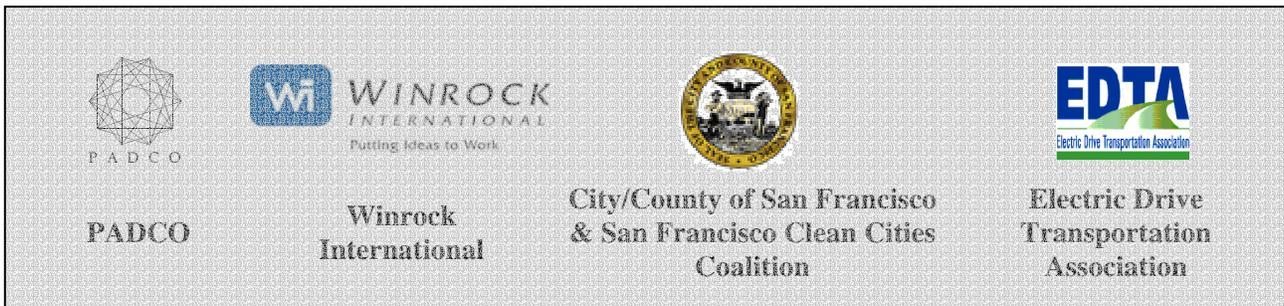




# KEVA Annual Report for 2004



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## ***KEVA Second-Year Highlights***

The Kathmandu Electric Vehicle Alliance (KEVA), which has just completed its second year of operation, exemplifies the robustness of the Global Development Alliance (GDA) approach of USAID. Despite facing a difficult policy environment in Nepal marked by numerous government changes and political turmoil, KEVA has moved ahead by engaging the private and NGO sectors, improving access to specialized technologies, opening public and private dialogue, and leveraging other resources.

KEVA's international partners recently consulted with electric vehicle (EV) stakeholders in Kathmandu to complete an evaluation of its 2-year achievements. They found that KEVA results are good, meeting or surpassing targets.

- The EV industry has been stabilized with about 600 three-wheel buses (*safa tempos*) running in Kathmandu, and the prospects for new expansion are good.
- The alliance approach and KEVA's catalytic role have been well accepted and appreciated by EV stakeholders. KEVA's focus on policy change, EV technology transfer, and public awareness is appropriate. The three areas are complementary in producing results.
- KEVA has facilitated access to new ideas, technologies, and resources through international partnerships that include:
  - ▶ the San Francisco Clean Cities Coalition (SFCCC) with Kathmandu Metro City and other organizations;
  - ▶ the U.S. Electric Drive Transportation Association (EDTA) with the Electric Vehicle Association of Nepal (EVAN) and its members; and
  - ▶ Winrock International (WI) with the Clean Energy Nepal (CEN), Kathmandu Environmental Education Project (KEEP), Environmental Camps for Conservation Awareness (ECCA), and other NGOs.
- Overall alliance management and administration of USAID GDA assistance has been well handled by PADCO, an independent operating company of AECOM Technology Corporation.
- Innovations promoted by KEVA are changing and expanding the Nepal EV industry.
  - ▶ EV businesses are being run more efficiently and profitably. New financing models have been developed for the industry, including an innovation fund from local private investors and banks to finance women drivers to buy existing *safa tempos*. This promotes an owner-drive concept, which is a preferred business model in the EV industry in Nepal.
  - ▶ New tourist *safa tempos* designed by the engineering staff of Kathmandu University and built by Shree Eco Visionary, a local EV manufacturer, will soon be used by Explore Nepal, a leading ecotourism business, to transport tourists around Kathmandu.
  - ▶ The development and production of 30 state-of-the-art *safa tempos* is under way and two local manufacturers have been working on new four-wheel electric buses.
  - ▶ The government has accepted a public-private partnership model for financing and operating electric trolleys, and KEVA is working to get it implemented with further government, donor, and private sector support.

I am satisfied to see good progress and I am excited about continuing to be able to work for at least one more year with a dedicated group of people to promote EV technologies.

Ben Stoner, KEVA Program Director



## *Catalyzing an Alliance*

### **KEVA Objectives**

- Mobilize broad support for EVs and the EV industry through KEVA with inclusion of additional national, donor agency, and U.S. partners
- Establish U.S.-Nepal partner relationships for EVs (government and private) between Nepalese and U.S. partners

KEVA is planned to be dynamic and expanding. Communications and outreach to new potential members, as well as cooperation with existing members, are important responsibilities of all the partners. The communications and outreach are to be conducted in both Nepal and the U.S. Support will be sought from many sources, including the environmentally conscious private sector and NGOs that operate in Nepal.

### **Second-Year Activities**

- Inclusive broad-based work planning
- Work plan as integrative guide for action
- Coordination with partners and members
- Outreach to new potential members
- Leverage funds to support EV programs

### **KEVA Results**

The Second-Year Evaluation of KEVA concluded the following.

- KEVA continues to provide energy and visibility in support for the EV industry.
- Government, EV industry, and NGO members appreciate the coordination of KEVA.
- KEVA undertook 19 activities in Year 2 and achieved leveraging of more than 100%.
- Core KEVA partnership relationships were strengthened during past year (see box below).
- KEVA partnership activities with local members have expanded and include: a public clean air awareness media campaign with Clean Energy Nepal (CEN); a school clean air awareness program with The World Conservation Union (IUCN) and Environment Camps for Conservation Awareness (ECCA); *safa tempo* improvement activities with MOPE/ESPS; tourism *safa tempo* development with the private sector and Kathmandu University; a tourism sector EV awareness program planned with Kathmandu Environmental Education Project (KEEP); and clean transportation technologies collaboration with *Sajha Yatayat*.

### **KEVA Promotes Partnerships between:**

- San Francisco Clean Cities Coalition and Kathmandu Valley Municipalities
- Pacific Gas and Electric and the Nepal Electricity Authority
- Electric Drive Transportation Association and Electric Vehicle Association of Nepal
- Winrock International and the Nepal Coalition for a Clean Environment

## *Policy and Regulatory Dialogue*

### **KEVA Objectives**

- Establish an understanding of Nepalese government policies and regulations affecting the EV industry, air pollution, and public health, and develop options for change
- Facilitate a dialogue between government and EV stakeholders on policy and regulatory changes to strengthen the EV industry, reduce pollution, and improve public health
- Support adoption of policy/regulatory changes by national government and municipalities

Because HMG policies toward the EV sector have been inconsistent, KEVA support was targeted to encourage formulation of positive regulations, strengthening of enforcement, and development of other forms of non-polluting transportation. KEVA support is needed to study the feasibility of new approaches and to stimulate the participation of EV industry associations and public interest groups in policy dialogue for clean air with HMG and municipal governments.

### **Second-Year Activities**

- Cost-benefit analysis of EVs in Kathmandu
- KEVA EV Policy Workshop
- Business plan for electric trolley operations
- Proposal for comprehensive transportation system management plan
- Study of health impacts of transportation
- EV study tour to the Electric Vehicle Symposium (EVS21) in Long Beach and to San Francisco

### **KEVA Results**

The Second-Year Evaluation of KEVA concluded the following.

- KEVA has defined needed policy regulatory changes through two studies: a comprehensive analysis of policies related to EVs in Year 1 and cost-benefit analysis of EVs versus diesel and gasoline transport in Year 2.
- KEVA has disseminated its policy analyses through workshops and its Web site.
- KEVA should work closely with its members that are analyzing policies, particularly IUCN, and should produce a good synthesis of recommended policies.
- Any further work should be action-oriented and should focus on applying changes that have been identified.
- KEVA's partnerships approach of analysis, stakeholder workshops, and one-on-one meetings with key HMG officials has been an effective approach for advocating policy change.
- KEVA should focus efforts on implementation of a few high-priority policy recommendations that are supported by its members and the general public.
- KEVA needs stronger member and donor support to advocate for HMG implementation of these policy changes.

## *Public Awareness and Advocacy*

### **KEVA Objectives**

- Establish an Electric Vehicle Information Resource Center that operates at the KEVA Secretariat
- Facilitate EV public awareness through pro-environment and public health groups, like CEN, ENPHO, university institutes, and others

Increased public awareness of the positive impacts of EVs for reducing negative health impacts and related costs of air pollution and the strengthened involvement of EV operators in public debate will promote the growth and effectiveness of the EV business.

In addition to general public awareness efforts, the Alliance forges partnerships with local NGOs to enhance the existing awareness campaigns and will initiate a process of public discussions on new regulations and policy decisions being made on the transportation sector in Nepal. The EV entrepreneurs' association will be supported through capacity building to have greater collective inputs into public policy.

### **Second-Year Activities**

- Outreach to Kathmandu tourism industry
- Awareness of health benefits of zero-emissions EVs
- Resource Center for NGO public awareness activities
- Use of data from municipal air monitoring
- EV marketing and market diversification

### **KEVA Results**

The Second-Year Evaluation of KEVA concluded the following.

- KEVA EV Resource Center is fully functional at its Secretariat Office. The center has facilitated two educational campaigns and several more are under way.
- KEVA has its own Web site ([www.keva.np.org](http://www.keva.np.org)) to disseminate KEVA's publications as well as other information on Nepal's EV industry.
- KEVA has facilitated numerous public awareness activities working with a broad group of NGOs and university institute members, including the Coalition for a Clean Environment (CCE), Clean Energy Nepal (CEN), Environment Camps for Conservation Awareness (ECCA), The World Conservation Union (IUCN), and the Kathmandu Environmental Education Project (KEEP).
- KEVA has invited NGO, university institutes, and others to participate in KEVA-sponsored workshops and meetings, and has distributed all its studies and papers on air pollution via its Web site.
- KEVA's activities for public awareness have been effective. KEVA has broadened public awareness through the CCE, including newsletters, brochures, and press releases for journalists, radio, and TV. KEVA should continue these and target them, building support for the EV industry in key constituencies.

## *Technology and Business Promotion*

### **KEVA Objectives**

- Increased knowledge of and access to improved technology by the EV industry
- EV businesses run in a more effective and efficient fashion
- Quality and quantity of EV support services (battery charging and vehicle maintenance) are improved/increased

KEVA encourages EV businesses and entrepreneurs to adopt the most appropriate business models for the growth of EV industry. Most of the EV businesses are run in a traditional way. KEVA strives to help reduce operating costs and consolidate the industry, as well as to make EV business more viable for institutional financing. KEVA is also exploring technological options to improve the battery life and performance and to adapt EV technology to other vehicles, for example, four-wheel mini-buses.

### **KEVA Results**

The Second-Year Evaluation of KEVA concluded the following.

- KEVA facilitated EV industry access both to international technologies through a study tour with EDTA and San Francisco for EV industry and government representatives and to regional technologies through participation in the New Delhi conference of the Society for India Automobile Manufacturers (SIAM). KEVA has also provided several technical consultancies for EV technologies.
- KEVA facilitated the design of a new tourist *safa tempo* by the engineering staff of Kathmandu University. Shree Eco Visionary is manufacturing five vehicles for Explore Nepal to use for transporting tourists around Kathmandu
- KEVA worked with Hulas Motors to define specifications of a four-wheel EV (the Hulas Mini-V). KEVA is ready to support the development of a prototype, but Hulas has not moved forward.
- KEVA has collaborated effectively with HOPE/ESPS to obtain assistance from the Clean Vehicle Promotion (CVP) Fund for EVAN to paint *safa tempos* and to initiate an upgrading program for the development and production of 30 state-of-the-art *safa tempos*.
- KEVA has analyzed EV businesses and has offered support for several pilot demonstrations involving battery operations and battery financing, and an innovation fund to finance women driver-owners.
- The innovation fund to finance women drivers to buy existing *safa tempos* has been successfully designed and is ready to be launched with support from local private investors and bank. This model will be monitored by KEVA and, if it is successful, will be scaled up to include all drivers and new vehicles.
- KEVA completed an analysis 282 sets of EV batteries. The average operational life of the batteries is 18 months. Almost half the batteries were purchased through leasing schemes. Data analysis of batteries is still under way, as is analysis of charging station operations.
- EVAN has received assistance from ESPS/MOPE for EV training and support services. KEVA is coordinating directly with ESPS/MOPE for this work.

### **Second-Year Activities**

- Reactivation of Kathmandu-Bhaktapur electric trolley
- Demonstration of new technologies
- Analysis of batteries used by electric *tempo*s
- Development of battery financing systems
- Analysis of technology improvements for electric *tempo*s
- Business management assistance to EV owners
- Access to off-peak loads for battery charging
- Regional EV technologies workshop

## *KEVA Administration and Management*

### **Evaluation Findings**

- The KEVA Secretariat is staffed by PADCO and WI and is located in WI offices in Baneshwar. The staff is high caliber and has provided efficient project administration and effective coordination.
- Procurement and small grant and financial management have been good, but will need to be expanded during the third year to keep up with KEVA's growing demands.
- KEVA use of workshops to get inputs from stakeholders, to review studies, and to disseminate results has been effective and media coverage is good.
- KEVA matching funding has met plans. Leveraging from local members and the private sector is good, but leveraging from other donors has been hindered by the lack of HMG action to request assistance for the Ring Road Electric Trolley (EU and China) and for the Transportation System Management Plan (UNDP).



*I need clean air!*

## ***KEVA Membership***

### **1. Managing Partners**

#### **Definition**

Partners are the funding and decision-making parties for KEVA. They use their resources and obtain resources from others and then work together to manage these combined resources to implement activities that support the objectives of KEVA.

#### **Organizations**

- Planning and Development Collaborative International (PADCO)
- Winrock International (WI)
- San Francisco Clean Cities Coalition (SFCCC)
- Electric Drive Transportation Association (EDTA) with Ford Motor Company

During the first two years of KEVA, the Managing Partners have contributed labor and in-kind assistance for KEVA operations valued at \$357,900.

### **2. Donors**

#### **Definition**

Donors are international and national development assistance agencies that provide support for the activities of KEVA. They may provide direct funding support to KEVA through KEVA partners or indirect support through other organizations and activities that contribute to KEVA's goal and objectives.

#### **Organizations**

- USAID – Cooperative Agreement for KEVA
- DANIDA – Environmental Sector Programme Support Project (ESPS/MOPE)
- UNDP – Global Environmental Facility (GEF)
- Asian Development Bank (ADB)
- European Union (EU)
- British Embassy Kathmandu
- Embassy of People's Republic of China
- Royal Norwegian Embassy
- Embassy of Japan

During KEVA's first two years, USAID contributed \$511,105 through a Cooperative Agreement with PADCO and other donors contributed a total of \$220,750 in support of KEVA activities.

### **3. Members**

#### **Definition**

Members are legally established organizations that support the objectives of KEVA and assist with some KEVA work plan activities. They may obtain support from KEVA for activities that coincide with their organization's mandate and activities. They may also contribute matching funds to complement and extend activities that are supported by KEVA.

## Organizations

- His Majesty's Government (HMG)
  - ▶ Ministry of Population and Environment (MOPE)
  - ▶ Ministry of Labor and Transportation Management (MOLTM)
  - ▶ Nepal Electricity Authority (NEA)
- Municipalities of Kathmandu Valley
- Universities and Institutes
  - ▶ Kathmandu University Engineering Group
  - ▶ Institute of Engineering Department of Mechanical Engineering
- NGOs
  - ▶ Electric Vehicle Association of Nepal (EVAN)
  - ▶ Nepal Coalition for a Clean Environment (CCE)
  - ▶ Clean Energy Nepal (CEN)
  - ▶ Himalayan Light Foundation (HLF)
  - ▶ Environment Camps for Conservation Awareness (ECCA)
  - ▶ Nepal Water Conservation Foundation (NWCF)
  - ▶ The World Conservation Union (IUCN)
  - ▶ Kathmandu Environmental Education Project (KEEP)
- Private Sector
  - ▶ EVAN member companies
  - ▶ Explore Nepal
  - ▶ Sajha Yatayat

During the first two years of KEVA, local member organizations have contributed \$108,474 in program support for clean air activities.



## *KEVA Policy Agenda*

From a social welfare perspective, the government should consider providing support to EVs in cases where the social benefits of replacing an internal combustion engine vehicle (ICEV) by an equivalent EV outweigh the associated social costs. Based on this criterion, KEVA has identified *safa tempos*, trolley buses, and electric cars as the EV categories deserving support. From an efficiency perspective, the specific courses of action for providing the required support should try to use the market mechanism whenever possible. Hence, KEVA's approach is to promote measures that bridge the private lifecycle cost gap between EVs and ICEVs.

To enable the market mechanism to replace new ICEVs by EVs, KEVA recommends using combinations of the following policy measures:

- reducing the electricity tariff rate;
- reducing the average import tax + VAT for EVs;
- reducing the interest rate for EV financing; and
- imposing a pollution tax on fossil fuels.

Examples of recommended policy combinations for the different types of EVs are presented in the table below. The table shows, for each type of EV, how the lifecycle cost difference between EVs and ICEVs changes in favor of EVs upon implementing the recommended policy combination.

**Examples of Policy Combinations for Supporting EVs**

		EV Average Import Tax & VAT Rate (%)	Electricity Tariff (Rs/kwh)	Diesel or Gasoline Price (Rs/liter)	Interest Rate for EV Financing (%)	EV Cost - New ICEV Cost (Rs/yr)
<i>Safa Tempo</i>	Status quo	12.5	9	31	13	90189
	Policy change	12.5	TOD rate	33.58	13	-22136
Trolley Bus	Status quo	12.5	4.25	31	13	-20060
	Policy change	12.5	TOD rate	33.58	13	-32080
Electric Car	Status quo	160.4	9.9	54	13	61446
	Policy change	130	TOD rate	56.81	7	-4785

Note that each policy combination includes a pollution tax on fossil fuels so that the government revenue generated from this tax can compensate for the losses experienced by the government as a result of tax breaks and subsidized tariffs for EVs. Similarly, the recommended electricity tariff rate in all the combinations is the Nepal Electricity Authority's (NEA) Time of Day (TOD) rate.

### *Safa Tempos*

With the use of TOD meters to take advantage of lower night-time (off-peak) rates and an increase in diesel fuel costs (which has occurred with world price increase), the *safa tempo* is competitive with new diesel microbuses. However, policy support is needed to replace old diesel microbuses, since these are the most polluting vehicles. The KEVA cost-benefit study, "Are Electric Vehicles Viable in Kathmandu," by Dr. Saurav Dev Bhatta, shows that the net benefit to society of replacing **old** microbuses by *safa tempos* or trolley buses is much greater than the net benefit from replacing new microbuses. However, since it is very difficult to make new EVs cost-competitive with old ICEVs through realistic changes in tax and tariff policies, the best way for society to reap these benefits is by banning the use of old microbuses in specific routes or by changing regulations to gradually phase out the use of older ICEVs.

### Trolley Buses

Since the estimated private lifecycle costs of electric trolley buses are already less than the costs of new minibuses, the government does not necessarily have to support trolley buses financially through subsidies or tax breaks. But the government should explore the possibility of supporting the expansion of the trolley bus system through a public-private partnership venture, as recommended by KEVA (2004).

### Passenger Cars

Since the benefits of replacing fossil-fuel passenger cars by electric cars outweigh the costs, the government should consider restricting future purchases of cars for government offices, instead replacing them with electric cars. Approximately 65 new government vehicles are registered in Bagmati zone each year.<sup>1</sup> Assuming that 20% of these vehicles are being used just inside Kathmandu, a total of 13 electric cars could be purchased each year by the government for use in Kathmandu. So, if the next batch of purchases included only REVAs (electric cars that are made in India), for example, the net benefit to society would range from Rs. 130,000/year to Rs. 142,000/year.<sup>2</sup>

### Motorcycles

Motorcycles comprise a significant and growing portion of the vehicle fleet in Kathmandu, and their average annual growth rate is around 21.6% (see CEN 2003). Policy makers should, therefore, also explore the viability of replacing gasoline-fueled motorcycles with electric motorcycles.



<sup>1</sup> This estimate is based on data from DoTM.

<sup>2</sup> Recall that the net benefit of replacing one Maruti by an equivalent REVA is between Rs. 9,933/year to Rs. 10,885/year.



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