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Cambodia Jatropha Biofuel Project for Sustainable Development

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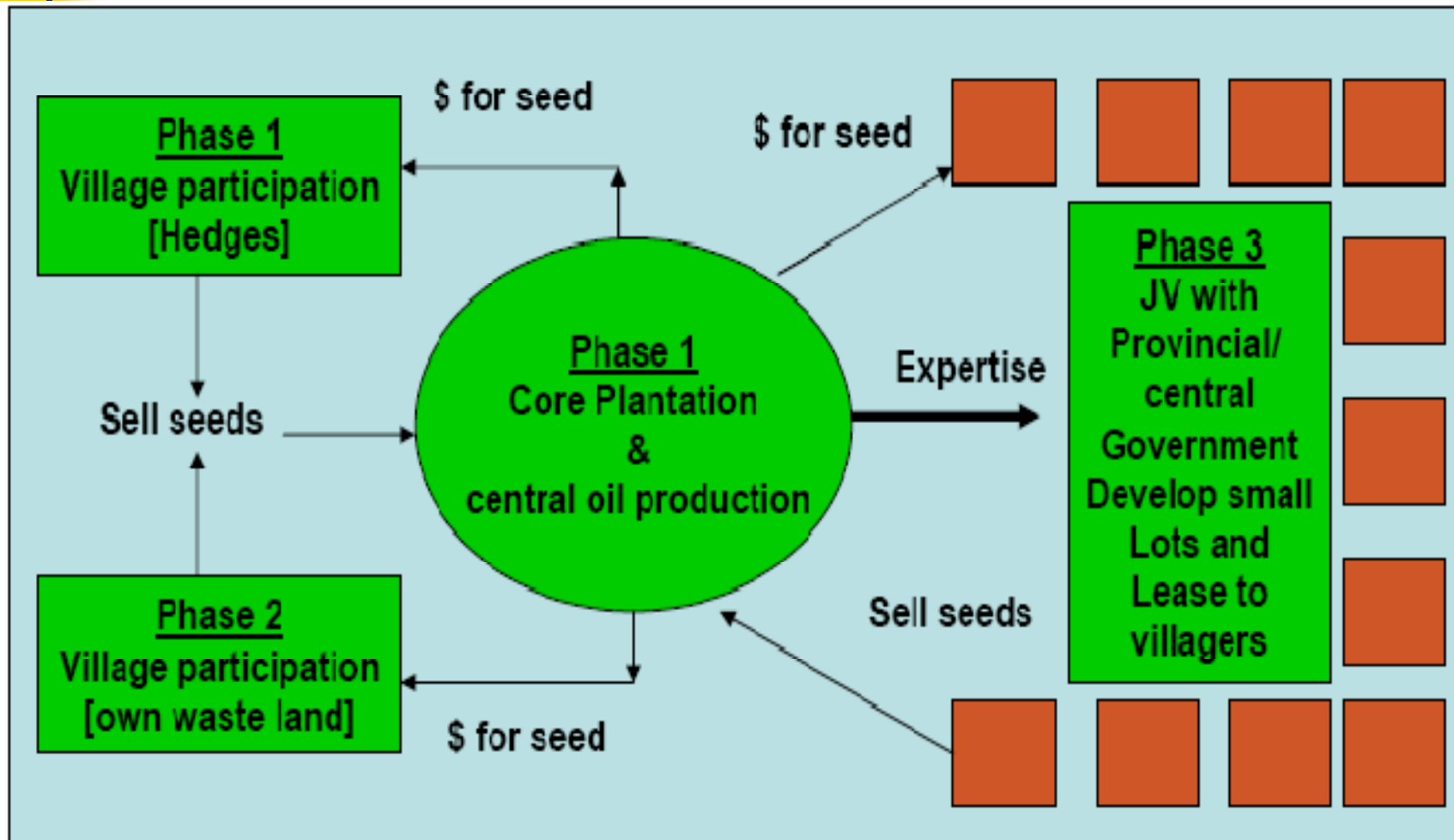
Project Background

- The pilot project is based on domestic Jatropha crops and small oil expellers, rather than commercial energy crops and central oil production.
- Pilot study started & funded by Global Village Energy Partnership [GVEP] Program [2005] in Cambodia.
- Andrew Williamson's feasibility study
- it might be financially viable.
- Original 2 potential investors pulled out. Green Acres Private Limited revived project in 2006.
- A 83 ha waste land [Kg Chhang] Province acquired for the project. Project started in mid-2006, initial 35 ha have been planted.

Appropriate Business model

- Different business models could be used as the basis for a new business producing biofuel in Cambodia.
- Businesses based on processing of agricultural products included:
 - The proportion of crop area owned and managed by the business, or contracted to private farmers, or purchased at a market;
 - The ownership and location of the processing plant;
 - Security of supply of the feed stock; and
 - Ownership and management of distribution chain.

The Project Business Model



Business model

- A 83hectare plantation with a central oil processing facility - "Symbol" of long term commitment by investors - instill confidence in villagers to participate in project
- Villagers to harvest jatropha seeds - from existing jatropha trees planted as hedges [and also from wild]
- Villagers with waste land to grow jatropha under contract farming method. Green Acres provides expertise, cuttings and fertilizers
- Work with provincial/central government to allocate waste land for project
 - Green Acres provides expertise, cuttings and fertilizers
 - Lease small planted plots to individual farmers on behalf of government
 - New owners sell seeds to Green Acres and part proceeds go to pay government for land.
 - Win-win-win for all 3 parties



Benefits to the community

- Immediate benefits

- Jobs for villagers [current 20, increasing to 80] in the plantation / oil mill/ marketing etc.

- Increase their income [at least US\$1 a day]

- A new cash crop from their own trees [hedges] - Future benefits

- Convert unused land to income generation [Phase 2]

- Potential ownership of additional land

[Phase 3 with government]

- Community contributions

- Green Acres intends to plough its "profits" into the community via improvements in village schools, water and electricity etc.

Jatropha Biofuel and Power Generator Project

- Proposed biofuel supply chain development maximizes the local benefits and provides a competitive biofuel for electric power generation.
- Contribution to Cambodia sustainable development
 - *Broad-based economic growth*
 - *Social and cultural development, and*
 - *Sustainable use of natural resources*
- Proposed project aims to supply Jatropha biofuel for additional heavy fuel oil (HFO) generators in PPSEZ with total capacity of 13 MW.
- Project requires 140,000 tons of Jatropha seeds and 59,000 ha plantation to contract farming schemes:
 - *Relatively large scale plantation,*
 - *Small scale fencing and intercropping*

Implication for the environment

- ✓ This project will provide a new 100% renewable energy source for rural Cambodia.
- ✓ Biofuel is also non-toxic and biodegradable so there will be less human and environmental health issues from its transport.
- ✓ Increased planting of Jatropha Curcas as fencing will help reduce soil erosion, provide shading etc.

Poverty Reduction

- ✓ Reduce poverty by introducing a viable, replicable new rural enterprise with two levels of income and job creation (nut-collection, and Biofuel production).
- ✓ Providing a cheaper and more secure source of fuel in the long term, as diesel prices rise.

Economic Sustainability

- The sustainability of the business model is enhanced by the possibility for diversifying into other post-harvest seed products.
- Business sustainability may be further advanced in the future by possible income from 'Carbon Financing' under the Clean Development Mechanism of the Kyoto Protocol.
- This is an interesting option because the use of a 100% renewable Biofuel.