

# Cambodia Agricultural Value Chain Program (CAVAC)

## Environmental Management System

Disaster Risk Reduction and Climate Change Adaptation  
Preparedness



Phnom Penh  
June 2012

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## ACRONYMS AND ABBREVIATIONS

ADB	: Asian Development Bank
AusAID	: Australian Agency for International Development
ACIAR	: Australian Centre for International Agricultural Research
CAVAC	: Cambodia Agriculture Value Chain Program
DRR	: Disaster Risk Reduction
EIA	: Environmental Impact Assessment
EMP	: Environmental Management Plan
EMS	: Environmental Management System
EPBC	: Environment Protection and Biodiversity Conservation
FWUC	: Farmer Water User Community
GDA	: General Department of Agriculture
IEA	: Initial Environmental Assessment
IEIA	: Initial Environmental Impact Assessment
IPM	: Integrated Pest Management
LEPNRM	: Law on Environmental Protection and Natural Resource Management
MAFF	: Ministry of Agriculture, Forestry and Fisheries
MoE	: Ministry of Environment
MOWRAM	: Ministry of Water Resources and Meteorology
N	: Anonymous
NCDM	: National Committee for Disaster Management
NSDP	: National Strategic Development Plan
PDD	: Project Design Document
PDWRAM	: Provincial Department of Water Resources and Meteorology
RGC	: Royal Government of Cambodia
SAW	: Strategy for Agriculture and Water
SEA	: Strategic Environmental Assessment
SEMP	: Strategic Environmental Management Plan
SIF	: Supplementary Investment Fund
SNAP	: Strategic National Action Plan for Disaster Risk Reduction
UNESCO	: United Nations Educational, Scientific and Cultural Organization
WHO	: World Health Organization

## 1 INTRODUCTION

The purpose of the Environmental Management System (EMS) document is to determine and describe the system by which CAVAC will achieve environmental safeguarding, disaster risk reduction and climate change adaptation preparedness.

The EMS describes CAVAC's legal obligations and outlines the steps to be followed in environmental assessments of activities and the procedures for managing potential environmental impacts. The EMS is based on and complies both with Australian federal legislation, as laid out in the AusAID Environmental Management Guide for Australia's Aid Program 2003, and with relevant Cambodian laws.

The EMS document consists of four parts. Firstly, as an AusAID program, strategic environmental issues have been identified and are addressed. The second part describes how disaster risk reduction and climate change adaptation are integral elements of CAVAC, minimizing vulnerability and exposure and preparing stakeholders to respond to any disasters that may occur. The following part describes in detail the applicable legal, regulatory and administrative regime of the Kingdom of Cambodia and AusAID. Finally, the environmental management process that will be applied in CAVAC is presented.

## 2 THE CAVAC PROGRAM

The goal of the Cambodia Agricultural Value Chain Program (CAVAC) is *to reduce rural poverty in the targeted provinces of Kampot, Kampong Thom and Takeo through accelerated growth in the value of agricultural production and smallholder incomes in rice-based farming systems*. To achieve this goal, CAVAC works with its

### ***The CAVAC vision: Sustainable rice-based agriculture***

CAVAC provinces located in the Mekong delta of Cambodia have long been made up of rice fields and small villages with little else to be seen. Options for diversification from the mono-crop rice are limited, but with the right management of soils, crop diseases and post-harvest treatment, it is very well possible to maintain this productive resource for many years ahead.

Cambodia's population is still rapidly growing, with the risk of quickly losing much of Cambodia's wild nature and natural resources. For thousands of years, Cambodian forests have allowed humans to augment their income by collecting from the wild. Over the last decades, the area and diversity of forests have been diminishing rapidly and this trend is likely to continue with the growing population.

Intensifying agriculture on existing farmland has still great potential. Higher yields generated by better farming practices and improved varieties, as well as additional crops every year as the result from access to irrigation, could reduce the pressure on uncultivated forest land, while meeting the need to feed a growing population in both Cambodia and abroad.

The impact of climate change on the present farming systems will be noticeable over time, but will likely be overshadowed by the impact of a large number of dams on the rivers that feed the delta. Rainfall patterns are highly influencing yields in the wet season. Dams may influence river and groundwater levels as well as the areas that flood every year.

Farming practices have changed fast over the last 20 years. Market demand, availability of affordable irrigation pumps and availability of labour are just a few factors. Changes in rainfall patterns and temperature, as well as the changes likely to be caused by new dams, are likely to influence these practices. Availability of irrigation pumps and canals will make farmers less dependent on rainfall. Availability of better, for example more drought-resistant varieties might help further. Change may also cause new challenges and diseases to emerge for which better functioning markets could provide solutions.

There is no doubt that agricultural production will increase in Cambodia. The above arguments show that CAVAC can make those choices to ensure that the growth initiated by CAVAC is one that preserves agricultural resources for the long term, while reducing the pressure on nature and biodiversity and preserving a safe environment for farmers. CAVAC's activities in input markets, extension, research, and irrigation support this goal as long as they are well designed, implemented and monitored. This starts with clear strategies.

development partners, including the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Water Resources and Meteorology (MOWRAM), along with provincial authorities and the private sectors.

As an agriculture program, CAVAC has a legal and operational adequacy requirement to safeguard the environment, including reducing the risk of exposure to the impacts of disasters and preparing for the consequences of climate change. This Environmental Management System (EMS) has been prepared to outline CAVAC's approach to addressing these issues, and complies with the relevant Cambodian and Australian policies and laws. Applying this framework will ensure the integration of environmental management within the broader program and that CAVAC can deliver interventions in an environmentally responsible manner.

CAVAC also intends to take advantages of the opportunity that it has to make a positive impact. There are several ways that CAVAC will do this. Promoting proper use of appropriate fertilisers will help to return nutrients to the soil, reducing the degradation caused by continuous mono cropping. Encouraging the better use of pesticides will reduce the negative impacts now sometimes observed, and the development of improved seed varieties will lead to healthier crops which have a range of benefits, including a reduction in the use of pesticides. The construction and rehabilitation of irrigation schemes will provide better access to water. This will improve food security and will importantly address some of the anticipated impacts of climate change.

CAVAC works with Cambodian farmer support systems, rather than working directly with farmers. The challenge is to translate the commitment to promote sustainable outcomes to our system partners. These systems include the government, associations, local research institutes, commercial companies like input suppliers, traders and processors, and the media. CAVAC selects systems and partners that contribute to sustainable outcomes.

CAVAC works in the following areas:

- i. **Value Chains:** The CAVAC program design determined that CAVAC would work in rice-based farming systems that include vegetables and fruits.
- ii. **Fertilizer:** The soils in the CAVAC provinces are fertile. High yielding crops will deplete elements from the soil that needs to be replenished to keep the soil fertile in the future. Applying the right combination of fertilizers at the right time and in the right way will keep the soil fertile. Overuse or wrong application may lead to eutrophication and pollution affecting surface, ground- and drinking water quality. The risk is limited to wet season ponds and CAVAC will set up relevant monitoring systems. Organic fertilizers can be part of the package of fertilizers that farmers use. It cannot, however, completely replace mined fertilizer.

In an ideal situation, farmers know the present soil types with their deficits, they know the needs of the crops, they know how best to apply fertilizer and the right fertilizers are available. At the moment, this is not normally the case. CAVAC will work on both farmer knowledge and the availability of the right types of fertilizer.

All CAVAC activities promote sensible use of the right fertilizer that improves long-term soil fertility. This will also contribute to healthier crops needing less pesticide. CAVAC will not support businesses selling more fertilizer for the sake of supporting agribusiness.

- iii. **Crop Protection and Herbicides:** Large mono-crop areas will need protection against diseases, insects, and other threats (especially rodents). In first-world countries, good information and regulations have resulted in sustainable practices. Cambodia is still far away from this. Cambodia has a list of banned chemicals, but not clear recommendations. Registration problems keep many of the modern products and knowledge out. Limited farmer knowledge and the use of available chemicals are placing a higher than necessary burden on biodiversity and human health. CAVAC's key strategy is to increase knowledge on good practices and to support the availability of better products. Integrated pest management is a great concept; and CAVAC will support farmer communities if they are seriously interested.
- iv. **Research:** The research that CAVAC supports is quite diverse. In general, it will improve the capacity of the country to adopt modern and better farming practices as well as to adjust better to the ever-changing environment, including developments caused by climate change. Already, it is currently supporting the development of seeds of varieties that are more drought-resistant and less dependent on pesticides.
- v. **Extension:** A large part of the inappropriate use of chemicals can be related to the limited farmer knowledge. Better knowledge will almost certainly reduce the burden on the environment and result in more valuable and better-yielding crops. Farmer knowledge is a constraint in many other aspects of the rice-based agriculture systems in Cambodia.
- vi. **Irrigation:** CAVAC undertakes a number of activities in irrigation that will allow farmers to continue the cultivation in the future. The strategy includes the rehabilitation of irrigation canals. Canals are only constructed following an environmental impact assessment. The canals have a number of additional benefits: they make farmers less dependent on rainfall and less vulnerable to climate change. They may also reduce transport costs of the harvest while reducing the disruption of flooding on transport. The canals also provide new habitats for fish and other wildlife. CAVAC will invest in the ownership of canals to ensure their long-term use. A further strategy element is that of pump efficiency. CAVAC supports improvements in pump efficiency, reducing not only pumping costs but also fuel consumption.

### 3 STRATEGIC ENVIRONMENTAL APPROACH

As an Australian Government funded program working in Cambodia, CAVAC operates under both the Australian and Cambodian laws. The environmental safeguarding framework for CAVAC is set by the AusAID guide on its environmental management system, and the Cambodian environmental protection law and its implementation regulations .

The AusAID Environmental Management Guides for Australia's Aid Program 2003 recommend that a strategic environmental assessment (SEA) be carried out as part of the formulation of aid programs such as CAVAC. The aim of the SEA is to identify the range of environmental impacts and environmental management issues that could result from interventions in the sector. The SEA is primarily an information tool to inform decision-makers during the design of aid programs, and to facilitate the design of environmentally sustainable programs, considering the range and cumulative impacts of a proposed program. It also provides direction to the environmental safeguarding component of the program.



The state of the environment in Cambodia in general and in the three program provinces is rapidly degrading (N. 2009c). Since the end of the civil conflict in the late 1990s and the subsequent stabilisation of the political and administrative systems, the growing demand for agriculture products and food to feed a very rapidly growing human population has been met mostly by expansion of the area rather than improvements in productivity, a trend that is exacerbated in recent years with increasing demand for agriculture produce for industrial purposes and for export. This expansion is still going on, and particularly in the peripheral provinces where numerous concessions are given for the development of very large, agro-industrial investments. The system of protected areas that was introduced in 1993 is currently under great pressure, and increasingly large parts of the 23 protected areas under the control of the Ministry of Environment (MOE) are designated for other purposes such as mining, hydropower development, tourism and entertainment infrastructure and agriculture concessions. Agriculture area expansion has replaced logging for high-value timber as the key driver of deforestation in recent years, and is currently also the main driver of biodiversity loss in Cambodia.

### **3.1 CAVAC'S APPROACH**

CAVAC will take adequate action to avoid or minimise unavoidable direct negative environmental impacts caused by its activities, as described in the EMS. In the case of cumulative or other impacts where the direct contribution by CAVAC is marginal, CAVAC will volunteer contributions to any initiative that is taken to manage or mitigate the impact. CAVAC will inform other agents contributing to such an impact of the risk or the occurrence of the impact and suggest and support (joint) environmental safeguarding measures.

### **3.2 KEY IMPACTS**

Although it is unclear if a formal Strategic Environmental Assessment (SEA) was undertaken during the design of CAVAC, there is ample evidence, nonetheless, that broad environmental issues have been identified and were taken into account during the design of CAVAC, and, for certain interventions are a main objective. Key areas of identified risk include: pesticide and fertiliser use and water management.

The growing demand for agriculture produce has not been matched with a commensurate growth in farming knowledge and skills and better farming inputs, and one of the consequences has been the uncontrolled and injudicious use of large amounts of harmful pesticides. Also the use of chemical fertilisers has increased, usually in sub-optimal ways, which risks the accumulation and run-off of agriculture chemicals in the environment.

The main other environmental issue in Cambodia nowadays is that of the use of its water resources. The demand for water for irrigation is steadily increasing, as well as claims in the region on water in the Mekong Basin Rivers for hydropower generation. Associated with these developments are issues of sediment transport and natural productivity of the floodplains that characterise much of the Lower Mekong Basin, including large parts of the program provinces. Where water resources until recently were considered adequate to meet the subsistence rice cropping demands, it is now clear they do not meet the needs of expanding production and are seen as a constraint in the development of more productive agriculture systems.

The goal of the CAVAC program will be achieved through outputs of which a number will be beneficial to the environment in their own right and lead to an overall reduction in pressure. Based on the CAVAC design characteristics, the main potential negative environmental impacts of any significance that can be identified<sup>1</sup> include a growing demand for (irrigation) water, a possible increase in the use of (harmful) pesticides and fertilisers, and a demand for agriculture area expansion.

Impact prevention and mitigation have been incorporated into the CAVAC design and the present EMS has been developed to minimise and manage any remaining negative environmental impact.

### **3.3 INDIRECT, SECONDARY, CUMULATIVE IMPACTS**

Many of the potential environmental impacts that would result from the implementation of CAVAC are marginal impacts into a larger environmental issue, such as the impact of hydropower dams in the Mekong region. Given the legal and policy framework within which CAVAC operates, it must endeavour to avoid or minimise negative impacts on the environment as much as is reasonably possible. In the case of CAVAC, there is a variety of impacts that may be caused by its activities, and this is yet further complicated by the nature of the CAVAC interventions that do not work directly with farmers as key agents bringing about impacts on the environment but rather working with the enabling environment for agriculture productivity improvement. As a direct consequence, most of the negative impacts on the environment that can be expected will not be direct impacts of program activities but rather indirect, secondary or cumulative impacts. This poses a particular challenge for CAVAC in meeting its legal obligations to safeguard the environment in that it has in most cases only limited or even no control at all over the agents that may actually directly be causing negative environmental impacts. In addition, secondary impacts on the environment may be expected as a result of successful implementation of the CAVAC program. This would be the case where CAVAC activities generate agents or enable agents to carry out activities with a negative impact on the environment. The cases where CAVAC activities will generate, directly or indirectly, negative impacts on the environment that are marginally insignificant but that contribute to a significant cumulative impact with other activities are the hardest ones for CAVAC to influence to minimise or avoid such cumulative impacts. One manifest example of such cumulative impacts is that of water extraction from a river for irrigation. The removal of water from that river by the program activity may cause an impact that per se is too small to measure. But when considered in interaction and in accumulation with the marginally insignificant impacts of a large number of similar, non-CAVAC activities on the same river, there might well be a combined impact that is significant, and possibly prohibitively severe. The decision on where CAVAC's direct responsibility ends and that of secondary agents starts in terms of environmental safeguarding is to some extent arbitrary.

### **3.4 CAVAC'S RESPONSE**

Specifically, CAVAC will address the identified strategic impacts in the following ways:

- i. The impact of growing demand for (irrigation) water will be minimised through a combination of water saving design measures and management actions that will maximise

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<sup>1</sup>As this would have been done in a formal SEA



the productivity of the water used and thus minimise the additional demand for water. All irrigation elements that will receive CAVAC support will need to be managed by a functional Farmer Water User Community (FWUC). The capacity of these FWUCs will be strengthened to understand and to apply principles of water productivity management. Where appropriate, the possibility will be explored of organising water management at the scale of a river or basin, in particular where a cumulative effect might be causing an impact; for instance, on the SteungSen River in Kampong Thom province that feeds into a core area of the Tonle Sap Biosphere Reserve.

- ii. Pest management in the project provinces still largely depends on the uneducated, injudicious large-scale and high-frequency application of a cocktail of highly toxic WHO Hazard Group Ia and Ib substances (WHO 2006). Whereas a ban on the importation of WHO Class I pesticides into Cambodia took effect in 2003, the products are still available to farmers (FAO 2010). An indirect effect of CAVAC interventions will be an increased demand for pest management, and the program will contribute to a reduction of harmful pesticide use by educating farmers and pesticide suppliers on sound pest management options, including the safe use of safe pesticides and integrated pest management (IPM). CAVAC will liaise between the National Integrated Pest Management Programme<sup>2</sup> and interested farmer groups to promote IPM. Improved fertiliser use is an integral part of the CAVAC interventions.
- iii. The possible creation of a demand for additional agriculture area expansion will be considered in the three program provinces but this is the possible impact that is the hardest one to prevent or mitigate. In areas where there is CAVAC support, the risk of creating demand for agriculture area expansion will be assessed and if necessary, CAVAC will support initiatives to reduce the risk of encroachment on protected areas or the clearing of forests or flooded forest. This could take the form of support to demarcation or mapping of vulnerable areas. If the risk of creating demand for additional farm land cannot be limited, CAVAC may abandon the proposed intervention.

#### **4 DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION**

Disaster risk reduction (DRR) and adaptation to a changing climate are integral elements of CAVAC. While they are considered in the identification and design of program activities, they are also explicit elements of the environmental safeguarding process for CAVAC.

The risk of disaster is reduced through minimizing vulnerability and exposure, and by ensuring that both government and communities are adequately prepared to respond to disaster situations if they develop. Much of the work required to achieve this lies outside CAVAC's Scope of Services. Nonetheless, awareness of disaster risk issues is important in the broader context in which CAVAC operates.

The key body in Cambodia for disaster management is the National Committee for Disaster Management (NCDM), chaired by the Prime Minister. The NCDM roles include making recommendations to the RGC; issuing principles and policies; and warnings on disaster preparedness and management. There are further Committees for Disaster Management at provincial and district level, and Commune Disaster Management Teams. A UN Disaster Management Team provides

<sup>2</sup> The National IPM Programme is positioned within MAFF and the General Directorate of Agriculture (GDA) is responsible for its implementation.

support to the NCDM. In March 2009, Cambodia issued a Strategic National Action Plan for Disaster Risk Reduction (SNAP). Cambodia has adopted the Hyogo Framework for Action 2005-2015.

AusAID (2009) was developed as a disaster risk reduction policy for the Australian aid program. The policy provides a framework for the Australian Government's commitment to reduce the risk of natural disasters within the aid program. A major aim of the Disaster Risk Reduction policy is to promote coherence and coordination between disaster risk reduction and climate change adaptation policies and programs.

In the event of a disaster, CAVAC will liaise with the appropriate Cambodian and Australian bodies as required, at a local, provincial, national and international level. This will ensure that any response by CAVAC to a natural disaster is part of a coordinated response at all levels. CAVAC staff will therefore be required to familiarize themselves with the relevant disaster management bodies relevant to CAVAC activities.

Climate change and forecasting the impact thereof in Cambodia has primarily been limited to forecasting changes in atmospheric temperature and precipitation. Climate change forecasts for the Mekong region have been based on models (ECHAM4 GCM and PRECIS) that provide precipitation and temperature outputs according to two different scenarios (Keskinen *et al.* 2009 and MRC 2009). The main changes for these two parameters are as following:

- By 2050, an increase in the mean annual temperature of 0.7°C for the Lower Mekong Basin (Jirayoot *et al.* 2009). The Mekong region is expected to become slightly warmer over the next century with warm periods extending in duration and covering much wider areas than at present. While accurate information of the climate change situation at the national or sub-national level is limited in the basin, Cambodia is expected to experience a significant increase in mean annual temperature over the next century (MRC 2009, Keskinen *et al.* 2009, and N. 2009b). The increase in temperature is mainly the result of could cover (Chinvanno 2008).
- By 2050, an increase in the mean annual precipitation of 10.9% for the Upper Mekong Basin and 4.5% for the Lower Mekong Basin (Jirayoot *et al.* 2009). Rainfall patterns in the basin are expected to fluctuate in the first half of this century and increase over the latter half due to increases in the intensity of rainfall during the wet season (May-October) (Keskinen *et al.* 2009, and Hoanh *et al.* 2004). Uncertainty remains regarding the effects of climate change on dry-season precipitation patterns. Recent analysis by Keskinen *et al.* (2009) suggests that dry-season precipitation will increase in northern catchments within the basin and decrease in southern catchments, while Nijssen *et al.* (2001) and Hoanh *et al.* (2004) suggest that, throughout the basin, the driest months will become drier. Chinvanno (2008) also notes the likelihood of a potential seasonal shift with the wet season beginning in June instead of May and lasting through November (N. 2009b).

The magnitude of the variations depends on the scale that is considered and there are significant regional differences (Chinvanno 2008, Keskinen *et al.* 2009, and Jirayoot *et al.* 2009). Based on the temperature and precipitation forecast, a number of secondary models have been developed or applied to forecast changes, for instance, in hydrology and livelihoods in the Mekong River Basin. Sea level rise can be considered as the third independent variable of climate change in the Mekong

River Basin. Yet, the water in the Mekong basin in Cambodia is expected to remain entirely fresh, as is currently the case.

Overall, the impact of climate change will be very small during the implementation of the CAVAC program; however, the anticipated life span of its investments will carry on for much longer, and then climate change considerations as described here will have to be taken into account. This is done by incorporating them into, for example, design criteria and parameters of interventions. It is particularly relevant for the irrigation investments.

CAVAC is addressing vulnerability related to natural disasters and climate change by improving food security, and particularly by:

- Developing more reliable water supplies;
- Enabling increased dry season cropping and double cropping;
- Specifically addressing short-term water requirements during early wet season and recession paddy production;
- Crop diversification; and
- Supporting improved water resources management and planning for irrigation.

Adequate water supply for the traditional wet season crop will provide an improved investment climate for farming communities, thus lowering their risk. This will encourage farmers to take full advantages of available agricultural inputs to increase production and reduce vulnerability. The measures taken will also make communities more resilient in terms of adapting to the uncertainties related to climate change. For example, a more reliable water supply removes a potential constraint to diversification, and addresses to some degree of the uncertainties of rainfall water supply. Further, CAVAC will work with MOWRAM and the PDWRAMs to improve capacity to manage water resources. In particular, hydrological data collection and analysis, and studies on water availability for irrigation will enhance understanding of water allocations and improve planning capabilities.

## **5 LEGAL FRAMEWORK AND DEVELOPMENT CONTEXT**

The environmental safeguarding requirements for CAVAC are determined by Cambodian and Australian laws. The program activities take place within the applicable legal, regulatory and administrative regime of the Kingdom of Cambodia and AusAID.

### **5.1 THE REGULATORY FRAMEWORK**

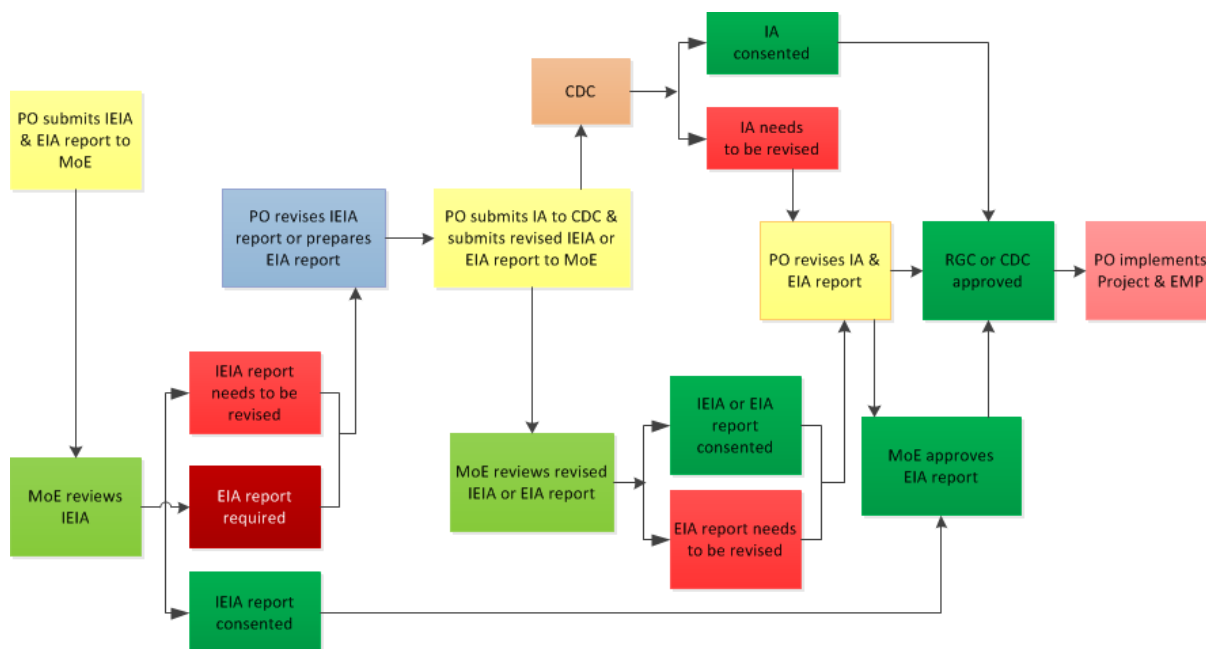
#### **5.1.1 Cambodian Legal Framework**

In Cambodia, the Law on Environmental Protection and Natural Resource Management<sup>3</sup> (LEPNRM) of 24 December 1996 regulates the protection of the environment in Cambodia. The Royal Government of Cambodia (RGC) Sub-Decree of 11 August 1999<sup>4</sup> (72.ANRK.BK) regulates the process

<sup>3</sup> No. NS/RKM/1296/36

<sup>4</sup> This sub-decree, known as the EIA Sub-Decree, is under revision, and it is expected that a new sub-decree will come into force during the implementation period of the program. The present environmental management framework may then need to be updated and adapted, as required.

of environmental impact assessment, and provides a screening list (Annex 1) for determining the projects or activities that are subject to the preparation of an initial or full Environmental Impact Assessment (IEIA and EIA respectively) according to the modalities and procedures described in the sub-decree. The EIA process in Cambodia is illustrated in **Figure 1**.



**Figure 1: EIA process in Cambodia**

The EIA Sub-Decree is the principal piece of regulation regarding the environmental assessment requirements under Cambodian national law. It applies directly to the CAVAC activities and requires constant consideration throughout project implementation. In addition, there are several other laws and regulations related to environmental safeguarding that apply, either directly, or since they are part of the environmental impact assessment process. These regulations are not expected to require specific attention from the program, but they may be directly applicable to supported or subsequent activities. They include as following:

- Royal Decree on Establishment of Natural Protected Areas (November 01, 1993);
- Royal Decree on Establishment of Community Fisheries (May 29, 2004) (NS/RKT/0505/240);
- Royal Decree on Establishment of the Tonle Sap Authority (June 29, 2009) (NS/RKT/0609/705) as amended by Royal Decree (March 24, 2010) (NS/RKT/0310/258);
- Law on Environmental Protection and Natural Resource Management (December 24, 1996)(NS/RKM/1296/36);
- Law on Protection of Cultural Heritage (January 25, 1996) (NS/RKM/26);
- Law on Fishery Management for the Kingdom of Cambodia (May 21, 2006) (NS/RKM/0506/011);
- Law on Land (August 30, 2001) (NS/RKM/0801/14);
- Law on Forest (August 31, 2002) (NS/RKM/0802/016);
- Law on Water Resources Management (June 29, 2007) (NS/RKM/0607/016), subsequent sub-decrees and regulations;

- Law on Protected Area (January 02, 2008);
- Law on Management of Pesticides and Fertilizers (December 23, 2011);
- Sub-decree on Standards and Management of Agricultural Materials (October 29, 1998) (ANKR/BK/69);
- Sub-decree on Water Pollution Control (April 06, 1999) (ANKR/BK/27);
- Sub-decree on Solid Waste Management (April 27, 1999) (ANKR/BK/36);
- Sub-decree on Environmental Impact Assessment Process (August 11, 1999) (ANKR/BK/72);
- Sub-decree on Air Pollution and Noise Disturbance Control (July 10, 2000) (ANKR/BK/42);
- Sub-decree on Establishment and Management of Tonle Sap Biosphere Reserve (April 10, 2001) (NS/RKT/0401/070);
- Sub-decree on Community Forestry Management (December 02, 2003) (ANKR/BK/79);
- Sub-decree on Community Fisheries Management (March 20, 2007) (25 RGC);
- Sub-decree on Mechanisms and Procedures for Implementing the Law on Biosafety (June 24, 2010); and
- Sub-decree on Flooded Forest Demarcation (August 28, 2011) (ANKR/BK/197).

Also relevant are the legislation and regulations regarding protected areas. A Royal Decree on Natural Protected Areas was issued on 1 November 1993 for the RGC to manage, plan and develop a national protected area system for the protection of environment, land, forests, wetlands and the coastal zone. The 23 protected areas in four categories (National Park, Wildlife Sanctuary, Protected Landscape and Multiple Use Area) are under the jurisdiction of the Ministry of Environment (MOE). Additional protected areas - protected forests and landscapes, fish sanctuaries and fish habitat conservation areas - are under the control of MAFF and managed by the forestry and fisheries administrations. The Law on Protected Area Management NS/RKM/0208/007 of 15 February 2008 applies to all 23 protected areas under the control of the Ministry of Environment. An *“Environmental and Social Impact Assessment”* is required for any proposal for development activities within or adjacent to the protected areas, and this is to be submitted to MOE. The Royal Decree on the Establishment and Management of Tonle Sap Biosphere Reserve (2001) established the UNESCO-backed reserve that encompasses the Tonle Sap Lake and its floodplain, including an extensive buffer and transition zone.

The Sub-decree on Flooded Forest Demarcation (ANKR/BK/197), which was issued on August 28, 2011, aims at demarcating flooded forest area (with a total area of 647,406 ha) surrounding the Tonle Sap Lake (located in Kampong Chhnang, Pursat, Battambang, BanteayMeanchey, Siem Reap, and Kampong Thom province) to be protected. This area is under the jurisdiction of the Ministry of Water Resources and Meteorology (MOWRAM). It stipulates a zoning system for the area between the national highways and the Tonle Sap lake system determining the nature of agriculture activities that are permitted and banned in each zone.

Law on Management of Pesticides and Fertilizers has recently been adopted by the National Parliament since December 2011. The main objective of this law is to support the national agricultural sector policy in enhancing the potential of agricultural products and ensure effective

manage and control of pesticides, fertilizers, and other agricultural inputs as well as to mitigate risks resulting from use of pesticides and fertilizers for the sake of farmers by ensuring food security, public health and sustainable agro-ecosystem.

Cambodia is also party to a number of relevant international conventions and agreements (Table 1). From an environmental safeguarding perspective, of the above mentioned regulations the EIA Sub-Decree is the most prominent regulation for the implementation of CAVAC.

**Table 1: Relevant international conventions and agreements**

Agreement	Date of Ratification
Convention on Biological Diversity	Sep 17, 2003
United Nations Framework Convention on Climate Change	Dec 18, 1995
UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage	Nov 28, 1991
Kyoto Protocol	Aug 22, 2002
Convention on Wetlands of International Importance especially as Waterfowl Habitat	Oct 23 1999
Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal	Mar 02, 2001
Stockholm Convention on Persistent Organic Pollutants	Aug 25, 2006
Montreal Protocol on Substances that Deplete Ozone Layer	Jun 27, 2001
Vienna Convention for the Protection of the Ozone Layer	Jun 27, 2001
Cartagena Protocol on Biosafety	Sep 17, 2003
United Nations Convention to Combat Desertification	Nov 16, 1997
Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin	Apr 05, 1995

### 5.1.2 Australian Legal Framework

The key Australian laws and government policies applicable to CAVAC are the Environment Protection and Biodiversity Conservation (EPBC) Act (1999), AusAID's Environment Strategy (2007), and AusAID's Environmental Management Guide for Australia's Aid Program (2003)<sup>5</sup>.

#### *The Environment Protection and Biodiversity Conservation Act (1999):*

This is the central piece of legislation relevant to CAVAC's operations in Cambodia. The legislation has been operationalized for international development projects through AusAID's Environment Strategy and Environmental Management Guide for Australia's Aid Program, discussed below.

#### *AusAID's Environment Strategy (2007):*

This strategy aims to "sustain economic growth and reduce poverty in the Asia-Pacific region by improving the management of natural resources, increasing community resilience and better conserving natural heritage". To achieve its aim, the Strategy plans to build a portfolio of activities that directly target environmental challenges, and support a stronger commitment to environmental management across all sectors of development.

<sup>5</sup> The 2003 AusAID's Environmental Management Guide for Australia's Aid Program has been under revision for some time and a revised version is expected shortly. The present Environmental Management System will be updated accordingly.



The Strategy requires that CAVAC, at a minimum, meets AusAID's regulatory obligations under the EPBC Act by ensuring that the environmental impacts of all activities are appropriately assessed, managed and monitored.

*AusAID's Environmental Management Guide for Australia's Aid Program (2003):*

The Management Guide provides an overview of AusAID's environmental management system and outlines the steps to be followed in conducting environmental assessments of interventions, as well as the procedures for managing potential environmental impacts so that projects comply with the EPBC Act.

The guidelines stipulate that for flexible activities such as CAVAC, a program-level Environmental Management System (EMS) needs to be developed and implemented. Under the EMS, an initial environmental assessment needs to be completed for all initiatives, and where environmental issues are identified, an appropriate EIA must be conducted and an Environmental Management Plan (EMP) developed and implemented for each activity.

## **5.2 THE DEVELOPMENT FRAMEWORK**

The development framework within which CAVAC was designed and is implemented provides guidance on the assessment of the environmental impacts of the program (N. 2009a). The policies that provide justification for the program and the investments that are made as part of it also provide indications of what environmental impacts are considered acceptable by the RGC and what are not. In addition, in the particular case of CAVAC, the program must comply with both the Cambodian and the Australian requirements for environmental safeguarding. The standards framework used to value or qualify any particular environmental impact is quite different in the two countries. The Australian standards are explicit and elaborate, while the Cambodian standards need to be derived from approved and current policies. The assumption is that duly accepted and enacted government policies set a desired outcome status, and that minimized environmental impacts occurring inevitably during the implementation of the policy and the pursuit of its objectives are acceptable.

The Cambodian policy framework is set under the RCG Rectangular Strategy for Growth, Employment, Equity, and Efficiency and the National Strategic Development Plan (NSDP) (2004). These highlight the role of agriculture as a vehicle for macroeconomic and rural development. The Strategy for Agriculture and Water (SAW), 2006–2010, adopted by MAFF and MOWRAM in March 2007, and the Harmonized SAW 2010–2013, adopted in 2010, are the overarching frameworks for harmonizing government and development partner efforts in agriculture and rural development (ADB 2011). The overall goal of SAW is to contribute to poverty reduction, food security, and economic growth by focusing on six program areas: (i) policy and regulation; (ii) institutional capacity building and human resource development; (iii) research and education; (iv) food security; (v) water resource management and agricultural land management; and (vi) agricultural business and marketing. The Rice Export Policy (August 2010) and subsequent policy measures for the promotion of paddy production (2010–2015) and agricultural products export promotion action plans for 2009–2013 produced by MAFF show the country's strong intention to broaden its sources of growth and international competitiveness (ADB 2011).

## 6 ENVIRONMENTAL MANAGEMENT PROCESS

The environmental management process for CAVAC is in line with the steps outlined in the AusAID Environmental Management Guide for Australia's Aid Program 2003. The objective of the CAVAC environmental management process is *'to ensure that the environmental safeguarding requirements under both Cambodian and Australian national legislations are fully complied with'*. For this purpose, the process consists of a number of steps that are applicable to all CAVAC activities<sup>6</sup>, and that will result in a documented, comprehensive set of reviews, assessments, remedies, and management actions such as strategic choices, monitoring and evaluations.

All interventions will be assessed using this process, with the exception of the four research activities (including Rice Germplasm, Rice Establishment, Horticulture Value Chain, and On-farm Water Management) managed by ACIAR in Australia. The CAVAC Environmental Management System acknowledges that ACIAR have their own environmental safeguarding system that directly relates to the nature of their work, and it is the responsibility of ACIAR to be able to demonstrate compliance with the EPBC Act.

The CAVAC environmental safeguarding process consists of four discrete steps (Figure 2). In practice, the fourth step, referral to the Minister of Environment for advice in case of inherent negative environmental impacts, will likely not be used since such activities would be considered incompatible with CAVAC's objectives of supporting the development of sustainable agriculture in Cambodia. The option of the fourth step is included here for sake of completeness, in line with the AusAID guidelines. The four consecutive steps in assessing interventions of ongoing programs are as following:

- i. Initial Environmental Assessment (IEA): Screening and Scoping;
- ii. Environmental Impact Assessment (EIA);
- iii. Development of an Environmental Management Plan (EMP); and
- iv. Referral to the Minister.

The initiative for the implementation of the environmental safeguarding system lies with the component managers, under overall supervision of the general manager of CAVAC. The CAVAC Environmental Specialist will ensure timely implementation of the environmental safeguarding system and support the component managers and the general manager on environmental safeguarding matters. The Environmental Specialist will also ensure that the entire process is duly documented and environmental safeguarding activities are properly recorded. A database will be developed to manage and plan the environmental safeguarding activities, as well as to plan for compliance monitoring and evaluation.

The environmental safeguarding system as it is described here at CAVAC program level is not suited for the activities that are supported or financed through the Supplementary Investment Fund as part of the irrigation component. This is a fund that can be accessed by Farmer Water Users Communities (FWUC) and Commune Councils to fund small infrastructure investments for irrigation infrastructure (for instance, to fix broken sluice gates). The criteria for the selection of activities to be funded from

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<sup>6</sup>Except for the ACIAR research components, see further

the SIF include environmental considerations. However, to ensure that the overall CAVAC environmental safeguarding system is comprehensive, there needs to be a formal review process of the environmental risks attached to each of the activities that may be funded through the SIF, given their potential for direct negative environmental impacts. Applications for SIF funding will be screened for potential impacts and funding may be made conditional upon certain environmental safeguarding conditions. The applications will include an application form that identifies the proponent and a description of the activity to be funded. It aims at gathering information that allows selection, and environmental information should be included. Applications will be reviewed by the CAVAC Environmental Specialist, who will apply the CAVAC IEA screening sheet (Annex 2) and record the assessment and findings in the environmental safeguarding database. Due attention will be given to DRR requirements.

### Step 1: Initial Environmental Assessment

The possible environmental impact of an activity can only be determined adequately once the activity has been conceived to a level where sufficient detail is available about its characteristics, location and operation. Individual CAVAC interventions will be determined during the course of program implementation, and, in accordance with the AusAID guidelines, all the proposed interventions will be assessed on a case-by-case basis. An initial environmental assessment will be carried out for all initiatives to identify environmental issues and potential environmental impacts, and to ensure that the initiatives are compliant with the EPBC Act. At this stage, the proposed intervention will also be screened against the Cambodian EIA Sub-Decree requirements.

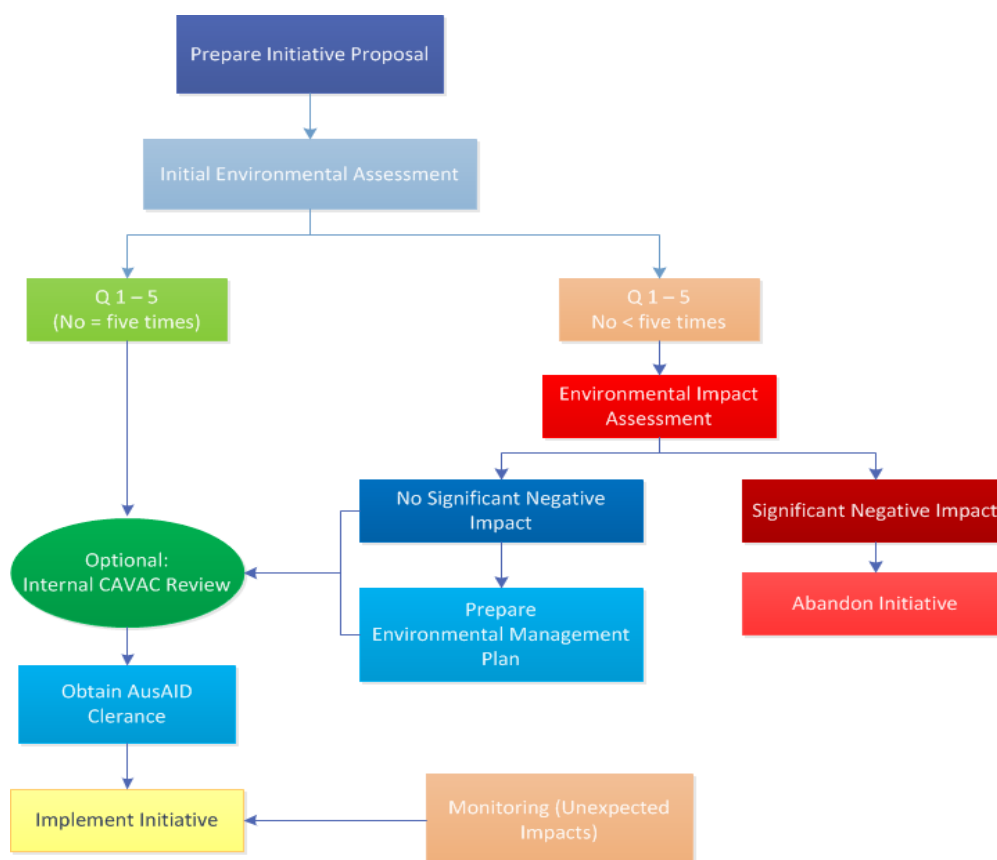


Figure 2: The CAVAC environmental safeguarding process. 'Q' refers to marker question.

This initial environmental assessment will be carried out during identification and initial assessment of interventions, and no later than at the preliminary stage of intervention preparation. The assessment will be undertaken by a designated and suitably qualified CAVAC's Environmental Specialist. It consists of answering environmental marker questions and initiating further action as may be required based on the answers to the marker questions.

The IEA marker questions are grouped in a check sheet for this purpose (Annex 2), and the completed check sheets are a minimum requirement for AusAID for an initial environmental assessment. While the completed check sheet provides a formal record that an IEA was carried out for the activity concerned, it is highly recommended that additional information is kept on record to substantiate the findings as recorded in the check sheet. The outcome of the screening of the proposed activity against the screening list of the RGC Sub-Decree on environmental impact assessment will also be recorded together with the answers to the environmental marker questions. IEA check sheets should be completed for all five markers, and the two additional questions, and not be halted once a positive score has been achieved on one of the marker questions.

The CAVAC staff member responsible for the intervention will also be responsible for completing the initial checklist, and the initial checklist will then be finalized by the CAVAC Environmental Specialist.

The AusAID Environmental Management Guide 2003 stipulates that *"for quality assurance purposes, the answers to all check sheet environmental marker questions are checked by AusAID's environment staff."* An arrangement to this effect will be agreed with AusAID.

Guidelines 3 and 4 of the Environmental Management Guide for Australia's Aid Program 2003 provide advice on answering these five environmental marker questions, including the suggested use of sectoral checklists to identify potential environmental issues. With respect to marker question 4, of the multilateral environmental agreements that are listed in the AusAID environmental guidelines, there is only one that is directly relevant to CAVAC, which is the *Convention on Wetlands of International Importance especially as Waterfowl Habitat* (1971), also known as the Ramsar Convention. Boeung Tonle Chhma, one of Cambodia's three recognized Ramsar sites, lies in Kampong Thom province and is part of the Tonle Sap floodplain.

Annex 2 to this document presents a tool for undertaking this assessment. It should be recognized that local circumstances may require consideration of additional attributes of the proposed initiative.

The result of this assessment will determine the need or otherwise for more detailed assessment. Should responses to all Environmental Marker Questions be 'no', the initiative can be implemented as is, with the CAVAC team responsible for monitoring for unexpected environmental impacts. These tasks shall be included in CAVAC's Monitoring and Evaluation process.

If responses to Environmental Marker Question 2, 3, 4 or 5 is 'yes', the CAVAC team will then proceed with a full Environmental Impact Assessment (EIA) and the preparation of an Environmental Management Plan (EMP) for the reviewed initiative, as outlined in Step 2 and 3 below.

In line with the envisaged integration of disaster risk reduction into the Australian aid program (AusAID 2009), the IEA will include a rapid examination of the proposed activity to ensure that it

does not contribute to the risk of disaster and that it is overall conducive to reducing disaster risk in ways described in the AusAID DRR document. This is of particular importance for interventions where CAVAC directly implements activities on the ground such as the construction or rehabilitation of irrigation canals where there are clear risks of flooding and landslides.

Step 1 also involves a checking of the proposed activity against the screening criteria listed in the Cambodian EIA Sub-Decree (Annex 1). If it is found that the proposed activity requires the implementation of an Initial Environmental Impact Assessment as defined in the EIA Sub-Decree, then CAVAC will contact the EIA Department of the Ministry of Environment to identify which further steps are required. It is anticipated that none of the CAVAC activities will trigger environmental safeguarding procedures under Cambodian law. The outcome of the screening process will be duly recorded and documented.

### *Step 2: Environmental Impact Assessment*

If negative environmental impacts are identified for an initiative in Step 1, the initiative will then be subject to a formal, comprehensive environmental impact assessment. The procurement of these specialist services will be conducted using CAVAC's procurement processes. The resulting EIA will identify, predict, and evaluate foreseeable environmental impacts. The EIA report will be reviewed by the CAVAC Environment Specialist.

The EIA will be carried out in compliance with the AusAID environmental guidelines<sup>7</sup> and in line with internationally accepted best practices for such cases. In most cases, an EIA based on existing information and data will suffice. However, in specific cases, specific investigations may be required to elucidate the extent of possible negative environmental impacts. The EIA will include a detailed description of the initiative that is being assessed<sup>8</sup>, a description of the baseline situation where the initiative is planned, the identification, and where possible quantification, of possible negative environmental impacts, an assessment of the acceptability or severity of the impact, identification of mitigation or prevention measures, and objectively verifiable indicators for monitoring and evaluation. Design alternatives, when available, that avoid potential negative environmental impacts should be included in the EIA.

Stakeholder consultation on the process and the findings of the EIA is a key element of the EIA process. The outcomes of the stakeholder consultation and how feedback received from stakeholders has been taken into account in the EIA or in the design of the initiative must be documented.

The conclusions of an EIA must be justified and documented, in particular for areas where the extent or character of a negative impact is not conspicuous.

The EIA must provide clarity regarding the expected environmental impacts of the initiative, and in particular with respect to the significance of such impacts as per the definition of significance provided in the AusAID guidelines. Environmental significance has a specific meaning under the Environment Protection and Biodiversity Conservation Act 1999 (Cwlth). In this respect, significant

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<sup>7</sup> The 2003 AusAID Environmental Management Guide contains a sample checklist that could be used to guide an EIA (Guideline 4, part 2).

<sup>8</sup> Including any design alternatives.

environmental impacts are negative impacts that are inherent in an activity irrespective of any positive impacts the activity may have or any proposed environmental management or mitigation measures. This is an uncommon use of the term 'significant', which in this context usually means sufficiently great or important to be worthy of attention, rather than inherent. In practice, it means that an initiative that has negative impacts that cannot be mitigated or prevented through altered design, is considered to have significant impact, and therefore must be referred to the Australian Minister of Environment and Heritage. The CAVAC Project Design Document (PDD) states that any proposed activity with significant negative environmental impacts that cannot be avoided will be rejected on the basis of being unsustainable.

### *Step 3: Environmental Management Plan*

When the EIA determines that the proposed initiative has no significant negative environmental impacts in the sense as determined in the EPBC, CAVAC can then proceed with the development of an Environmental Management Plan (EMP). The EMP will be prepared in compliance with the AusAID environmental guidelines. Once approval is received, the procurement of these specialist services will be conducted using CAVAC's procurement processes.

EMPs will seek to mitigate environmental impact through sound management processes, and responsibility for mitigation and prevention will be clearly defined. The EMP will be prepared by an independent environmental expert. It is expected that it will usually be prepared by the same person who prepared the EIA. The EMP will usually be in tabular form and present the offending impacts, mitigation strategies, responsibilities for mitigation, and indicators for monitoring. In addition, it clearly identifies effective ways in which monitoring outcomes are fed back into the management system.

### *Step 4: Referral to the Minister*

This step is included here for consistency with the 2003 AusAID Guide on environmental management. Initiatives that would require referral to the Minister due to significant negative environmental impacts will be abandoned by CAVAC, in line with its PDD.

### *Monitoring*

Effective compliance with national and AusAID environmental safeguarding legislation requires an extensive program of monitoring. Factors that need to be monitored relate both to the environmental safeguarding system as to the implementation of environmental management plans. Further, the program must remain vigilant for the occurrence of unforeseen environmental impacts.

CAVAC will establish and integrate into the overall program monitoring systems and processes, a monitoring scheme that will enable efficient and comprehensive follow-up of its performance as indicated by the following parameters:

- IEAs carried out for new program initiatives;
- IEAs carried out for unforeseen environmental issues that arise during implementation;
- IEAs carried out for SIF-funded activities;
- EIAs carried out for initiatives as identified during IEA;



- EMPs developed for initiatives as identified in EIA and not abandoned; and
- EMPs implementation.

Due to the nature of the programming of CAVAC activities, EIAs will typically be carried out during the early stages of development of specific interventions. Often, there will be changes to the initial concept before the design of the intervention is finalized. This raises the need to, as an initial step, compare the description of the interventions of the EIA report with the final designs, and then check if all the findings are still relevant or if there are substantive changes with probable consequences for the EIA findings or the EMP. The validity of the original EIA findings are then confirmed and documented. In case of significant changes, the same approach will be followed as that in case unanticipated environmental issues arise, as described further.

A database will be established, that will be used for recording, planning and monitoring of the program's performance on environmental safeguarding. The database will record all new initiatives that are included in the annual work plans and establish environmental safeguarding timelines and work plans based on the steps described in this environmental safeguarding system. The Environmental Specialist will liaise with other CAVAC staff regarding the implementation of the environmental safeguarding actions required for the initiatives. Provincial coordinators will liaise with program beneficiaries, in particular with respect to the planning of activities under the SIF and the monitoring of ongoing activities in the field.

The database will be used to record the program's performance on environmental safeguarding and to demonstrate that its legal obligations under both national and Australian rules have been met. A reporting scheme will be established that is integrated in the overall CAVAC reporting cycle.

Where unanticipated environmental issues arise, the activity will be taken through a new IEA exercise, followed by an abridged EIA if required, which will focus on the detected impact and its cumulative effects on any other impacts associated with the activity. Based on the outcome of the abridged EIA, the activity may need to be abandoned in case of significant environmental impact sensu EPBC act, i.e., impact that is inherent to the activity. For all other cases, where any impacts can be mitigated or further prevented through adjustments to the activity, a specific environmental management plan will be developed and implemented after AusAID clearance has been received. The records of the additional IEA, and any follow up activities will be kept like all the other records of environmental safeguarding activities.

In assessing specific proposals, CAVAC will take the following course:

- When assessing the likely impacts of the interventions, CAVAC will generally avoid undertaking activities leading to the development of new crops, unless there is an exceptional case which will be carefully assessed before proceeding.
- CAVAC will not undertake irrigation work which is likely to lead to the opening up of new land previously not used for cropping. It will generally look to areas where better water supply will lead to additional crops during the annual cycle. CAVAC understands that this is likely to lead to greater use of fertilizers and/or pesticides, and will manage this by working with FWUCs and monitoring the activity.

- Where CAVAC interventions will lead to the same crop cycle but higher yields, CAVAC will ensure proper safer and better use of fertilizers, and will work with government on ensuring better and appropriate use of pesticides.

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**ANNEX 1. SCREENING LIST OF THE RGC SUB-DECREE ON ENVIRONMENTAL IMPACT ASSESSMENT**

The present list is based on an unofficial translation provided by MoE of the Annex to the Sub-decree on Environmental Impact Assessment Process (August 11, 1999) (ANKR/BK/72) listing the industries that are subject to an IEIA/EIA, together with, where applicable, the threshold at which the IEAI/EIA becomes mandatory. If no threshold is specified, the IEAI/EIA requirement applies to all activities under that category, regardless of their size.

No.	Type and Activities of the Projects	Size/Capacity
<b>A Industrial</b>		
<b>I Foods, Drinks, Tobacco</b>		
1.	Food processing and caned	≥500 tones/year
2.	All fruit drinks manufacturing	≥ 1,500 liters/day
3.	Fruit manufacturing	≥ 500 tones/year
4.	Orange juice manufacturing	all sizes
5.	Wine manufacturing	all sizes
6.	Alcohol and beer brewery	all sizes
7.	Water supply	≥ 10,000 users
8.	Tobacco manufacturing	≥ 10,000 boxes/day
9.	Tobacco leave processing	≥ 350 tones/year
10.	Sugar refinery	≥ 3,000 tones/year
11.	Rice mill and cereal grains	≥3,000 Tones/year
12.	Fish, soy bean, chili, tomato sources	≥ 500,000 liters/year
<b>II. Leather Tanning, Garment and Textile</b>		
1.	Textile and dyeing factory	all sizes
2.	Garments, washing, printing, dyeing	all sizes
3.	Leather tanning, and glue	all sizes
4.	Sponge- rubber factory	all sizes
<b>III. Wooden Production</b>		
1.	Plywood	≥ 100,000m <sup>3</sup> /year(log)
2.	Artificial wood	≥ 1,000 m <sup>3</sup> /year (log)
3.	Saw mill	≥ 50,000m <sup>3</sup> /year (log)
<b>IV. Paper</b>		
1.	Paper factory	all sizes
2.	Pulp and paper processing	all sizes
<b>V. Plastic, Rubber and Chemical</b>		
1.	Plastic factory	all sizes
2.	Tire factory	≥500 tones/year
3.	Rubber factory	≥ 1,000 tones/year
4.	Battery industry	all sizes
5.	Chemical production industries	all sizes
6.	Chemical fertilizer plants	≥ 10,000 tones/year
7.	Pesticide industry	all sizes
8.	Painting manufacturing	all sizes
9.	Fuel chemical	all sizes
10.	Liquid, powder, solid soaps manufacturing	all sizes

<b>VI Mining Production other than Metal</b>		
1.	Cement industry	all sizes
2.	Oil refinery	all sizes
3.	Gas factory	all sizes
4.	Construction of oil and gas pipeline	≥ 2 km
5.	Oil and gas separation and storage facilities	≥ 1,000,000 liters
6.	Fuel stations	≥ 20,000 liters
7.	Mining	all sizes
8.	Glass and bottle factory	all sizes
9.	Bricks, roofing tile manufacturing	≥150,000 piece/month
10.	Flooring tile manufacturing	≥90,000 piece/month
11.	Calcium carbide plants	all sizes
12.	Producing of construction materials(Cement)	≥ 900 tones/month
13.	Cow oil and motor oil manufacturing	all sizes
14.	Petroleum study research	all sizes
<b>VII Metal Industries</b>		
1.	Mechanical industries	all sizes
2.	Mechanical storage factory	all sizes
3.	Mechanical and shipyard enterprise	all sizes
<b>VIII Metal Processing Industrials</b>		
1.	Manufacturing of harms, barbed wires, nets	≥ 300 tones/month
2.	Steel mill, Irons, Aluminum	all sizes
3.	All kind of smelting	all sizes
<b>IX Other Industries</b>		
1.	Waste processing, burning	all sizes
2.	Waste water treatment plants	all sizes
3.	Power plants	≥ 5 MW
4.	Hydropower	≥ 1 MW
5.	Cotton manufacturing	≥ 15 tones/month
6.	Animal's food processing	≥ 10,000 tones/year
<b>B. AGRICULTURE</b>		
1.	Concession forest	≥ 10,000 ha
2.	Logging	≥ 500 ha
3.	Land covered by forest	≥ 500 ha
4.	Agriculture and agro-industrial land	≥ 10,000 ha
5.	Flooded and coastal forests	all sizes
6.	Irrigation systems	≥ 5,000 ha
7.	Drainage systems	≥ 5,000 ha
8.	Fishing ports	all sizes
<b>C. TOURISM</b>		
1.	Tourism areas	≥ 50 ha
2.	Goal field	≥ 18 holes
<b>D. INFRASTRUCTURE</b>		
1.	Urbanization development	all sizes
2.	Industrial zones	all sizes
3.	Construction of bridge-roads	≥ 30 tones weight
4.	Buildings	height ≥ 12 m or floor ≥ 8,000 m <sup>2</sup>



5.	Restaurants	≥ 500 seats
6.	Hotels	≥ 60 rooms
7.	Hotel adjacent to coastal area	≥ 40 rooms
8.	National road construction	≥ 100 km
9.	Railway construction	all sizes
10.	Port construction	all sizes
11.	Airport construction	all sizes
12.	Dredging	≥ 50,000 m <sup>3</sup>
13.	Dumping site	≥ 200,000 people

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**ANNEX 2. INITIAL ENVIRONMENTAL ASSESSMENT CHECK SHEET**

Intervention Plan No.:	
Intervention Plan Title:	
Assessed Date:	
Assessor Name:	
EMS Database Doc No.	
<b>Conclusion:</b>	<b>Proceed</b> <input type="checkbox"/> <b>EIA</b> <input type="checkbox"/> <b>Cambodian IEIA</b> <input type="checkbox"/>

**1. AusAID's EMS Requirements**

No.	Question	Yes	No
<b>1.</b>	<b>Is the initiative in an environmentally sensitive location or sector? (Does the initiative include the following sensitive locations or sectors?)</b>		
Locations	Forests, including tropical rainforests or vegetation?	<input type="checkbox"/>	<input type="checkbox"/>
	Wetlands, floodplains, lakes, mangroves?	<input type="checkbox"/>	<input type="checkbox"/>
	Water sources (potable) or their margins?	<input type="checkbox"/>	<input type="checkbox"/>
	Steep lands, mountain areas?	<input type="checkbox"/>	<input type="checkbox"/>
	National parks, protected areas, areas of high biodiversity values?	<input type="checkbox"/>	<input type="checkbox"/>
Sectors	Rural development, including agriculture, forestry, and fisheries?	<input type="checkbox"/>	<input type="checkbox"/>
	Infrastructure construction (roads, irrigation canals, hydraulic structures)?	<input type="checkbox"/>	<input type="checkbox"/>
	Water resources (head works, dams, flood control)?	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.</b>	<b>Is there potential for the initiative to have an impact on the environment?</b>		
Could the initiative result in:	An environmental effect on a community?	<input type="checkbox"/>	<input type="checkbox"/>
	The transformation of an area?	<input type="checkbox"/>	<input type="checkbox"/>
	Any impact on ecosystems of an area?	<input type="checkbox"/>	<input type="checkbox"/>
	Any diminution of the aesthetic, recreational, scientific or other environmental quality of value of an area?	<input type="checkbox"/>	<input type="checkbox"/>
	Any adverse effect on an area or structure, that has aesthetic, anthropologic, archaeological, architectural, cultural, scientific or local significance or other special value for the present or future generations?	<input type="checkbox"/>	<input type="checkbox"/>
	The endangerment, or further endangerment, of any species of fauna or flora?	<input type="checkbox"/>	<input type="checkbox"/>
	Important long term effects of the environment?	<input type="checkbox"/>	<input type="checkbox"/>
	The degradation of the quality of the environment?	<input type="checkbox"/>	<input type="checkbox"/>
	The curtailing of the range of beneficial uses of the environment?	<input type="checkbox"/>	<input type="checkbox"/>
	The pollution of the environment?	<input type="checkbox"/>	<input type="checkbox"/>
	Environmental problems associated with the disposal of waste?	<input type="checkbox"/>	<input type="checkbox"/>
	Increased demands on natural resources that are, or are likely to be, in short supply?	<input type="checkbox"/>	<input type="checkbox"/>

<b>3.</b>	<b>Is the explicit, or implicit, aim of the initiative to have a positive environmental impact?</b>		
	Does the aim of the initiative include a positive environmental impact?	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.</b>	<b>Is the initiative relevant to multilateral environmental agreements?</b>		
	Is the initiative relevant to multilateral environment agreements?	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.</b>	<b>Could the initiative have significant negative environmental impacts?</b>		
	Direct, indirect and cumulative impacts?	<input type="checkbox"/>	<input type="checkbox"/>
	All on-site and off-site impacts?	<input type="checkbox"/>	<input type="checkbox"/>
	All positive and negative impacts, but especially the total negative impact that can be attributed to the initiative over the entire geographic area, and over time?	<input type="checkbox"/>	<input type="checkbox"/>
	The frequency and duration of the activity?	<input type="checkbox"/>	<input type="checkbox"/>
	The characteristics and sensitive of the receiving environment?	<input type="checkbox"/>	<input type="checkbox"/>
	The degree of confidence with which the impacts of the initiative are understood and known?	<input type="checkbox"/>	<input type="checkbox"/>

## 2. Disaster Risk Reduction

<b>6.</b>	<b>Does the initiative have the potential to create or aggravate disaster risk?</b>	<b>Yes</b>	<b>No</b>
	Flooding	<input type="checkbox"/>	<input type="checkbox"/>
	Land slides	<input type="checkbox"/>	<input type="checkbox"/>
	Traffic hazards	<input type="checkbox"/>	<input type="checkbox"/>

## 3. Annex to Sub-decree on Environmental Impact Assessment Process (August 11, 1999) (ANKR/BK/72)

<b>7.</b>	<b>Is the activity/initiative listed in the screening list of the Cambodian EIA Sub-decree or, the case being, does it exceed any of the thresholds listed?</b>	<input type="checkbox"/>	<input type="checkbox"/>
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**\*\*\* Attach additional information in support of the above findings as needed \*\*\***