Lumbini Clean Public Transport Project (LCPTP) under

South Asia Tourism Infrastructure Development Project (SATIDP)

Asia Clean Energy Forum

10 June 2016

Government of Nepal Ministry of Culture, Tourism and Civil Aviation & Lumbini Development Trust



Lumbini UNESCO Cultural World Heritage Site (Tange Master Plan Area)

LUMBINI MASTER PLAN

Lumbini Master Plan was prepared in '70s with the support of United Nations

Total Area 777 hectares

north-south 3 miles x east-west 1 mile

Master plan covers an area of 3 sq. miles, comprising three zones of 1 sq. mile each, including:

New Lumbini Village (north)

International Monastic Zone (middle)

Sacred Garden (south)





Sacred Garden, Birthplace of Lord Buddha



International Monastic Zone





New Lumbini Village and Cultural Centre



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Greater Lumbini Regional Planning Area

BUDGET STATUS (to be re-balanced)	
 (i) (a) installation of solar power supply system of about 350kW capacity with provision of related electrical works; (b) construction of covered vehicle stops with proper lighting (inside the heritage site); and (c) construction works for minor road improvements 	\$1,100,000
 (ii) (a) procurement of about 30 to 40 commercially-available Li- ion battery-powered EVs (with a total seating capacity of about 200) both for outside and inside the heritage site; and (b) construction of a charging station/maintenance depot for EVs 	\$1,500,000
(iii) procurement of electric power-assisted modern rickshaws	\$120,000
(iv) construction of covered vehicle stops with proper lighting (outside the heritage site)	\$60,000
(v) consulting Services	\$200,000
(vi) unallocated	\$20,000
Total	\$3,000,000

EV-based Clean Public Transport +Decentralized Renewable Power Generation +Vehicle to Home (V2H) Power Supply +Tourism Promotion

Safa Tempo (Electric Minibus) in Kathmandu, Nepal



Electric Vehicles

Safa Tempo (electric minibus) currently running in Kathmandu



Mass-produced newer and better EVs for Lumbini

Decentralized renewable power generation (small solar power plant) to supply power to EVs





Three Business Opportunities

- Electric Vehicle (EV) Procurement
- Electric Vehicle (EV) Leasing Auction
- Solar Power Plant Procurement (DBO contract)

Electric Vehicle (EV) Procurement

- Mass-produced affordable Li-ion battery-powered EVs
- Passenger (excl. driver) seating capacity from 3 to 20 (in other words, taxis or minibuses)
- Procurement of EVs as a "fleet"

Total passenger seating capacity of 200(?), including a minimum total passenger seating capacity of 10(?) for universal access for the disabled; multiple types of EVs acceptable

- CHAdeMO rapid chargers compatible
- Two-Stage Bidding Procedure
- Warranty requirement

Electric Vehicle (EV) Leasing

 EV fleet (after the selection of EVs) to be leased out through auction for local public transport service provision

Finance lease or operating lease

Trade-in of polluting diesel/gasoline engine vehicles Quick implementation for immediate benefit and visibility

O&M costs of EVs extremely cheap

Good for electric-energy-surplus countries

• Vehicle to Home (V2H) power supply

Bidirectional inverter system to use electricity stored in EV's battery for power supply

Revenue generation even when EVs are not transporting passengers during tourism off-peak season

Solar Power Plant Procurement

- Solar power generation increasingly cost-effective
- Design-Build-Operate (DBO) Contract
- Two-Stage Bidding Procedure

(Following will be fine-tuned to reflect the EVs selected)

 IT equipment and services for remote monitoring of electricity sale and purchase transactions

Real-time operation monitoring through "information visualization"; Smart card fare collection

Rapid (CHAdeMO) chargers & regular chargers

 Balancing out generation capacity, and dedicated Energy Storage System (ESS) capacity and mobile energy storage capacity of EVs' batteries

Power generation time and vehicle usage time overlap (both daytime); Unpredictable weather; Unreliable main grid

For More Information

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