to environmental and greening/botanic aspects	Project Manager (EGDA) and all relevant municipal agencies
<p>On the job training (OJT)</p> <p>OJT will focus on botanic and environmental aspects. Target groups will be workers and managers of Contractors (2014) and O&amp;M company (2015). OJT will mostly take the form of continuous advices provided by consultants while they observe the teams at work. 8 visits are planned during the construction period and 6 during the O&amp;M period (est. 2h / per visit). to recommend good practices, meetings will be arranged (at their office) with management staff of the Contractor in the mid of Construction period, and with management staff of the O&amp;M company at the beginning of O&amp;M period. OJT will be reported in the notices and more comprehensively in the environmental reports.</p>	<p>Consultants (during sites visits) under EGDA's supervision</p> <p>Consultants and EGDA for meetings</p>
O&M of Site 1 after October 2014	Tasganii Park Enterprise (to be established)
O&M of Site 2 after October 2014	UB City Corporation
Financing Contractor + Consultants	MUB through PMU USIP (UBCAP)
Shutdown operation if necessary	Project Manager (EGDA), possibly upon request of Municipal Government
Change operation	Project Manager (EGDA) possibly upon request of Municipal Government

\*Notices (in English and Mongolian) will take the form of tables (2-4 pages) according to the issues observed. Environmental reports (5-10 pages summary + annexes) in English and Mongolian will be prepared by Consultants and delivered to the Project Manager. The Project Manager will approve and comment them before sending to the World Bank.

Comments from the Bank will be taken into account to improve the environmental monitoring and possibly to change the implementation practices.

Environmental reports, once approved, should be made available to the ESG members, to the Working Group, and summarized, available on the web site of the municipality.

**Table 4 – Actions and Responsibilities for the Project Monitoring**

<b>Actions</b>	<b>Phase</b>	<b>Responsibility</b>
<b>Data Collection for Environmental Monitoring (cf. EMP)</b>	Construction	Provide environmental and botanic data: <b>Contractor</b> Collect additional information through site visits: <b>Consultants</b>
	Operation	Provide environmental and botanic data: <b>Contractor</b> Collect additional information through site visits: <b>Consultants</b>
<b>Data Analysis</b>	Construction	<b>Consultants</b> , under the Project Manager's responsibility
	Operation	<b>Consultants</b> , under the Project Manager's responsibility
<b>Environmental Reports Preparation*</b>	Construction	<b>Consultants</b> , under the Project Manager's responsibility
	Operation	<b>Consultants</b> , under the Project Manager's responsibility
<b>Action Management</b>	Construction	Express request to the Contractor to modify its practices: <b>Project Manager</b> , based on recommendations from <b>Consultants</b> Notify the termination of the Contract in case of non-compliance: <b>Project Manager</b>
	Operation	Express request to the Contractor to modify its practices: <b>Project Manager</b> , based on recommendations from <b>Consultants</b> , or following request from the <b>World Bank</b> Notify the termination of the Contract in case of non-compliance: <b>Project Manager</b>

**Table: Proposed greening performance indicators**

**1. Soil indicators**

<p>Appropriate quality of (soil and topsoil): organic matters and nitrogen, etc.</p> <p>Evolution of the quality of top soil between the two years</p>	<p>Purpose: quality / planting objectives and combination of plants re-arrangement + limit use of natural / chemical fertilizers, moisture, etc.</p>	<p>Monitoring frequency: August 2015</p> <p>Source: Soil analysis provided by the O&amp;M company in 2015 + sites visits</p>
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**2. Greening indicators**

<p>Quality of seeds (grass seed germination) and seedlings</p> <p>Germination rate for grass: Minimum rate of 90% for first quality grass seeds</p>	<p>Purposes:</p> <p>Quality of seeds and seedling: Check adequacy of seeds and seedlings and identify reasons justifying additional quantity of seeds and seedlings required if any</p> <p>Germination rate: Optimize the use of fertilizers, modify the combination of trees and shrubs, eventually determine additional quantity of seeds required and propose alternative species in the worst case,</p>	<p>Monitoring frequency: Quality of seeds and seedling: Twice, before each seedling period</p> <p>Generally in Ulaanbaatar</p> <p>Germination rate for grass: beginning and end of each wet season (4 times in total)</p> <p>Sources: Test + observation in Consultants' laboratory based on seeds samples provided by the Contractor, visual counting + photos to estimate germination rate per plot</p>
<p>Mortality rate per adult tree and shrub species planted</p> <p>No rate but a rate 20% is estimated normal)</p>	<p>Purpose: use of fertilizers / compost / topsoil, modify the arrangement of plants and watering of trees and shrubs, eventually determine additional quantity of trees and shrubs required and propose alternative planting / species in the worst case</p>	<p>Monitoring frequency: At the end of each wet season (2 times in total)</p> <p>Source: Counting + photos or film (to identify causes) + formal declaration of the Contractors + staff interviews</p>
<p>Nb of sound trees and shrubs / Nb of trees / shrubs affected by disease per year (analysis species by species)</p>	<p>Purpose: identify cause of disease and risks of contamination, use of fertilizers / compost , modify the arrangement of trees and shrubs, modify watering of trees and shrubs propose alternative planting / species in the worst case</p>	<p>Monitoring frequency: Beginning and end of each wet season (4 times in total)</p> <p>Source: Declaration of the Contractors + counting on site + photos or film (to identify causes) + staff interviews</p>
		<p>Monitoring frequency: All along the 2 wet seasons</p>



Quantity and quality of compost / use of fertilizers	Purpose: limit the use of fertilizers and assess the quality of compost	Source: On site observation + purchasing orders transmitted by the Contractor + observation of composting method used by Contractor's staff (photos or films)
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Quantities and types of chemical fertilizers used per year and per plot	Purpose: limit the use of chemical fertilizers + check practice of use and storage	Monitoring frequency: All along the 2 wet seasons Source: Purchasing orders transmitted by the Contractor + observation of spreading works (photos or films)
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### 3. Watering

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Water consumption (quantities)	Purpose: define appropriate watering use of water and consider alternative watering system in the future.	Monitoring frequency: Monthly along the 2 wet seasons Source: Contractor's watering plan + m <sup>3</sup> of Water effectively charged to the Contractor + interviews of staff + observation on site
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Watering practice performance with regard to expected results of planting	Purpose: define appropriate watering use of water and consider alternative watering system in the future.	Monitoring frequency: all along the 2 wet seasons Source: Contractor's watering plan + interviews of staff + observation on site (photos or film)
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Watering system performance: pressure in the pipe, leakage, characteristics of sprinkling	Purpose: Assess functioning of the watering system	All along the 2 wet seasons Source: Interviews of staff + observation on site + photos
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