1. Introduction

1.1 Project Background

The project *Provincial Capacity Building in Coastal Zone Management in Cambodia* started in May 1997 as a co-operation between Danida and the Royal Government of Cambodia. The Environmental and Disaster Relief Facility (EDRF) financed the Danida contribution to the Project.

The present phase covered a transition period from May 1999 to December 1999. Kampsax International provided the consultancy services during this period. Phase 2 of the project will begin in April 2000.

The purpose of the Transition Phase project was to consolidate the results achieved during the first phases of the Project and to further strengthen the institutional framework.

Five additional case studies were conducted, including alternative livelihoods in the mangroves area from which the present report received some information.

1.2 Objectives of the study

The objectives of this study are to:

- give an overview of the salt farming activities in the coastal zone of Cambodia especially in Kompot Province and Kep Municipality. This includes a review of the economic aspects of the salt farm industry.
- examine the land tenure problems linked to this activity, especially in connection with conversion of mangroves and with a special emphasis on gender aspects.
- provide recommendations for addressing the identified issues.

These objectives are somewhat wider than the objectives formulated in the Project Document, which focused on tenure. However, we considered it necessary to give a more complete picture of the salt farming industry in Cambodia. This does not seem to be documented elsewhere and is necessary for understanding the underlying forces of this economic activity.

1.3 Methodology

The report compiles information collected by two teams using two different approaches.

The first team conducted by HE Keo Khemara from the Ministry of Land Management, Urban Planning and Urbanization collected information mainly from the salt federation staff and from several big producers of salt. A substantial part of information also comes from HE Khemara's personal experience in the salt business.

The second team (headed by Silaka, a Cambodian NGO) was been working in the field in collaboration with local staff from the Department of Environment, Department of Women Affairs and Department of Industry, Mines and Energy. Although this study was constrained by the short time available, the government counterparts were involved as much as possible.
including development of the questionnaires and collection of information. Due to the limited time, the findings have not been shared with the government or community stakeholders as previously intended (this may be taken up during the next phase).

A questionnaire was developed by four representatives from the government departments in Kompot, Kep and SILAKA's Research Coordinator and Gender Expert. From the original TOR, seven major subject matters were outlined and written in Khmer. The team then went through each of the seven major subjects and elaborated themes to better develop and support the information needed to satisfy each of the seven subjects.

After developing the questionnaires, a half-day workshop was held in Kompot to discuss the information collection methodology and other issues of concern. The workshop identified the team members and the location and procedures for information collection. During the workshop, the two interviewers groups also developed an information collection plan with a time frame outlining the number of interviews and focus group discussions. Information collection was broken into 28 in-depth interviews with key informants and two focus group discussions with female salt farm workers.

Four days were used for collecting the information in the field. Regular meetings with the information collection team were held when possible, but this was not always feasible considering the distance between the two locations and the limited time frame.

The report was put together by E. Baijot based on these contributions.

2. Characteristics of the area

2.1 Social and economic development

The CZM project has previously made several socio-economic studies of coastal village in Kompot province and Kep municipality. Please refer to those studies for a more detail description.

In 1998, the population of Kep municipality was 28,677 and for Kompot province 527,904.

The majority of the local coastal rural population sustains its livelihood from small-scale fishing activities and from rice paddy culture (especially in Kompot) and, to a lesser extent, extraction of forest resources. Plausible fisheries statistics are not available since provincial fisheries officer request catch figures to be disclosed by the fishermen who then have to pay taxes on their catch.

In the course of the political turmoil, which plagued the country during the past 2 decades, there have been significant demographic shifts. In their despair to find better livelihood, families from inland headed for coastal regions with a hope to find better conditions. Their living conditions are characterized by the following circumstances:

- Indebtedness
- Conflicts, piracy, extortion of fees from militia and other influential powers (incl. at illegal checkpoints)
- Lack of proper drinking water supply, or complete absence of drinkable water in the neighborhood of the settlement
- In most cases, no health facilities and service are available
- Poor education system
- Few social roots or relative bands in the region
- Lack of or limited traditional knowledge of the coastal resources and how to rationally use them (since many are new comers).

2.2 Biophysical conditions

Mangrove forests are the prevailing ecosystem in many coastal zones of Cambodia. Mangroves
commonly occur in estuarine systems and as fringing belts on near shore creeks, lagoons and in marine sheltered bays. A total of some 30 true mangroves and about one dozen of mangrove associate species have been identified by the project (see: Assessment of sustainable livelihood alternatives to mangrove exploitation, November 1999).

In coastal flats with highly saline sandy soils, like in areas where extensive salt farm development takes place (e.g. Kompot Province) the predominant mangrove species are *Avicennia* on the seaward side and *Lumnitzera* in the landward side. In the latter environment, fringing mangroves tend to have stunted growth, which is attributed to physiological stress for the vegetation that has to cope with infertile saline soils, fine sand accumulation, and high evaporation rates due to wind exposure.

Shrimp farms were developed early in Kompot province. According to MoE and MAFF sources, shrimp fanning began in Kompot Province in 1989; reportedly, there were 54 shrimps farms in 1995 covering 422 ha. As in many other places, about 70% of those shrimp farms have been abandoned. Failures of shrimp fanning are attributable to various factors like:

- Poor soil quality (acid soils);
- Diseases;
- Unfavorable (seasonal) salinity;
- Poor pond management (e.g. draining, disinfecting, water level, aeration, dam and sluice maintenance, feeding regime etc.);
- High (lethal) ammonia concentrations in pond water
- Insufficient supply of larvae caught in the wild.

Shrimp pond development in Cambodia reflects almost identically those environmental and social problems that have been identified in other countries of SE Asia, above all in neighboring Thailand. Problems range from the elimination of valuable mangrove vegetation and alteration of soil and water quality to interference with adjacent eco-systems (depending on intact mangroves) and the socio-economic imbalances within rural communities.

### 3. Salt production in the coastal zone

#### 3.1 Historical aspects

The topography of Kompot province is suitable for salt production and salt farms are now common throughout the Kompot and Kep countryside adjacent to the sea. There is still some controversy about how salt production was first introduced into Cambodia. Some claim that during the colonial time most of salt producers/farmers were Chinese immigrants from Hainan (China) brought into Cambodia by the French as workers for farming, food processing and trade. According to government officials and salt farm owner, Kompot and Kep has been a traditional salt farm area for several decades. On the other hand, E. Menetrier did not mention any salt farm activity in his "Monographie de la circonscription residentielle de Kampot" (Edition d. Extreme Asie, Saigon, 1924), while other small industries already existed. Actually, he reported that salt then was imported from Bangkok.

Before Pol Pot regime, a few businessmen owned some 3,000 hectares of salt farming land. They hired workers to work in their farms and established a salt co-operative in order to market their product all over the country.

During Khmer Rouge time, salt farming was changed to a socialist co-operative. Most of workers were women. Boeung Rong, where geographical conditions are the best for salt farming, was used for this purpose. The salt produced was reported to be of moderate quality. Kompong Trach, Ses Sor and Kep were empty land during that time.

Land was initially "seized" from individuals and deemed to belong to the State during Khmer Rouge rule from 1974 to 1979. During this period, salt farming became an important State asset that produced enough salt to export to China.

The Vietnamese occupation that began in 1979 caused a change in government policies. The
production of salt in Kompot and Kep took a downturn between 1979 and 1985. The salt farms were no longer a government priority even though operations continued as a State owned enterprise. In 1986, the Cambodian government changed approach and allowed the salt farm workers to borrow the land from the government if they paid annual taxes. The continued movement towards privatization of most government businesses led to increased production. As the production of salt increased, however, the Kompot and Kep areas soon became strife with land tenure issues and environmental mismanagement.

During the late 1980s and early 1990s, salt farming was profitable since the regional salt production decreased as some salt farm owners went in search of higher profits with shrimp farming instead. However, this situation changed again when most shrimp farmers decided to return to salt farming after having experiencing losses from shrimp farming.

In 1996, the four years mandate of the contested co-operative expired and the responsibility was handed over to private companies. This generated frustration among the big salt farmers and therefore they were allowed to owner 49% of the shares. This body was called the Salt Federation or also the co-operative.

In early 1998, the Federation ran out of capital and was obliged to establish a joint venture with Pheapimex, a private company. The new contract gave to Pheapimex 51% of the capital. This new organization is named Pheapimex Co-operative. It obtained an exclusive right from the government to sell the produced salt (subject to certain conditions).

3.2 Location and distribution

Salt production in Cambodia is exclusively made in Kampot province and Kep municipality. There are six production locations where lands are sandy and easily irrigated. Those are Boeung Roung I and II, Ses Sor, Boeung Touk, Treoy Koh, Kampong Trach and Kep. Boeung Roung I is the biggest and produces high quality salt.

The table and map below indicates the location and the encroachment of the salt farming into the adjacent areas. In the last two years, the salt farming area has expanded to an additional area of 471 hectares distributed as follows:

- 181 hectares in Baeung Rang
- 262 hectares in Ses Sar
- 153 hectares in Kep

This expansion took place in 1997 and 1998, especially after Pheapimex Co-operative provided loans to the farm owners. The salt farm areas in Boeung Tuk and Troey Koh was reduced by about 125 hectares in Kampong Trach due to poor infrastructure, high transport costs and other problems.
**Table 1. Salt production** (Source: Salt Federation, 1999)

<table>
<thead>
<tr>
<th>No.</th>
<th>Location (see the map)</th>
<th>Area (ha)</th>
<th>Production (tons)</th>
<th>Number of farms*</th>
<th>Distance to Kompot town (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boeung Roung I+II</td>
<td>1,271</td>
<td>20,000</td>
<td>26</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Ses Sor</td>
<td>300</td>
<td>7,070</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Boeung Tuk</td>
<td>320</td>
<td>5,000</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Troeuy Koh</td>
<td>990</td>
<td>24,000</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Kompong Trach</td>
<td>540</td>
<td>14,000</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>6</td>
<td>Kep</td>
<td>677</td>
<td>6,000</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>4,098</strong></td>
<td><strong>76,774</strong></td>
<td><strong>97</strong></td>
<td><strong>162</strong></td>
</tr>
</tbody>
</table>

*A farm means a landowner with his workers*

The distribution of the salt farms is as follows:

<table>
<thead>
<tr>
<th>Size</th>
<th>%</th>
<th>Number of farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 5ha</td>
<td>11.1</td>
<td>19</td>
</tr>
<tr>
<td>5-20ha</td>
<td>47</td>
<td>78</td>
</tr>
<tr>
<td>20-50ha</td>
<td>29</td>
<td>48</td>
</tr>
<tr>
<td>50-100ha</td>
<td>9.2</td>
<td>15</td>
</tr>
<tr>
<td>100-200ha</td>
<td>3.1</td>
<td>5</td>
</tr>
<tr>
<td>over 200ha</td>
<td>0.6</td>
<td>1</td>
</tr>
</tbody>
</table>

**3.3 Technical aspects**

Sun is very important to salt farming; salt farming is only possible during the dry season, which usually lasts five to six months. Salt farming also requires seawater and a shallow pond with a bottom of compacted dirt and sand. Channels are prepared between the sea and the salt fans. Diesel powered pumps lift the seawater from the main channels to the ponds.

By October-November, most of the salt farms are ready for production. The equipment includes pump, hoe, wire basket, spade, rake, soil compactor etc. The farmers start to repair bridges and build dikes for the ponds where production will take place. The production system utilizes three types of ponds:

- **a. Reservoir pond**
  This pond is used to stock the seawater pumped either directly from the sea or mostly from a supply channel. The dikes are 0.60 to 1.00 meter high. The bottom of this pond is higher than the other two ponds in order to make sure that seawater from this pond easily flows to others. In some cases, a reservoir pond is not used.

- **b. Evaporating ponds**
  This area is divided into 5 blocks. Starting from the reservoir field, the sizes of the blocks range from the biggest one to the smallest ones. There is no standard size for those plots. Seawater becomes saltier as it flows along from one block to next one. The salinity typically increases from 1 -3 to 7 -12 to 18 -21 to 25 -30. It takes about 40 days to flow through the five blocks in order to concentrate seawater up to 25 -26%. It is then released into the third pond, the crystallization pond.

- **c. Crystallization pond**
  After 5 to 6 days under the sun, the seawater starts crystallizing. When the salt crystallization reaches maturity it is collected into small stacks and then transported into the warehouse made of wood and corrugated sheets. Finally, the pond is cleared, and the process is repeated.
This field requires very careful preparation. It is divided into blocks of 13x20 m, 10x30 m, and 15x30 m in order to facilitate leveling of the bottom and compaction of the sand in 3-5 cm thickness.

3.4 Salt quality

The quality of salt produced in Kompot and Kep does not meet the international standard that specifies moisture content less than 4%. Salt is locally divided into three types:

- First quality: white and fine salt with low moisture (less than 4%). It is produced through boiling low quality black salt and then crystallises it by natural evaporation. The production is about 215 tons per annum only.

- Second quality: white salt with 5.77% moisture. This salt is used mainly for food ingredient.

- Third quality: grey and coarse salt that contains some impurities. This salt is mainly used for salting fish.

There is no iodine in natural salt. The World Health Organization (WHO) therefore recommends that iodine be added before it is sold to consumers.

3.5 Main problems faced by the salt farmers

3.5.1 Lack of capital for investments

Very few farmers are able to run their business without external financial support; most need loans for investment in infrastructure such as buildings, roads, repairing dikes, deepen channels etc. Previously, co-operatives helped their members to solve problems such as seeking loans.

Currently, the Salt Federation provides loans to its members in proportion to the value of their salt production. It will lend 5,050 Riel to produce a bag of 70 kg of salt. The average selling price is 10,000 Riel per bag, and after deduction of various expenditures, the gross profit is 4,000 Riel per bag. This is shared equally between the producers and the co-operative. The interest rate calculated from this is about 40 per cent (2,000/5,050). This compares with an interest rate from private moneylenders of about 36 per cent and from the bank only 20 per cent.

The loan is disbursed in phases:

30% during preparation prior to production
20% during the production stage
50% during salt collection

The producer has to pay a tax of 1,000 Riel per bag to the company. The company in its turn pays the government 950 Riel per bag.

3.5.2 Climatic conditions

Unpredictable drought and flood causes serious problems to the farmers. The drought in 1998 resulted in a high salt production that both generated surpluses and lowered the market price. This over-production could not be exported due to its low quality. It was thus stocked. Conversely, in 1999, there was a severe flood in July/August and about one fourth of the total production was lost. Farmers had additional costs to prevent flooding and repair damaged infrastructure.

3.5.3 Loss of salt

It is estimated that up to 20% of the production is lost during stocking and transport from the warehouse to the end-users.
3.5.4 Unstable market prices

Price fluctuations are huge and can exceed 50% depending on season and market demand. The demand for salt is especially high during the fish salting season. Price fluctuations are also caused by middlemen and smuggling activities across the Vietnamese-Cambodian border. The managers of the co-operative estimate that during fish salting season about ten thousand tons of salt are illegally imported from Vietnam by boat. Salt is also imported from Thailand, especially in the border provinces of Battambang and Bantey Manchey. In this case, salt is often sold with no profit, since salt is mainly used to hide other smuggled goods such as liquors and other valuable goods.

The Salt Federation has gained experience in controlling excessive price fluctuation. Competition amongst the farmers to sell the surplus has previously caused price declines.

In 1997 the price was down to 3,000 Riels per bag of 70 kg, but in 1998 and 1999, it has remained stable at 10,000 Riels per bag. It is predicted that the price may decrease in 2000 as thousands of tons of surplus are stocked in the warehouses and cannot be absorbed by the market.

3.5.5 Technical and managerial problems

Production techniques have not improved and most of the product does not match the international standards. The World Food Program is implementing a program in Kompot province to improve the quality and provide assistance to enrich the salt with iodine.

There is a need to improve the management of the production system, the techniques and the marketing.

4. Environmental problems

4.1 Mangrove forests and salt farms

Since the restructuring of the co-operative society in 1998, the small and medium producers have funds to develop an additional 471 ha for salt farming. These new production areas will mainly be building at the expense of the adjacent paddy fields or of the remnants of the mangrove forests.

The mangrove forest area is not considered by the producers as suitable to be converted to salt farm producing areas, because the soil is muddy and soft. The producers prefer areas with natural and clean sand. Moreover, the costs for land deforestation can be huge, higher than the cost of land itself. The producers therefore prefer to convert the adjacent paddy fields into salt pans or to resume the exploitation of the former abandoned salt farmland, rather than starting to clear mangroves areas.

Conversion of mangroves to salt farms therefore mainly takes place in the inner fringe of the mangroves where the vegetation has been heavily cut and only stunted growth remains. In some areas, land is also cleared for speculative purposes, as seaside land is expected to yield a substantial increase of value in the future. Nevertheless, this does not seem to be a general trend.

When visiting the Kompot and Kep countryside, there are instances when for kilometers all that can be seen is salt farmland, while at other locations, the salt farms are intermittently located in-between rice fields. Informants mentioned the conversion of rice fields into salt farms, but this study was not able to determine the extent of the phenomena.

4.2 Soil erosion

A typical salt farm in Kompot and Kep region is only productive during the dry season from December to May. During the rest of the year, the salt farm is pretty much abandoned as young mangroves sprout and algae quickly forms over the barren land during the rest of the six to seven months of the year. Considering that salt farms consist of nothing more than compacted earth, a
fair amount of soil erosion occurs during the non-productive months. However, as the rainy season stops, the salt farms start to return to life. Mangroves that have taken root throughout the salt farm must be removed and the algae that have established themselves on the surface need to be scrapped off. The mud embankments surrounding the ponds must also be repaired as the past seven months of rain and wind has leveled and eroded them.

4.3 Saltwater intrusion to rice fields

Informants mentioned the problem of salt farms leaking saline water into neighboring rice fields and thus damaging crops and soil. Salt farms are often bordering rice fields and saltwater regularly leaks into adjacent rice fields. This is a major cause of conflict between the community and the salt farms.

4.4 Environmental awareness

Discussions with government staff indicated that cutting of mangroves has been reduced after recent government laws and intervention. Most informants agreed that in the past the destruction of mangroves was indiscriminate. The destruction of mangroves did affect the coastal ecosystem, which the fishing industry depends heavily on. A previous CZM study (3/1999, p. 19) mentioned that informants identified the destruction of mangroves for salt farms as a major reason for the reduction of marine resources including shrimp. The current study does not have access to updated satellite mappings (i.e. based on recent aerial photos) nor was the study able to verify from local people whether the salt farms have respected the laws protecting the mangroves. Most people interviewed seemed to agree that the government has helped to protect the mangroves. It should be noted that the informants appeared to have a high awareness of the ecological function of mangroves. At the same time, informants also acknowledged the profit potential of salt farms, which is most likely a stronger incentive for destroying mangroves (despite the inappropriate quality of the soil).

5. Socio-economics aspects

5.1 Production and consumption

Different sources (Salt Federation, local producers and interviewees) indicate that the yield per ha ranges as follows:

- 10 - 20 tons/ha per season for new farm land in its two first years;
- 20 - 25 tons/ha per season for old farmland.

Under favorable conditions, the yield can reach 50-60 tons/ha.

The average national production is estimated at 85,000-130,000 t annually.

According to the Salt Federation, the average consumption per capita is 10 grams per day. With the present national population of 12 millions people, the human consumption in Cambodia is therefore about 45,000 tons per year. Other consumption are linked to animal raising and fish salting and are summarized as fellows:

<table>
<thead>
<tr>
<th>Type of consumption</th>
<th>Annual consumption (tons)</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human consumption</td>
<td>45,000</td>
<td></td>
</tr>
<tr>
<td>Fish salting and other</td>
<td>30,000</td>
<td>1995</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal raising</td>
<td>10,000</td>
<td>1995</td>
</tr>
<tr>
<td>Total</td>
<td>185,000</td>
<td></td>
</tr>
<tr>
<td>Losses</td>
<td>20% of the production</td>
<td>Average figure, occurs mainly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>During storage and transportation from warehouse and consumers</td>
</tr>
<tr>
<td>Illegal import</td>
<td></td>
<td>Estimate between 10,000-20,000 tons per year.</td>
</tr>
</tbody>
</table>
The table shows that in average there is a good balance between consumption and production. However, the general opinion of the businessmen of this sector is that the surplus is growing. Salt produced in Cambodia cannot be exported, as the quality does not meet international standards.

5.2 Pricing

There is a significant market demand for second quality salt. It is sold 10,000 Riels per bag of 70 kg in Kompot province. Transportation and road conditions strongly effect market price. For instance, from Kompot to Phnom Penh the cost of transport ranges from 1,100 up to 1,500 Riels per bag (for big truck with trailer that can load up to 560 bags). The price reaches 13,000 Riels in Phnom Penh, 15,000 Riels in Pursat and 17,000 Riels in Battambang and 18,000 Riels in Bantey Meanchey respectively.

5.3 Investment aspects

For most of the salt farmers, the main criteria for developing a new salt pan are as follows:

- low cost of land and easy to clear from any vegetation;
- close to the sea or canal which will lower the irrigating or pumping costs; sandy soil with a low slope;
- easily accessible with good infrastructure.

The price of a new land ranges from 1-2 millions Riels, for existing farmland cost 4-20 million Riels depending on location, production capacity and quality of salt. The most expensive land is located in Boeung Roung I.

The cost to clear forest is 1-3 million Riels per hectare depending on the density of the vegetation. The cost increases to 5 million Riels for a densely forested area.

The incomes per ha of good salt farmland can reach up to about 4,000,000 Riels which is 3 to 4 times higher than the revenues generated by paddy field.

5.4 Employment

At present, approximately 4,000 persons are involved in salt production (3,200 in 1995).

Salt farming is a form of off-season employment for rice farmers living in the communities near the salt farms. After the planting and harvesting of rice, the men often seek work as motorcycle driver in Phnom Penh or as construction workers while wives, parents and children remain to look after the property. The people who remain may work as labourers in the salt farms.

The perception of the community around salt farms is that the salt farm work is relatively easy, but the pay is low. However, for the salt farm workers, there appears to be no other source of additional income. The salt farm worker is someone who does not normally fish, whether because they are physically unable or because they are afraid of the sea.

The choice is limited according to the informants: they can either sit at home and earn nothing or go to work in the salt farm and earn 2,500 to 7,000 Riels a day.

The salt farm workers were asked about alternative sources of income. From discussions with the salt farm workers, it was learned that most own at least some land and a house in a nearby community. The land provides a basic shelter, a rice field and crops such as bananas and vegetables. During the season in which the salt farm workers do not work on the salt farm, they are normally engaged in rice farming.

During focus group discussions, the women were asked about additional sources of income. Roughly, two out of five responded that they were given a certain amount of raw unprocessed salt from the salt farms, which they took home and boiled. The boiling process refined the salt and added value to the finished product that was then sold in near-by markets.

Labour wages are reported as follows (source: interviews):
- Skilled workers receive 200,000 Riels per month
- Security guards and soil compaction workers receive 4,000 to 7,000 Riels per day
- Salt carriers receive 3000 Riels per day
- Salt packagers receive 100 Riels per bag
- Salt porters (from warehouse to truck) receive 150 to 200 Riels per bag.

Salt farms employ mostly unskilled or low skilled labour from the communities surrounding salt farms. The work is more relatively demanding at the start of the salt farming season, when the salt farms have to be prepared for the production process. The dam needs to be reinforced and the ponds need to be scrapped of algae and mixed with sand to improve the quality of salt. Once the preparation is done, the work becomes less demanding as the workers simply overlook and maintain the flow of water and wait for the sun to do its work. Occasionally, the water pump will break down and the male workers will have to fix it. Other than that, the job just calls for raking, bagging and storing the produced salt in a private or government warehouse.

The benefits available to salt farm workers vary depending on the skill level of the work required, the length of employment, and the distance between the worker's actual home and workplace. Work on a salt farm can be calculated on a daily basis as well as on a monthly basis, depending on whether the worker is a permanent or temporary employee. The permanent workers have a regular monthly salary, while the temporary worker's assigned duties are based more on the quantity of a specific task rather than by the day, week or month. During a visit to a salt farm, a young female worker reported being paid 5,000 Riels for clearing a certain area for algae. She shared the work and the pay with another young girl.

During in-depth interviews and focus group discussions, it was mentioned that the salary of salt farm workers, both permanent and temporary workers, ranged from 2,000 to 7,000 Riels a day. The workers often received other benefits in addition to salary. The most common benefit was a portion of the salt produced, which the worker usually took home and refined through a boiling process before selling it at the market.

Occasionally, the salt farm has to recruit labour from outside the immediate community such workers are provided housing, food and minor medical expenses.

The most attractive benefits were reserved for full-time staff, usually a male technician, who often received housing, food and minor medical expenses. The permanent key staffs were usually machine operators, who receive a monthly salary of about 200,000 Riels and an additional 15 kilograms of rice. A long-term employee had the privilege of sick days without pay deduction, which the temporary workers did not get. Although the long-term employees had sick leave, they had to be cautious about how they used it, because excessive usage would result in dismissal.

Bonuses are sometimes paid. The bonus can either be based on profit sharing and/or New Year gifts. Depending on the productivity of the salt farm and the debts incurred by the salt farm owner, it is customary to provide a bonus at the end of the season based on profits. The profit sharing was usually in the form of a sarong and/or 10,000 Riels. During an unproductive year, the workers would receive nothing.

6. Gender issues in economy and labour related to salt farming

6.1 Background

The locals in Kompot and Kep perceived the coastal mangroves and other marine resources to be unlimited. As previous research has pointed out, that a large portions of current residents of the coastal areas have just recently migrated down to the coastal areas. The research team had an opportunity to discuss with some of the female crab sellers in Kep about their practice of keeping crabs of all sizes. The response was that the ocean was not like the lake; that it was an inexhaustible resource, which they would never be able to deplete like the lake. However, the irony is that these former migrants from freshwater areas recognized from personal experience that the lakes had resources that in the end were exhaustible. What determines the use of land and resources in Cambodia is not based more on history or ecologically wise habits and behaviors, but the quick
drive to survive and make a profit. The present situation in the coastal areas is not "normal in the sense that there have been great population shifts within the past two decades. This has changed the way the coastal people view the resources.

The salt farmland and the surrounding land around the salt fans were examined from the perspective of gender. What perspective do men and women have about the usage of salt farmland and surrounding common property resources? According to respondents, the use of land is based on the needs of the individual and family. The responsibilities are divided down gender lines, where females are responsible for general care of the family, childcare and small income generation to help support the family. The male role is perceived as one of more physically demanding work such as cutting trees, fishing, or work that requires special skills and knowledge such as machine repair. These perceptions of gender roles have helped to mould the local perception of land use and role of women and men on and around salt farms.

However, it should be noted that the concept of gender is new to Kompot and Kep, and it is not easily understood. The social structure and dimensions that affect gender roles are not questioned openly, which makes gathering information about gender very challenging. What this rapid survey indicates is that gender awareness training is needed for high government officials and other important community stakeholders including women. The people of Kompot and Kep consider women to be an important partner, but the roles are often limited and/or constrained.

6.2 Tradition

During the in-depth interviews and focus group discussions, respondents were asked what the role of men and women were like prior to the Khmer Rouge period. The idea of trying to understand the past roles was to try to determine social perceptions as well as what changes may have occurred over the past two to three decades. The response from the informants involved in this rapid survey was that there is no real change. The role of men and women on the salt farms and in the communities around salt farms has essentially remained the same. This leads the survey to conclude that the gender perception of land has remained much the same between the past and present.

Men and women often do the same kinds of work on the salt farm, but men are also given other responsibilities that are perceived to be better suited for them. As with most traditional societies, Cambodians also perceive men to be more physically capable, tough and better prepared to do more "complicated" work such as machine repair and building warehouses or other challenging structures besides channels and ditches, which women are expected to help with. Essentially, men are expected to do physically and mentally difficult land work, while women are expected to do the more monotonous and "lighter" work.

6.3 Gender roles in salt farming

The complete gender roles of men and women on salt farms in Kompot and Kep require in-depth analysis to gain a broader understanding. This rapid survey was not able to gain a thorough understanding and context of the gender roles, which will require a certain amount of time and ongoing discussion to clarify. The tools used for this survey to engage information about gender roles was based on questions about male and female roles on the salt farm and follow-up Questions probing the context behind their work.

Salt farm workers usually start work at 7:00 AM and stop at 11:00 AM for lunch and rest. At 1:00 PM, the workers start work again and stop at 4:00 PM. The starting hour of work was described as being relatively the same for both males and females; however the work stopping time was different, because women needed to return home earlier to do housework including preparing food and taking care of the children. Men were able to spend more time working because they had no other responsibilities.

The gender roles on the salt farm starts from the family unit. Before examining the gender roles on the salt farm or surrounding land, the family unit needs to first be clarified and better understood. An important source of livelihood in Cambodia, and in the research areas of Kompot and Kep, is rice farming. Rice farming really revolves around planting and harvesting, which at most consumes two months of the year-one for planting the other for harvesting. The rest of the ten months of the
year require other income generation activities to help feed, cloth and other general care items for the family. Usually, it is the male, whether it is a husband or adult son(s), who will help the women with the planting and harvesting, but after that period, he will venture off to find other income. Often they will come to Phnom Penh or other urban areas to work as cyclo-drivers, moto drivers, and general labourers. The incomes that they earn in the urban city will cover their travel and living cost with the rest being sent back home to support their family (mother and siblings, wife and children). However, someone has to remain and manage the property and young children or elderly parents. Normally, the people who remain include the salt farm workers, who are normally the wife, parents or young children of the migrant worker.

The roles of men and women on the salt farm are different. Women are usually given work deemed appropriate and not requiring intense physical exertion such as scraping algae, digging shallow channels, reinforcing dikes, raking dried salt flakes and helping men to carry sacks of salt. Women are usually given more monotonous and time-consuming work. A male salt farm worker described the woman's role as pounding the ground-base of the reservoir, scraping algae from the base of the reservoir, maintaining the small dam surrounding the salt farm, managing the flow of water into the salt farm and carrying salt into the warehouse. The female salt farm workers' account of their work did not differ from what the male salt worker described.

What was observed during the interviews was that the community and salt farm workers and owners held deeply-rooted perceptions of male and female roles. In general, the male was not only stronger but also capable of handling more "complicated' tasks such as machinery repair and building structures such as warehouses. The male worker was in many respects more highly valued, because he is also more expensive. Consequently, the salt farm owner must treat him better. The woman on the other hand was considered to be abundant cheap labour most suitable for low skilled and lower paid work.

In a recent report published by CDRI (Gender and Development in Cambodia: an Overview, 1999) it was pointed out that: "Among adults, there is no strict sexual division of labour, but where there is an engendered division of labour, it is constructed around the idea as to what constitutes physically demanding labour or what constitutes technically induced forms of labour". Halcrow (1994) similarly concluded that: Male tasks are those which are considered to involve considerable physical effort, such as ploughing while "female" tasks, such as transplanting are considered not to be so physically demanding. Work that is seen to be technical, or to involve large machines or tools, is also perceived to be male (p. 45).

The gender roles need to be examined in detail when the interviewers asked what forms of discrimination existed on the salt farms, the informants (salt farm owners, workers, authorities and community stakeholders) mentioned that there is no discrimination on the salt farms. They reported that anyone is allowed to work on the salt farm regardless of age or sex. The main criteria are that the person is "healthy" and willing to work hard. However, the actual answer to the discrimination question is relative. The response from the informants is simply a reflection of the lack of awareness of gender roles.

7. Land tenure aspects in the salt farming areas

Today in Cambodia, only 50,000 land titles of an estimated 5,000,000 developed parcels have been issued by the Land Titles Department. In Kep and Komport, as in most parts of Cambodia, only temporary certificates of land use and possession have been issued to the fanners by the commune and district land titling offices.

Land transactions have been made in different ways:

- Tacit agreement between sellers and buyers;
- By concessions of land awarded either by Khum or district chiefs to a maximum area of 5 hectares, or by provincial governors mainly for concession of urban land and to an extent of 2,000 m²;
- By public land occupations once cleared and land boundaries clearly demarcated.

The sums paid to officials for land registration of agricultural parcels are much higher than the
official fees. Nevertheless, the land titles are not permanent.

Actually, there are different ways of proceeding to legitimate the land possession:

- land possession recognition from the neighboring property owners by an oral mutual agreement. This is the case for most of the parcels that have not yet been officially registered;
- land transfer recognition has been established under a private agreement between sellers and land buyers and witnessed by two people;
- recognition by a document attesting the land possession which has been issued and signed by both the Village and Khum chiefs and, according to the land category, sometimes by other administrative authorities;
- recognition of land possession by a land title that legitimates it at an upper level, as land dimensions have been taken and the registration approved by the District Land Title Department Chief.
- issuing of certificate of ownership card has been successfully experimented in three pilot communes (Kandal Stung, Bati and Prey Nup districts). The National Cadastre Department has planned to implement this land titling system gradually and pragmatically.

Tenure of most of the salt farmlands has been recognized unofficially and only legitimated by a document issued by the khum chief as evidence of the farmer's rights since this procedure was a fast and cheap land titling process. Recently the local authorities in collaboration with the local Cadastre Department have allocated land record books to farmers from Kompong Trach, Kep and Ses Sor, as recognition and legitimacy of their land rights.

Compared with other sectors, the salt farming has generated less land disputes.

The expansion of salt farming over neighboring areas seems to have decreased -mainly as a result of the overproduction of salt, which at least temporarily has reduced land tenure problems and the threat to the mangrove forests.

Previously, some mangroves forest was cleared and farmers in Kompong Trach, Kep, Ses Sor were issued land ownership titles by the local authorities. Titles were issued at district level for about 25% of these farmlands and land survey was done by District Office of Geography. Poor enforcement has resulted in forest clearance extending to the coast, especially in Troeuy Koh, Angkorl Kep and Ses Sor. Selling and buying of land in these state-owned areas were considered legal.

8. **Institutional and legal aspects**

Salt production is considered mineral resources from the sea and therefore regulated by the Ministry of Industry, Mines and Energy. To get a salt trading license, the Salt Federation has to comply with formalities at different administrative levels. The approval process commences with the district authorities, then passes to the Ministry of Industry Mines and Energy and then goes to the Ministry of Commerce, the Council of Ministers and the Prime Minister. Sometimes the process happens to be in reverse order, commencing with the Prime Minister's approval, for example for "Pheapimex Cambodia Salt Co-operative". Once the license has been granted, the cooperative is required to comply with principles developed by the Ministry of Industry, Mines and Energy and the Ministry of Commerce:

- Developing and improving the infrastructure of the salt fields;
- Training about the techniques to improve the product (as for instance the iodine process);
- Granting loans on a voluntary acceptance basis;
- Ensuring the salt purchase among producers and find commercial outlets within the country;
- Arbitrating disputes among salt producers;
- Ensuring competitive market price and contributing to develop the producers' purchasing power;
- In case of no compliance with those principles, the license validity should be suspended.
- The license validity is 99 years.
The implementation of the above principles is reportedly weak.

There is no control from the local institution to improve gradually the management of the salt federation. The motivation for enforcement is reportedly low. Weak institutional capacity to manage and monitor compliance with the license agreements has generated protests from producers against an economic monopoly they consider as essentially trade profit oriented and deeply corrupt.

The World Food Program has implemented a program in the Kompot provinces to develop the salt production quality by providing a technical assistance for the iodine enrichment process. Yet, so far there has been no regulation for regular controls and follow up of this process by the local authorities.

Chambers of commerce have been created in Cambodian provinces to enhance the local trade, develop the production, look for new markets, provide technical and management information. As such, there is yet not a chamber of commerce in Kompot Province. The Chinese community association from Kompot province has played a significant role in the salt business and trade development, but its development capacity has not been extended beyond friends and family network.

9. Main problems in the national salt market

9.1 Inequitable share of salt purchases among the producers

The co-operative has always been purchasing salt from producers in a way that was to the advantage of the big producers who themselves are members. This situation has made the small and medium producers look for commercial outlets by themselves or create their own distribution channels. The producers who live in remote areas (Kep, Kopong Trach) are completely being apart due to transportation costs. Often the co-operative has not kept its promises to develop the access infrastructure and caused dissatisfaction and animosity from part of the producers who has decided to sue the co-operative for repressive and unfair practices.

9.2 Overproduction and the export difficulties

An annual, although irregular, overproduction of about 20,000 tons may result in lower prices.

Attempts to export are not new, but so far, they have failed. This is due first to the low product quality. The Cambodian salt quality has a humidity rate of 5.8%, which is relatively high compared to the international standard rate of 4%. Moreover, this is non-iodised salt. Secondly, salt export necessitates a high production and stable supplies.

9.3 The negative consequences of the monopoly

The Co-operative or Salt Federation has regulated the use of an appropriate credit system and stabilized the price of the salt in the local market. But, in response to the overproduction problem and to the inequitable collection of the salt production, it has failed to bring down a current high interest rate of about 40% and to maintain stable prices over a long period of time.

Therefore, the small and medium producers have tried to sell the production on their own and find alternative financing. However, the local authorities support the co-operative and ensure its monopoly.

Probably less exposed are the big producers who, as co-operative shareholders, have an important share capital, and make consequently a double profit. The big producers have their own channels of distribution and their own means of transport.

9.4 Conflicts of interests within the salt federation
9.4.1 Mismanagement

In 1997-98, the atmosphere was tense after the assassination of one of the co-operative general managers. He was killed after he tracked down an internal corruption network. Today the co-operative has returned to a more normal situation, but the Pheapimex Co-operative is facing other difficulties including over-production.

9.4.2 Conflicts between the Co-operative and small and medium scale producers

The smaller producers in the remoter areas have previously complained about the monopolistic practices of Pheapimex and the inequitable collection of their production. This conflict has been solved, however, since they have been allowed to sell their own production, provided they comply with the regulations, including paying 1,000 Riels for each bag (of which 950 Riels are to be paid to the State). Some producers are still dissatisfied, however, and have expressed some doubts about this payment, fearing the money might get lost before being collected by the Government.

9.4.3 Conflicts between the salt distributors

Sometimes the distributors are willing to lower their prices in order to win the market over their competitors.

9.5 Suggestions to improve the salt trade system

The situation could improve through the following points:

- Establishment of an appropriate credit system that provides the small and medium sized producers to have a sufficient working capital with an annual interest rate not higher than of 15%. As described in a previous project report (Socio-economic and natural resources studies in five villages in Kep Municipality), the villagers now prefer to borrow from friends, neighbors or relatives rather than from institutions.

- Creation of a local chamber of commerce that will closely collaborate with the co-operative to improve the overall production management, thus reducing the production costs and ensuring a more equitable collection of the salt production.

- Legislation should be enacted to cover the operation of the institutions. In addition, the State should encourage practical research to improve the salt quality to meet the export quality standards. It could also support research for new products using salt including those used in cattle rearing activities.

- The planned development of the road and railway network will reduce the transport cost of the remote province of Kompot, thus making its production more competitive.

9.6 The regional market

**Vietnam:** Vietnamese salt has more impurities and a lower density than Cambodian salt, but it is cheaper. At certain period of the year, the Vietnamese production can grab substantial market shares in Cambodia, especially during the fishing season in the Mekong River. With direct access to the sea, the Vietnamese ships are able to supply Cambodian floating villages that are big salt consumers (fish preservation, condiment use).

**Thailand:** Thai salt is considered better since it is whiter and has a lower humidity percentage. The Thai prices are very similar to those prevailing in the northern Cambodian provinces, which are far from Kompot, but the very degraded road RN5, especially in Bantey Manchey province, makes transport costs much higher.

In the border provinces of Battambang and Bantay Meachey, the Thai salt price is generally very competitive because of the smuggling transport into Cambodia of alcohol and luxury goods, which are hidden into salt bags to avoid customs. Once the goods have been sold, the carriers sell the salt at a very competitive price.
In terms of profitability, a rough estimation is that salt activity is 3 to 4 times more profitable than rice cultivation and nearly twice that of fruits trees. On the other hand, salt production is less profitable than palm oil, rubber or manioc.

10. Conflicts and conflict resolution

10.1 Disputes among small and big salt producers

The mandate of the former co-operative expired in 1996. It was not renewed due to lack of support from the small and medium scale producers. The reasons for this were:

- Unfair and unbalanced allocation of the loans, to the disadvantage of producers from the remote areas (Kep, Kompong Trach). Moreover, their transport difficulties, due to poor roads, were ignored by the co-operative;
- Low commitment to maintain and develop the roads and channels infrastructure;
- An inequitable salt collection organization which favored the big producers, who were important shareholders, and a small group of producers tightly linked with the management board.

The new Pheapimex Co-operative has fairly allocated loans to the majority of the producers. In 1998, 100% of the producers were granted adequate loans. However, in 1999, an estimated 18.5% of them did not renew their request for loans, protesting against the co-operative price policy and some other recurrent problems like co-operative mismanagement, unbalanced salt collection schemes and transport difficulties.

Conflicts of interest among producers have not disappeared since the establishment of the new Pheapimex Co-operative. So far, only the requirements of the big producers and those from the core production areas (Boeung Roung, Boeung Tuk, Troey Koh and Ses Sar) have been satisfied by the management policy, and Kep and Kompong Trach have been left apart. Alternative solutions have to be considered to improve the current situation and create a system of guidance for an efficient and sustainable management:

- Either, the authorization to create another salt co-operative for producers from Kep and Kompong Trach areas. Commercial links should be developed between the two co-operatives, through a collaboration agreement. This collaboration would be necessary to improve the national salt market inter alia, stable and competitive prices, social balance among producers and export promotion. The agreements should be developed with the assistance of an economist and a business lawyer.
- Or, improvement of the Pheapimex Co-operative through a supervisory body that would guaranty the compliance with the license status and make the co-operative able to effectively address the overproduction problem and address the salt quality problem. This solution will probably not be easily implemented.

10.2 Conflicts between investors and producers

The major part of the loan system is managed by private investors acting simultaneously as bankers, business managers and traders. These investors are not held responsible for losses due to mismanagement.

Since Pheapimex (who owns 51% of the co-operative) joined the salt federation in 1998, the situation improved, although the management tends to favor the big producers. Pheapimex has no salt farms and has seen its profits declining. At the end of 1999, the Pheapimex investor had nevertheless a return of 20% gross.

The threat to small salt farmers who expressed strong disagreement to the co-operative practices
had been growing. Some repressive measures were taken against producers who took the risk to sell their products outside Kompot without authorization and tax paid to the co-operative. These attempts organized by producers who were tired of waiting for the co-operative to buy part of their surplus were stopped by police intervention. The case was brought up to the senior government officials and even to court.

Despite of this problem, the last two years balance sheet of the Pheapimex Co-operative has been positive and improvement of the producers' standard of living has been noticeable. Nonetheless, the co-operative has failed to solve several key problems: the permanent conflicting issues such as inequitable salt collection in the different production areas, salt production that does not match standard quality, poor road infrastructure making difficult for the remote areas to sell their products.

According to professional observers, the outlook for the salt farming activity is rather gloomy for the following reasons:

- the downward trend of the profit margin
- stockpiling of (irregular) surpluses (20,000 tons per year)
- salt smuggled from Vietnam during the fishing season
- dissent among salt farmers from the remote production areas (mainly Kep and Kompong Trach) which might result in a fall in market price

Investors who do not have salt farms themselves start to worry about changes and the outlook tends to discourage part of them. Some of them are ready to sell their shares.

Most likely, the current Pheapimex Co-operative management will not succeed in meeting these challenges. They need external support from the Government and another institutions. The difficulties faced by the salt producers reflect the general problems of the current Cambodian economy that strongly needs to be restructured, regulated and more institutionalized.

10.3 Conflicts between salt distributors

The salt distribution has no regulatory framework. Each salt dealer tries to get a distribution monopoly in the provinces and in order to eliminate competitors does not hesitate to use illegal pressures or to undercut prices down to 50%.

In 1997, salt dealers were allocated an exclusive right to sell in the big provinces and big towns as Kompong Cham, Phnom Penh, and Siem Reap against a 60,000 USS deposit with the cooperative. A 50,000 US$ deposit had to be paid for the rest of provinces around the Tonle Sap region. For the other provinces, an average amount between 30,000 and 40,000 US$ was requested.

This system of exclusive rights resulted in a price explosion and gave Opportunities to small dealers in close relationship with salt producers to sell salt at a more competitive price. Some of them took this opportunity to sell Vietnamese salt illegally imported via the Mekong River in big vessels. The situation became out of control and therefore the co-operative had to suppress unilaterally the implementation of the exclusive selling right and pay back the initial deposit payments.

Salt dealers have tried to undermine the strong competitors by selling with broken prices or offering credit payment facilities to their clients. Extension of the payment periods led to significant indebtedness and cut down the margin profit of the dealers. In order to remain competitive, dealers have been trying on one hand to strengthen the loyalty of good clients and to create a channel of retail outlets while on the other side they have been negotiating buying price directly to the salt producers. Some have been obliged to buy salt farms as producer-distributors. Some have their own transportation means and their own gas stations.
A regulatory framework is needed that can improve the distribution management and regulate unfair competition so that the small producers and retailers can remain in business.

Improvement of the management capacity could occur within either formal or informal associations acting as a kind of syndicate, therefore the systems and networks could be properly and progressively organized and developed.

In any case, big salt producers and dealers have a significant role to play to challenge and overcome difficulties linked to salt trade and distribution. Therefore they need to be backed up and be more aware of their responsibilities. Management improvement is needed to maintain a steady market curb the overproduction tendency and develop new economic opportunities connected to the salt production as salt fish food processing and animals raising.

11. Conclusions and recommendations

This report was a first description of the salt farm1 business in Cambodia and several points require more research, including those related to the improvement of the economic and social conditions of women working on salt farms.

From an economic point of view and macro-approach, the main recommendations and procedures for a sustainable development of the salt economy would be:

- To prepare and draw up a precise land use zoning according to the cadastral map with the input of the salt farmers communities. Salt faring areas and mangroves forest to be protected should be clearly delineated. The local land development office and the cadastre department would be entitled to authorize any change of the land use map.

- Ensure land tenure status with certificates of ownership allocated gradually to communities, starting with the salt farms adjacent to the mangrove forest area;

- Set up a regional or provincial Chamber of Commerce with an adequate status and a clear and well defined role to address the following issues,

- Improvement of the salt standard quality by reducing its humidity rate to less than 4% and adding iodine,

- Try to develop salt export opportunities and to promote salt use in new business like cattle raising,

- Setting up a financial body that could provide equitable loans to the small and medium size salt producers,

- Development and enactment of legal instruments to cover the operational aspects of salt production,

- Restructuring the salt producer federation; the salt economy development is precluded by an inadequate financial system, the limited management capacity of the present Pheapimex co-operative and a lack of regulations.

Presently, a group of salt investors is playing a triple role, acting as bankers, managers, and distributors. This triple responsibility has significant consequences on the results.

Restructuring the salt economy activity will require a greater involvement and more responsibilities from the big producers who have emerged as major players in the salt economy. The community of small and middle producers should be strengthened through the setting up of local associations according to their production areas.
Salt farmers should belong to a real federation of salt producers with status approved by the majority. The Government, the Chamber of Commerce and a private or semi-public financial body should back restructuring of the salt policy.