

Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility
(Version 5)

STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: September 26, 2015

Screener: Lev Neretin

Panel member validation by: Ralph E. Sims
Consultant(s):

I. PIF Information *(Copied from the PIF)*

FULL SIZE PROJECT GEF TRUST FUND

GEF PROJECT ID: 9226

PROJECT DURATION : 3

COUNTRIES : China

PROJECT TITLE: Integrated Adoption of New Energy Vehicles in China

GEF AGENCIES: UNIDO

OTHER EXECUTING PARTNERS: Ministry of Industries and Information Technology (MIIT)

GEF FOCAL AREA: Climate Change

II. STAP Advisory Response *(see table below for explanation)*

Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies):
Concur

III. Further guidance from STAP

1. [Note: The title is "New Energy Vehicles" but only electric vehicles are included and not those running on hydrogen or biofuel fuels.]
2. Standards and guidelines are sought for electric vehicles and integrating recharging schemes into the grid, with the aim for cities to adopt them following two pilot demonstrations. Trucks, buses, taxis will be included as well as private cars. Why electric scooters and pedal-assist electric bicycles are also not included is not clear since many exist in China and are growing rapidly worldwide. EVs featured prominently within China's INDC.
3. Capacity building on smart-grid systems (based on renewable energy (RE)) will be undertaken for key stakeholders. In addition, the outcomes will be disseminated to the manufacturers of EVs and recharging systems.
4. The project is linked with policies to increase the share of low-carbon electricity sources in the grid. Little GHG emission reduction, if any, occurs if displacing gasoline or diesel vehicle fuels with electricity systems with a high carbon emission factor (at around 600-900 kg CO₂/kWh generated). (This point is made in section 1.1). For example, one life cycle analysis showed an EV automobile in China emits as much CO₂/km traveled as a large gasoline vehicle consuming 9l/100km (<http://shrinkthatfootprint.com/electric-car-emissions>). This is verified by the Tsinghua University analysis (page 13) so is understood by the project proponents and the goal of full "integration" of EVs with RE systems. Annex B clearly outlines the data assumptions. For example it shows:
 - a diesel bus running 200km a day emits 5.68 t CO₂ /yr;
 - the same bus using power from a coal-fired power grid emits 6.99 t CO₂/yr;
 - the same bus using power from a 50% RE / 50% coal grid emits 3.50 t CO₂/yr .
5. Yancheng City may have a higher share of renewables (11%) in its electricity mix than other cities on the grid, but this is still insufficient to make EVs a true low-carbon transport option.
6. In Shanghai, there is potential for EVs to be integrated and benefit from off-peak power and solar PV, as well as provide the benefits from vehicle battery storage becoming part of a smart-grid development. However, replacing 200 diesel buses with 200 electric buses gives negligible reduction in total GHG emissions per year. Surprisingly, what are not addressed in any detail in the PIF are project co-benefits such as the health benefits from reduced local air pollution and lower associated costs.
7. Annex B shows a diesel bus in Yancheng at 30l/100km produces 5.68 t CO₂ /yr whereas a diesel bus in Shanghai for some unknown reason has a lower fuel consumption at 25l/100km so produces relatively less 4.73 t CO₂/yr. Assumptions made are not clear and could be explained in the project document.]

8. Project proponents are advised to use new GEF GHG accounting guidelines and report emissions accordingly (<https://www.thegef.org/gef/node/11187>). The numbers given in the proposal for post-project direct emissions as it seems are direct project emissions. Indirect or consequential emission calculations have to be verified.

9. Promotion of EV and associated systems does not go in isolation from the overall transport development infrastructure. There are several ongoing GEF and non-GEF projects targeting development of sustainable low-carbon transport in China. Project proponents are advised to connect/mainstream project-specific activities into the larger transport development frameworks. Experience of SloCAT partnership and closer links with this initiative could benefit project sustainability and wider dissemination of lessons learned.

10. Barriers to deployment of EVs are the initial relatively high purchase cost of EVs, lack of public recharging facilities. Linking the purchase of EVs with carbon markets and investment in grid renewables is a novel approach. Deploying grid renewables in parallel with EVs and smart-grid designs is a commendable approach. Missing perhaps is the option for off-grid direct recharging of EVs by small-scale independent RE systems such as solar PV panels installed on a vehicle garage roof.

11. Concerns over battery replacement costs, lowering of voltage output with age and hence reduced vehicle range, and recycling of battery materials at end-of-life, are issues that need attention in the project interventions.

12. Many other countries are undertaking similar studies. It would be ideal if an international standard could be applied worldwide for EV recharging, so it may be wise to investigate what other work is being done. The IEA's Electric Vehicles Initiative, which China has co-chaired with the US, is a useful place to start <http://www.iea.org/topics/transport/subtopics/electricvehiclesinitiative/>. Project proponents are advised to consider links with these and other initiatives to assure that lessons learned in this project are disseminated widely.

<i>STAP advisory response</i>	<i>Brief explanation of advisory response and action proposed</i>
1. Concur	In cases where STAP is satisfied with the scientific and technical quality of the proposal, a simple “Concur” response will be provided; the STAP may flag specific issues that should be pursued rigorously as the proposal is developed into a full project document. At any time during the development of the project, the proponent is invited to approach STAP to consult on the design prior to submission for CEO endorsement.
2. Minor issues to be considered during project design	STAP has identified specific scientific /technical suggestions or opportunities that should be discussed with the project proponent as early as possible during development of the project brief. The proponent may wish to: <p>(i) Open a dialogue with STAP regarding the technical and/or scientific issues raised.</p> <p>(ii) Set a review point at an early stage during project development, and possibly agreeing to terms of reference for an independent expert to be appointed to conduct this review.</p> <p>The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.</p>
3. Major issues to be considered during project design	STAP proposes significant improvements or has concerns on the grounds of specified major scientific/technical methodological issues, barriers, or omissions in the project concept. If STAP provides this advisory response, a full explanation would also be provided. The proponent is strongly encouraged to: <p>(i) Open a dialogue with STAP regarding the technical and/or scientific issues raised; (ii) Set a review point at an early stage during project development including an independent expert as required.</p> <p>The GEF Secretariat may, based on this screening outcome, delay the proposal and refer the proposal back to the proponents with STAP’s concerns.</p> <p>The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.</p>