

# 3 Resource Efficiency and Pollution Prevention and Management

## Introduction

1. ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable.

2. This ESS sets out the requirements to address resource efficiency and pollution<sup>1</sup> prevention and management<sup>2</sup> throughout the project life cycle consistent with GIIP.

## Objectives

- To promote the sustainable use of resources, including energy, water and raw materials.
- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.
- To avoid or minimize project-related emissions of short and long-lived climate pollutants.<sup>3</sup>
- To avoid or minimize generation of hazardous and non-hazardous waste.
- To minimize and manage the risks and impacts associated with pesticide use.

## Scope of application

3. The applicability of this ESS is established during the environmental and social assessment described in ESS1.

## Requirements

4. The Borrower will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention

<sup>1</sup>The term “pollution” is used to refer to both hazardous and non-hazardous chemical pollutants in the solid, liquid, or gaseous phases, and includes other components such as thermal discharge to water, emissions of short- and long-lived climate pollutants, nuisance odors, noise, vibration, radiation, electromagnetic energy, and the creation of potential visual impacts including light.

<sup>2</sup>Unless otherwise noted in this ESS, “pollution management” includes measures designed to avoid or minimize emissions of pollutants, including short- and long-lived climate pollutants, given that measures which tend to encourage reduction in energy and raw material use, as well as emissions of local pollutants, also generally result in encouraging a reduction of emissions of short- and long-lived climate pollutants.

<sup>3</sup>This includes all GHGs and black carbon (BC).

measures in accordance with the mitigation hierarchy. The measures will be proportionate to the risks and impacts associated with the project and consistent with GIIP, in the first instance the EHSs.

## Resource efficiency

5. The Borrower will implement technically and financially feasible measures for improving efficient consumption of energy, water and raw materials, as well as other resources. Such measures will integrate the principles of cleaner production into product design and production processes to conserve raw materials, energy and water, as well as other resources. Where benchmarking data are available, the Borrower will make a comparison to establish the relative level of efficiency.

### A. Energy use

6. The efficient use of energy is an important way in which the Borrower can contribute to sustainable development. When the project is a potentially significant user of energy, in addition to applying the resource efficiency requirements of this ESS, the Borrower will adopt measures specified in the EHSs to optimize energy usage, to the extent technically and financially feasible.

### B. Water use

7. When the project is a potentially significant user of water or will have potentially significant impacts on water quality, in addition to applying the resource efficiency requirements of this ESS, the Borrower will adopt measures, to the extent technically and financially feasible, that avoid or minimize water usage so that the project's water use does not have significant adverse impacts on communities, other users and the environment. These measures include, but are not limited to, the use of additional technically feasible water conservation measures within the Borrower's operations, the use of alternative water supplies, water consumption offsets to maintain total demand for water resources within the available supply, and evaluation of alternative project locations.

8. For projects with a high water demand that have potentially significant adverse impacts on communities, other users or the environment, the following will apply:

- A detailed water balance will be developed, maintained, monitored and reported periodically;
- Opportunities for improvement in water use efficiency will be identified and implemented;

- Specific water use (measured by volume of water used per unit production) will be assessed; and
- Operations must be benchmarked to available industry standards of water use efficiency.

9. The Borrower will assess, as part of the environmental and social assessment, the potential cumulative impacts of water use upon communities, other users and the environment and will identify and implement appropriate mitigation measures.

### C. Raw material use

10. When the project is a potentially significant user of raw materials, in addition to applying the resource efficiency requirements of this ESS, the Borrower will adopt measures<sup>4</sup> specified in the EHSs and other GIIP to support efficient use of raw materials, to the extent technically and financially feasible.

## Pollution prevention and management

11. The Borrower will avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the EHSs, whichever is most stringent. This applies to the release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts.

12. Where the project involves historical pollution,<sup>5</sup> the Borrower will establish a process to identify the responsible party. If the historical pollution could pose a significant risk to human health or the environment, the Borrower will undertake a health and safety risk assessment<sup>6</sup> of the existing pollution which may affect communities, workers and the environment. Any remediation of the site will be appropriately undertaken in accordance with national law and GIIP, whichever is most stringent.<sup>7</sup>

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<sup>4</sup>These measures can include reuse or recycling of materials. The Borrower will seek to reduce or eliminate the use of toxic or hazardous raw materials.

<sup>5</sup>In this context historical pollution is defined as pollution from past activities affecting land and water resources for which no party has assumed or been assigned responsibility to address and carry out the required remediation.

<sup>6</sup>Such assessment will follow a risk-based approach consistent with GIIP, in the first instance the EHSs.

<sup>7</sup>If one or more third parties are responsible for the historical pollution, the Borrower will consider seeking recourse from such parties so that such pollution is appropriately remediated. The Borrower will implement adequate measures so that historical pollution at the site does not pose a significant risk to the health and safety of workers and communities.

13. To address potential adverse project impacts on human health and the environment,<sup>8</sup> the Borrower will consider relevant factors, including, for example: (a) existing ambient conditions; (b) in areas already impacted by pollution, the remaining assimilative capacity<sup>9</sup> of the environment; (c) existing and future land use; (d) the project's proximity to areas of importance to biodiversity; (e) the potential for cumulative impacts with uncertain and/or irreversible consequences; and (f) impacts of climate change.

14. In addition to applying resource efficiency and pollution control measures as required in this ESS, when the project has the potential to constitute a significant source of emissions in an already degraded area, the Borrower will consider additional strategies and adopt measures that avoid or minimize negative effects. These strategies include, but are not limited to, evaluation of project location alternatives.

### A. Management of air pollution<sup>10</sup>

15. In addition to the resource efficiency measures described above, the Borrower will consider alternatives and implement technically and financially feasible and cost-effective<sup>11</sup> options<sup>12</sup> to avoid or minimize project-related air emissions during the design, construction and operation of the project.

16. As part of the environmental and social assessment of the project, the Borrower will characterize and estimate sources of air pollution related to the

project.<sup>13</sup> This will include an estimate of gross GHG emissions resulting from the project, providing that such estimation is technically and financially feasible. Where the Borrower does not have the capacity to develop the estimate of GHG emissions, the Bank will provide assistance to the Borrower.<sup>14</sup> For projects that have diverse and small sources of emissions (for example, community-driven development projects) or where emissions are not likely to be significant (for example, projects in education and social protection), GHG estimations will not be required.

### B. Management of hazardous and nonhazardous wastes

17. The Borrower will avoid the generation of hazardous and nonhazardous waste.<sup>15</sup> Where waste generation cannot be avoided, the Borrower will minimize the generation of waste, and reuse, recycle and recover waste in a manner that is safe for human health and the environment. Where waste cannot be reused, recycled or recovered, the Borrower will treat, destroy, or dispose of it in an environmentally sound and safe manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material.

18. If the generated waste is considered hazardous,<sup>16</sup> the Borrower will comply with existing requirements for management (including storage, transportation and disposal) of hazardous wastes including national legislation and applicable international conventions, including those relating to transboundary movement. Where such requirements are absent, the Borrower will adopt GIP alternatives for its environmentally sound and safe management and disposal. When hazardous waste management is conducted by third parties, the Borrower will use contractors that are reputable and legitimate enterprises licensed by the relevant government regulatory agencies and, with respect to transportation and

<sup>8</sup>Such as air, surface and groundwater and soils.

<sup>9</sup>Assimilative capacity refers to the capacity of the environment for absorbing an incremental load of pollutants while remaining below a threshold of unacceptable risk to human health and the environment.

<sup>10</sup>'Air pollution' refers to the release of air pollutants (often associated with the combustion of fossil fuels), such as nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), particulate matter (PM), as well as other contaminants including GHGs.

<sup>11</sup>Cost-effectiveness is determined according to the capital and operational cost and financial benefits of the options considered over the life of the project.

<sup>12</sup>The options for reducing or preventing air pollution may include a combination of approaches such as: enhancing energy efficiency, process modification, selection of fuels or other materials with less polluting emissions, and application of emissions control techniques. Options for reducing GHG emissions may include alternative project locations; adoption of renewable or low carbon energy sources; alternatives to refrigerants with high global warming potential; more sustainable agricultural, forestry and livestock management practices; the reduction of fugitive emissions and gas flaring; carbon sequestration and storage; sustainable transport alternatives; and proper waste management practices.

<sup>13</sup>For the purposes of such estimate, the Borrower may utilize national methodologies accepted in the context of international agreements on climate change, with the agreement of the Bank.

<sup>14</sup>Depending on the capacity of the Borrower, the type of the project and the basis on which financing is being provided to the Borrower, this assistance may involve the Bank carrying out the GHG estimation on behalf of the Borrower, for example relating to IDA or FCS projects, working with Borrower counterparts and using project information provided by the Borrower. The Bank can also provide technical assistance to the Borrower in the use of the methodologies established by the Bank so that Borrower competency is strengthened in this respect.

<sup>15</sup>These wastes may include municipal waste, e-waste and animal waste.

<sup>16</sup>As defined by the EHSs and relevant national law.

disposal, obtain chain of custody documentation to the final destination. The Borrower will ascertain whether licensed disposal sites are being operated to acceptable standards and where they are, the Borrower will use these sites. Where licensed sites are not being operated to acceptable standards, the Borrower will minimize waste sent to such sites and consider alternative disposal options, including the possibility of developing its own recovery or disposal facilities at the project site or elsewhere.

### **C. Management of chemicals and hazardous materials**

19. The Borrower will avoid the manufacture, trade and use of chemicals and hazardous materials subject to international bans, restrictions or phaseouts unless for an acceptable purpose as defined by the conventions or protocols or if an exemption has been obtained by the Borrower, consistent with Borrower government commitments under the applicable international agreements.

20. The Borrower will minimize and control the release and use of hazardous materials.<sup>17</sup> The production, transportation, handling, storage, and use of hazardous materials for project activities will be assessed through the environmental and social assessment. The Borrower will consider less hazardous substitutes where hazardous materials are intended to be used in manufacturing processes or other operations.

### **D. Management of pesticides**

21. Where projects involve recourse to pest management measures, the Borrower will give preference to integrated pest management (IPM)<sup>18</sup> or integrated vector management (IVM)<sup>19</sup> approaches using combined or multiple tactics.

22. In the procurement of any pesticide the Borrower will assess the nature and degree of associated risks, taking into account the proposed use

and the intended users.<sup>20</sup> The Borrower will not use any pesticides or pesticide products or formulations unless such use is in compliance with the EHSGs. In addition, the Borrower will also not use any pesticide products that contain active ingredients that are restricted under applicable international conventions or their protocols or that are listed in, or meeting, the criteria of their annexes, unless for an acceptable purpose as defined by such conventions, their protocols or annexes, or if an exemption has been obtained by the Borrower under such conventions, their protocol or annexes, consistent with Borrower commitments under these and other applicable international agreements. The Borrower will also not use any formulated pesticide products that meet the criteria of carcinogenicity, mutagenicity, or reproductive toxicity as set forth by relevant international agencies. For any other pesticide products that poses other potentially serious risk to human health or the environment and that are identified in internationally recognized classification and labelling systems, the Borrower will not use pesticide formulations of products if: (a) the country lacks restrictions on their distribution, management and use; or (b) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly.

23. The following additional criteria apply to the selection and use of such pesticides: (a) they will have negligible adverse human health effects; (b) they will be shown to be effective against the target species; and (c) they will have minimal effect on nontarget species and the natural environment. The methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies. Pesticides used in public health programs will be demonstrated to be safe for inhabitants and domestic animals in the treated areas, as well as for personnel applying them; (d) their use will take into account the need to prevent the development of resistance in pests; and (e) where registration is required, all pesticides will be registered or otherwise authorized for use on the crops and livestock, or for the use patterns, for which they are intended under the project.

24. The Borrower will ensure that all pesticides used will be manufactured, formulated, packaged, labeled, handled, stored, disposed of, and applied according to relevant international standards and codes of conduct, as well as the EHSGs.

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<sup>17</sup>These materials may include chemical fertilizer, soil amendments and chemicals other than pesticides.

<sup>18</sup>IPM refers to a mix of farmer-driven, ecologically based pest control practices that seeks to reduce reliance on synthetic chemical pesticides. It involves: (a) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them; (b) integrating multiple methods (relying, to the extent possible, on nonchemical measures) to keep pest populations low; and (c) selecting and applying pesticides, when they have to be used, in a way that minimizes adverse effects on beneficial organisms, humans, and the environment.

<sup>19</sup>IVM is a rational decision-making process for the optimal use of resources for vector control. The approach seeks to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of disease-vector control.

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<sup>20</sup>This assessment is made in the context of the environmental and social impact assessment.

25. For any project involving significant pest management issues<sup>21</sup> or any project contemplating activities that may lead to significant pest and pesticide management issues,<sup>22</sup> the Borrower will

prepare a Pest Management Plan (PMP).<sup>23</sup> A pest management plan will also be prepared when proposed financing of pest control products represents a large component of the project.<sup>24</sup>

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<sup>21</sup>Such issues would include: (a) migratory locust control; (b) mosquito or other disease vector control; (c) bird control; (d) rodent control, etc.

<sup>22</sup>Such as: (a) new land-use development or changed cultivation practices in an area; (b) significant expansion into new areas; (c) diversification into new crops in agriculture; (d) intensification of existing low-technology systems; (e) proposed procurement of relatively hazardous pest control products or methods; or (f) specific environmental or health concerns (e.g., proximity of protected areas or important aquatic resources; worker safety).

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<sup>23</sup>Depending on the nature and the scale of the risks and impacts of the project, the elements of a PMP may be included as part of the ESCP and preparation of a stand-alone PMP may not be necessary.

<sup>24</sup>This is when financing of substantial quantities of pesticides is envisaged. A pest management plan is not required for the procurement or use of impregnated bednets for malaria control, or of insecticides for intradomestic spraying for malaria control identified in internationally recognized classification systems.