

## **HEV/EV Mission Plan 2020**

India imports around 90% of the total crude oil requirement to sustain the economy. Out of the total oil import, 70% is used for the transportation sector. Petroleum products are subsidized to keep inflation in control. This translates into a huge burden in terms of the revenue loss to the exchequer. Automobile industry in India is conscious of these implications and as a responsible industry has taken several initiatives over the years to increase the vehicle efficiency, curb tail-pipe emissions and develop future alternative fuel technologies to provide sustainable auto-mobility to the masses.

At this juncture, automobile industry feels that electric drive power-train technologies have grown over the years and have reached to a level where research outcomes being carried out across the globe could be applied toward development of economically viable products for the end-users benefiting the society at large. However, it is imperative to create an all inclusive business model on which the success of the electric-mobility will largely depend. No doubt, Government of India has to play a pivotal role to earmark necessary financial incentives to kick start the whole paradigm shift toward electric mobility in the country in the years to come.

In its constant endeavor, the industry is closely working with various ministries in order to develop a comprehensive electric-mobility plan for the country. Government of India has shown optimism and interest toward development of a policy, wherein, it is proposed to create a national level apex inter-ministerial structure to address the challenges toward promoting domestic manufacturing of hybrid/electric vehicles in India.

In view of the above, several rounds of deliberations have been held amongst various stake-holders including Government of India and the Automotive Industry. As a result, a common view has emerged to create a national level mission mode framework for achieving certain goals by year 2020 similar to the lines of Automotive Mission Plan: 2006-2016. The framework will create a blueprint to deliver tangible outcomes in 10 years of its existence in terms of number of hybrid/electric vehicles plying on the road, technology-options, reference-vehicle specifications, safety and type-approval standards, regulations, vehicle tax-structure, tariff policy etc.

SIAM would like to engage a knowledge partner for carrying out a primary and secondary data study wherever required in the process of formulating the above mission framework. It is foreseen that the knowledge partner shall work in accordance with the engagement structure to be laid down and under the supervision of Monitoring Committee to be set-up by SIAM.

## Request For Proposal

The knowledge partner is expected to be engaged in the following manner (the list is not exhaustive):

- The study proposal may contain the following:
  - Terms of reference
  - Objective (based on the requirement indicated in this document)
  - Specific deliverables
  - Reference to previous studies related to electric mobility
  - Methodology
  - Primary data collection plan
  - Timelines (the study is expected to be completed in 4~6 months)
  - Detailed cost break-up
  - 2020 vision for appropriate technology mix for various vehicles mix
- Will support the Monitoring Committee throughout the entire process of formulation of the mission plan.
- Carry out primary research wherever required, based on the study proposal from the knowledge partner.
- Carry out quantitative analysis based on the various information and data available from the secondary sources.
- Derive subjective understanding based on the outcomes of the primary research and the analysis.
- Map the entire spectrum pertaining to HEV/EV development in the country.

The broad areas of research for carrying out the above study would be following:

### **1. ELECTRIC VEHICLE: GLOBAL SCENARIO**

- a. Technology
  - i. Battery
  - ii. DC-DC Motors
  - iii. Battery Management System
  - iv. Electronic Control System
  - v. System integration requirements
  - vi. Materials
  - vii. Design
  - viii. ELV (Recyclability)
  - ix. Testing Set-up
  - x. Infrastructure – Power, Battery Recharging etc.
  - xi. Battery re-charging technology
- b. Vehicle specifications – type, system configuration, mileage etc.
- c. Standards and regulations
- d. Market structure – Major Players, Fleet Mix, Vehicle Models etc.
- e. Fiscal incentives and tariff policy
- f. Business models being deployed

## **2. CHALLENGES IN INDIA**

### **a. Technology**

- i. Battery
- ii. DC-DC Motors
- iii. Battery Management System
- iv. Electronic Control System
- v. System integration requirements
- vi. Materials
- vii. Design
- viii. ELV (Recyclability)
- ix. Testing Set-up
- x. Infrastructure – Power, Battery Recharging etc.
- xi. Battery re-charging technology

### **b. Technology & Production Road Map**

- i. Appropriate technologies (EV, BEV, PHEV) to be encouraged for India's product mix
  1. Public Transport Buses
  2. 2-Wheelers
  3. City Taxi Fleet (3-Wheelers and 4-Wheelers)
  4. Privately owned 4-wheelers
- ii. Export opportunities
- iii. Economically viable production capacities

### **c. Government Policies needed to encourage transition to Electric Mobility**

- i. Cost structure of Electric, Hybrid, and Plug-in HEV vehicles in comparison to conventional combustion engine vehicles
- ii. Tax Structure
- iii. Incentives
- iv. Mandatory Usage Laws

### **d. Standards & Regulations**

- i. Safety
- ii. Type-Approval

### **e. Parameters for business models**

- i. Carbon Credit
- ii. PPP
- iii. Public Transport
- iv. Battery replacement for ex. Hire-Use-Return Schemes
- v. Market Size – Fleet Mix
- vi. Consumer information etc.

- f. Total Cost of Ownership (Cost-Benefit of shifting from conventional fuel to HEV/EV)**
  - i. Pricing
  - ii. Comparative Drivability
  - iii. User-friendly for ex. Mileage, Recharging Time, Maintenance etc.
  - iv. Other Indirect Aspects
- g. Long-term R& D Projects in Electric Mobility that need Government support to ensure India's competitiveness in the long term**
- h. Environmental benefits**
  - i. Well-to-Wheel CO<sub>2</sub> emission reduction from alternate Electric Mobility Strategies
  - ii. Pollution reduction and its benefits in terms of health benefits to urban dwellers in India through the implementation of Electric Mobility Strategies

### **3. RECOMMENDED INTERVENTIONS**