



GLOBAL ENVIRONMENT FACILITY  
INVESTING IN OUR PLANET

**Naoko Ishii**  
CEO and Chairperson

October 17, 2016

Dear Council Member,

The UNDP as the Implementing Agency for the project entitled: ***China: Greening the Logistics Industry in Zhejiang Province***, has submitted the attached proposed project document for CEO endorsement prior to final Agency approval of the project document in accordance with the UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the project concept approved by the Council in March 2014 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the UNDP satisfactorily details how Council's comments and those of the STAP have been addressed.

We have today posted the proposed project document on the GEF website at [www.TheGEF.org](http://www.TheGEF.org) for your information. We would welcome any comments you may wish to provide by November 14, 2016 before I endorse the project. You may send your comments to [gcoordination@TheGEF.org](mailto:gcoordination@TheGEF.org).

If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Naoko Ishii  
Chief Executive Officer and Chairperson

Attachment: GEFSEC Project Review Document  
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee



# REQUEST FOR CEO ENDORSEMENT

**PROJECT TYPE: Full-sized Project**

**TYPE OF TRUST FUND: GEF Trust Fund**

For more information about GEF, visit [TheGEF.org](http://TheGEF.org)

## **PART I: PROJECT INFORMATION**

Project Title: GREENING THE LOGISTICS INDUSTRY IN ZHEJIANG PROVINCE (GLIZP)			
Country(ies):	People's Republic of China	GEF Project ID:	5373
GEF Agency(ies):	UNDP	GEF Agency Project ID:	PIMS 5238
Other Executing Partner(s):	In China: Zhejiang Provincial Development and Reform Commission, Fuyang Municipal People's Government	Submission Date:	5 February 2016
		Resubmission Date:	25 March 2016
		Resubmission Date:	25 April 2016
		Resubmission Date:	08 July 2016
		Resubmission Date:	26 Spt. 2016
GEF Focal Area (s):	Climate Change	Project Duration(Months)	48
Name of Parent Program (if applicable):	N.A.	Project Agency Fee (\$):	276,800
➤ For SFM/REDD+ <input type="checkbox"/>			
➤ For SGP <input type="checkbox"/>			
➤ For PPP <input type="checkbox"/>			

### **A. FOCAL AREA STRATEGY FRAMEWORK<sup>1</sup>**

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (\$)	Co-financing (\$)
CCM-2	Outcome 2.1: Appropriate policy, legal and regulatory frameworks adopted and enforced	Output 2.1: Energy efficiency policy and regulation in place Output 2.3: Energy savings achieved	GEFTF	1,152,800	3,798,800
CCM-4	Outcome 4.1: Sustainable transport and urban policy and regulatory frameworks adopted and implemented	Output 4.1: Cities adopting in low-carbon programs Output 4.3: Energy savings achieved	GEFTF	1,761,900	8,331,200
<b>Total Project Costs</b>				2,913,700	12,130,000

### **B. PROJECT FRAMEWORK**

Project Objective: Widespread application of energy efficient green logistics <sup>2</sup> techniques and practices in the logistics industry in Zhejiang Province						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Co-financing (\$)
1: Policy and Regulatory Support for	TA	1: Established and enforced policy and	1.1: Completed analysis of: (1) the energy use trends and GHG emissions from the operation of	GEF TF	590,000	860,000

<sup>1</sup> Refer to the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

<sup>2</sup> Supply chain management practices and strategies that reduce the environmental and energy footprint of logistic companies in materials handling, waste management, packaging and physical distribution (i.e., freight transport).

Green Logistics		regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province	the logistics industry (materials management and physical distribution) in Zhejiang Province; and, (2) green logistics systems developed and implemented in other countries and their utilization performances 1.2: Formulated, recommended and implemented standards, policies, incentive schemes and implementing rules and regulations on the promotion and adoption of green logistics in Zhejiang Province 1.3: Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry 1.4: Approved follow-up plan for the replication of the applications of the piloted green logistics policies in Zhejiang Province and in other provinces and cities			
2: Green Logistics Systems Demonstration	Inv	2: Improved energy efficiency in the materials management and physical distribution operations in the logistics industry in Zhejiang Province	2.1: Completed designs of energy efficient materials management demonstrations focusing on using energy efficient materials management systems in packaging, warehousing, cold storage, etc., in the logistics industry in Zhejiang Province 2.2: Completed designs of energy efficient physical distribution demonstrations focusing on integrated multi-modal transport systems, and reduction of empty load rates in the freight transport operations of the logistics industry in Zhejiang Province 2.3: Installed and fully operational green logistics-based centralized logistic platform in Fuyang City, Zhejiang Province 2.4: Operational green logistics-based physical distribution (freight transport) system demonstration project in Zhejiang Province	GEF TF	1,809,300	10,560,000

	TA		2.5: Documented annual evaluation reports on the energy performance and environmental impacts of each demo project in materials management and physical distribution, and documented and disseminated demo project results 2.6: Developed action plan for sustainability of the green logistics system demonstration program	GEF TF	136,200	20,000
3. Capacity Building and Promotion of Green Logistics Systems	TA	3: Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province	3.1: Completed assessment report on the capacity development needs in green logistics and developed green logistics capacity building program 3.2: Completed green logistics training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang Province 3.3: Completed technical assistance program for assisting small-to-medium size LSPs on the application of green logistics systems. 3.4: Completed promotional workshops and/or activities to disseminate documents, and to enhance awareness and knowledge in green logistics systems. 3.5: Completed and fully evaluated program for the promotion and capacity building of green logistics systems <sup>3</sup> 3.6: Designed, endorsed and implemented energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province	GEF TF	239,450	516,000
Sub-total					2,774,950	11,956,000
Project Management Cost (PMC) <sup>4</sup>				GEF TF	138,750	174,000
<b>Total Project Costs</b>					<b>2,913,700</b>	<b>12,130,000</b>

<sup>3</sup> This refers to the results of the assessment of the capacity development program implementation. This is necessary for the improvement and the sustenance of the capacity development program. As in all capacity development programs, all training or capacity building interventions are evaluated in terms of their impacts and relevance, and whether these address the identified capacity development needs (Output 3.1). The results of the evaluation are then used as guide in the redesign or modification of the capacity development program to make it more in line with the capacity development needs.

<sup>4</sup> PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

### C. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME (\$)

Sources of Co-financing	Name of Co-financier (Source)	Type of Co-financing	Co-Financing Amount (\$)
Local Government	Zhejiang Provincial Government	Cash	1,000,000
Local Government	Zhejiang Provincial Government	In-kind	300,000
Local Government	Fuyang City Government	Cash	2,000,000
Local Government	Fuyang City Government	In-kind	180,000
Private Sector	Fuyang Hangzhou Transfar Logistics Base Co., Ltd.	Cash/Grant	210,000
		In-kind	3,640,000
Private Sector	Zhejiang Fuyang Port International Co. Ltd.	Cash/Grant	2,730,000
		In-kind	1,820,000
GEF Implementing Agency	United Nations Development Programme	Grant	250,000
Total Co-financing			<b>12,130,000</b>

### D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>: N. A.

<sup>1</sup>In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

### E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount (\$)	Co-financing (\$)	Project Total, (\$)
International Consultants	408,000	1,246,500	1,654,500
National/Local Consultants	775,000	4,050,000	4,825,000

### F. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? No

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

## PART II: PROJECT JUSTIFICATION

### A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF<sup>5</sup>

The project conceptual design and the statement of Outputs as presented in the GEF-approved PIF remain the same in the Project Document, except for a minor change, albeit very important emphasis of the project approach in the promotion of green logistics in the Zhejiang Province and targeted nearby cities. The justification of the change is presented in the table below:

Expected Outputs		Rationale for Changes in PIF Outputs/Activities in the ProDoc
GEF-Approved PIF	Project Document	
1.2. Formulated and recommended standards, policies and implementing rules and regulations on the promotion and practice of green logistics in Zhejiang Province	1.2: Formulated, recommended and implemented standards, policies, incentive schemes and implementing rules and regulations on the promotion and adoption of green logistics in	<i>Inclusion of pilot incentive scheme for encouraging small to medium size logistics services providers to adopt and practice EC&amp;EE and green logistics technologies/techniques. Emphasized the implementation of</i>

<sup>5</sup> For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter “NA” after the respective question.

Expected Outputs		Rationale for Changes in PIF
	Zhejiang Province	<i>formulated and recommended standards, policies, incentive schemes and implementing rules and regulations.</i>
3.4: Conducted promotional workshops and/or activities to disseminate demo program results and documents, and to enhance awareness and knowledge in green logistics systems	3.4: Completed promotional workshops and/or activities to disseminate demo program results and documents, and to enhance awareness and knowledge in green logistics systems.	<i>Emphasized the thorough completion of the promotional activities to achieve the main objective of the project for wider application of green logistics in terms of reach and impact of the project in promoting green logistics not only in Fuyang, Zhejiang Province but also in targeted users and LSPs in nearby cities which should likewise appreciate and adopt these concepts and systems for more sustainable long term benefits.</i>

**A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc. N.A.**

**A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities. N.A.**

**A.3 The GEF Agency's comparative advantage: N.A.**

**A.4. Baseline project and the problem that it seeks to address:**

By the end of 2012, there are around 11,000 logistics companies in Zhejiang Province. A total of 105 of these have exceptional degree of creditworthiness (AAA rated), representing 12.7% of the country's total logistics companies. In 2013, this number climbed to around 13,000. Out of this, 139 are AAA rated, accounting for 11.0% of the nationwide total number of logistics companies. More logistics enterprises have transitioned from just providing warehousing service to providing comprehensive, multi-dimensional and integrated services; and to developing and operationalizing specialized logistics businesses. Though many logistics services providers (LSPs) have already adopted new logistics models for their businesses, the small and medium-sized LSPs still make up the bulk of the provincial logistics industry. A significant number of these SME LSPs are still engaged in conventional loading and unloading, warehousing and shipment with rampant unregulated competition.

As a province with a relatively advanced logistics industry, Zhejiang Province has been making efforts to explore measures for improving the efficiency of the operations in its logistics industry, thereby contribute to the provincial efforts to optimize energy utilization efficiency and contribute to the country's climate change mitigation targets. The provincial government has taken the lead in adopting a number of these measures. Among these efforts, which were subsumed into the GLIZP Project as baseline projects, are the following:

Project	Status & Accomplishments (as of 3Q 2015)
Transformation of Road and Port Logistics Project	The implementation of this project is still ongoing. As of 3 <sup>rd</sup> Quarter 2015, the transportation center, the express transport center and the central warehouse have been established as planned. The operation of the logistics information exchange center is still being optimized. The outputs of these projects so far have already started to contribute to the improvement of the management and technology applications in the logistics industry in Zhejiang Province.

International Port Logistics Project	The implementation of this project is still ongoing. The construction of the custom and quarantine inspection warehouse, as well as the container handling facilities has been completed. However, the optimization of the international port logistics system is still in progress.
Energy Savings in Transportation Propulsion Engineering Project	This installation of the relevant infrastructures under this project has been completed. It is now operational, and it is expected that with this initiative, the specific energy consumption in freight transportation in Zhejiang Province will be improved (i.e., reduced). An estimated total of 0.67 million tons coal equivalent (tce) energy savings have been achieved so far.
Implementation of the Fuyang City "Trade Logistics 12th Five-Year Plan"	The implementation of this plan is still in progress. Some logistics centers are under construction to improve the infrastructure, such as the Dongzhou Logistics Center, etc. System optimizing measures are being taken to improve the network efficiency of transport.

The other relevant ongoing initiatives, some of the activities of which have been subsumed as baseline activities of the GLIZP project, include the following:

- a. *Stage out Action Plan for Rejuvenation of Inland Water Navigation in Zhejiang Province (2013-2017)*
- b. *13th Five Year Plan for the Development of Modern Logistics Industry in Zhejiang Province (2016-2020)*
- c. *Setting of the Standards of Zhejiang Province Green Logistics (continuing since 2010)*
- d. *Hangzhou Modern Logistics Development Plan (since 2006, extended to 2020)*
- e. *Transportation Information Platform including App Promotion (continuing since 2000)*
- f. *Improvement of Container Full-Load Rate and Implementation of the Water-Land Transshipment Project (continuing since 2014).*

However, despite these initiatives, there are still significant potentials for improving the efficiency of utilizing energy in the logistics industry in Zhejiang. These potentials can be realized in the materials management (e.g., intelligent green warehousing, energy efficient cold storage, packaging, etc.) and physical distribution (i.e., freight transportation) operations within the entire provincial logistics industry. Nevertheless, to realize these potentials, the province's logistic industry has to address several specific challenges and issues in regards the existing policies and regulations that govern the industry, technical issues in the application of green logistics technologies (techniques and practices), as well as capacity issues within the industry.

**A. 5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:**

The proposed project builds on some of the abovementioned baseline projects in the logistics industry in Zhejiang Province. These projects are meant to improve the operational efficiency of the logistics industry in the province through upgrades in the materials management and physical distribution (freight transportation) operations in the logistics industry. While the idea of cost savings, environmental protection and operational efficiency improvement are among the driving forces for the Zhejiang Fuyang Green Logistics Platform Program of the Zhejiang Provincial Government, due to lack of knowledge of green logistics techniques, the two logistics improvement projects under this program are by and large still based on the traditional logistics model which does not take a holistic approach toward minimizing energy and environmental impacts at every stage of the logistics operations. With just these two projects,

the full potential for energy savings, operational cost savings, and GHG emission reductions in the province's logistics industry will not be realized.

The project will tackle the two major energy consuming operations in the logistics industry in Zhejiang Province, materials management and physical distribution (i.e., freight transport). For the effective showcasing and promotion of the application of the green logistics model, enhancements of the current design to incorporate green logistics features will be done through the removal of barriers associated with the lack of capacity and knowledge about the application, design, financing and operation of green logistics technologies in the operations (materials management and physical distribution) in the province's logistics industry. Incremental support activities are necessary to remove the barriers, as well as challenges to the effective implementation of the application of the energy-saving and environment conserving features of green logistics systems in the logistics industry in Zhejiang Province.

Incremental activities that will facilitate the establishment and operation of intelligent green warehousing systems, and energy efficient and environment benign processes such as product packaging, and cold storage, will enable the improvement of the specific energy consumption in materials management operations in the industry. To enable this, incremental funds are required to address the barriers related to the lack of capacity and knowhow in the industry (particularly the small-to-medium sized LSPs) in the application green logistics technologies (techniques and practices).

Similarly, incremental activities that will facilitate more cost-effective approaches such as multi-modal freight transport, will enable full utilization of river systems in the province for transporting cargos and goods to reduce empty load rates of freight trucks from the current 50% to at least 10%. This will bring about improvement in the specific energy consumption in the freight transport operations in the industry. To also enable this, incremental funds are necessary to address the inadequate capacity (technical knowhow, and finance) of the government authorities and the industry, in the evaluation, design and implementation of suitable freight transport systems that are not only energy conserving but also reduces environmental problems related to transport fuel utilization. Furthermore, incremental funds are needed for assisting the provincial government in the formulation of green freight transport strategy and policies, as well as the enforcement of the associated implementing rules and regulations and standards aimed at improving the efficiency and environmental sustainability of goods/products distribution by the logistics industry are among the incremental activities that will be carried out. In addition to the initiatives for reducing empty load rates, other potential schemes shall be evaluated for future applications in the province's transport sector. This may include the development of an integrated public transport and freight transport systems; e-commerce transport and goods/products distribution systems; strategies and guidelines for layout planning for goods/products distribution centers; new distribution technologies that are in accord with an efficient system of urban freight distribution; and green certification of freight transport companies.

Improving the energy utilization efficiency in these two major operations in the logistics industry through the application of green logistics technologies will bring about energy savings to, and associated GHG emission reduction from the logistics industry in Zhejiang Province. GEF financial support is necessary to encourage the major stakeholders in the logistics industry (government authorities, commercial establishments, and manufacturing industries) to support the establishment and operation green logistics infrastructures; and facilitate the cost effective utilization of such infrastructures and the enabling of green logistic systems. Otherwise, without such incremental enabling activities the achievement of the anticipated alternative scenario in Zhejiang Province's logistic industry will not be realized. More importantly, incremental activities to establish and enforce policy and regulatory frameworks that are supportive (through effective institutional arrangements, financial/fiscal incentives, information sharing, etc.) will be necessary to sustain the application of green logistics technologies in the logistics, as well as the substantial sustainable development benefits that result from them.



Without GEF support for funding the incremental cost for removing the barriers that this proposed project will address, the expected potential additional global environmental benefits (in terms of avoided CO<sub>2</sub> emissions linked from the electricity and transport fuels that will be saved) would not be realized. Without this proposed project, China would have limited success in promoting energy efficient and environment friendly techniques and practices in an energy-intensive logistics industry, and consequently the potential contribution to achieving the country's GHG emissions reduction targets will not be fully realized. The GEF support for the required incremental costs will ensure the creation of the much needed enabling conditions that will facilitate the widespread application of green logistics technologies, and ultimately realize the expected global environmental benefits of reducing GHG emissions (from energy savings derived from the energy efficient materials management and physical distribution operations) in the country's logistic industry.

With the successful implementation of the barrier removal activities, a more favorable enabling environment will be created that will motivate most, if not all, of the LSPs in the province to improve their operations (materials management and physical distribution), save on energy use and energy costs, and improve their cash flows and competitiveness. Overall, the project is expected to bring about GHG emission reduction of around 471.4 ktons CO<sub>2</sub>/year due to energy savings of about 80.06 ktoe/yr derived mainly from the green logistics applications in materials management operations and the enhancement of the freight transport system that will employ multi-modal transport schemes involving road, water, and combination road-water transport.

**A.6. Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks: N.A.**

**A.7. Coordination with other relevant GEF financed initiatives**

The implementation of the GLIZP project will be fully coordinated with the other projects implemented in China, both ongoing and completed, that are related to freight transport and industrial energy efficiency. Among the relevant completed projects are the following GEF-funded projects:

- China Energy Efficiency Promotion in Industry Project (CEEPI) – The project team will consult with the implementers of this completed project about lessons learned in the implementation of activities addressing the removal of policy/regulatory, institutional and capacity barriers.
- Guangdong Green Freight Demonstration Project Motor Challenge Program (MCP) – Consultations with the implementers of this completed project will be carried out to learn about best practices in enhancing freight transport energy efficiency capacity, as well as those aimed at removing technical and information barriers.
- Eco-Transport in City Clusters: Model Development and Pilots – The project team will consult the implementers of this ongoing project about best practices in enhancing transport efficiency, energy saving, and CO<sub>2</sub> emission reduction through multi-modal transport integration in city clusters.

Among the ongoing GEF-funded projects that will also be consulted for coordination and information sharing are energy efficiency projects by the ADB (e.g., Hebei Energy Efficiency Improvement and Emission Reduction Project); and by the WB (Developing Market-based Energy Efficiency Program in China), for lessons learned in regards implementation of energy efficiency technologies/techniques that can be applied in materials management operations in the logistics industry. For coordination and information sharing in regards energy efficiency in transport (particularly related to freight transport), among the ongoing GEF-funded projects that the GLIZP project team will coordinate with are the ones by the ADB (e.g., ASTUD: Jiangxi Ji'an Sustainable Urban Transport Project). Such coordination efforts are also meant to learn from the experiences from these other projects regarding the implementation of

energy efficiency technologies/techniques that can be applied in the physical distribution (i.e., freight transportation) operations in the logistics industry. Where feasible and applicable, the project will also coordinate and share information with new transport projects that will be developed and implemented in China. One such project is the planned WB Efficient and Green Freight Transport Project that aims to improve the efficiency of and reduce carbon emission from China's freight transport sector<sup>6</sup>.

The project team will also coordinate with the relevant departments of the local governments in Zhejiang Province and Fuyang City on the implementation of their ongoing/planned green logistics platform program particularly in the implementation of some of its activities that have been subsumed into the GLIZP project. As designed, this is not only meant to make use of potential synergies, and ensure complementarity and building on best practices and lessons learned but also to enhance these with the inclusion of incremental activities on the facilitation of green logistics techniques. Among these are the following:

- Transformation of Road and Port Logistics Project
- International Port Logistics Project
- Energy Savings in Transportation Propulsion Engineering Project
- Sea-railway Joint Transportation Engineering Project by Ningbo Municipal Government
- Drop and Pull Transport Removal Project of Zhejiang Yushi International Logistics Co., Ltd.
- Zhejiang Province Initiatives in the Construction of Logistics Park (Base)
- Zhejiang Province Initiatives in Information Exchange Center for Purchasing and Inventory Management of Logistics Resources
- Combined Transport on Ocean and River Development Plan

The project team will also coordinate the project activities implementation with the relevant stakeholders, as well as with the UNDP-Bangkok Regional Hub in Bangkok, Thailand. The UNDP country office in China will be fully involved in the project implementation through its participation in the various stakeholder and co-financing consultation meetings and technical workshops during project development, and in the multipartite review meetings.

## **B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:**

### **B.1 Describe how the stakeholders will be engaged in project implementation.**

The stakeholders of this project include the relevant entities in the Zhejiang Province that are involved in materials management and freight transportation business. The following table lists down the stakeholders of the GLIZP Project, their respective roles during project implementation and how they will be engaged:

Stakeholder	Roles and Responsibilities in Project Implementation
Zhejiang Provincial Development and Reform Commission)	As main implementing partner for the implementation of the GLIZP Project in connection with the overall project direction and management, organizational, financial and administrative support, capacity development activities of the staff involved under the project, policy and decision making, achievement of the expected outputs, monitoring and documentation of results, sustainability of activities and outputs in ensuring attainment of expected outcomes during and after the project; and liaison/coordination with stakeholders and beneficiaries.

<sup>6</sup> Reja, B. "WB-China Transport Partnership in Greening Freight System", 9th Better Air Quality Conference, South Korea, August 2016.

	ZPDRC shall assume the leadership role in coordinating and motivating the players of the logistics industry towards its goals in the materials management and physical distribution
Fuyang City Government	As project collaborator in the identification, design and implementation of the demonstration of applications of green logistics technologies, techniques and practices in logistics operations in Fuyang City and related capacity development. Fuyang City Government in cooperation with the ZPDRC shall spearhead the resource mobilization and investment in the required demonstration facilities for green logistics in the material management and physical distribution, including combined road and water transport.
Zhejiang Fuyang Port International Co. Ltd.	As project collaborator for the identification, design and implementation of demonstration of green logistics applications in materials management operations and related capacity development. This will involve the installation and operation of the specific requirements in modernizing and equipping the system on reliable information technology application in various phases of operations by increasing the container full-load rate from the current low load rate. And by relying on the Dong Zhou dock land and water resources, this scheme will transfer land transport into waterway transport thereby reducing pressure on roads, as well as reduce energy consumption.
Fuyang Hangzhou Transfar Logistics Base Co., Ltd.	As project collaborator for the identification, design and implementation of demonstration of green logistics applications in physical distribution operations and related capacity development. This will involve the systematic and efficient scheduling of transport modes and combined road and water transport in a centralized platform by addressing the problem of asymmetric information, and improve goods-vehicles matching efficiency, reduce truck empty-loaded rate based on highway port network information platform, thus advocating widespread use of empty trucks on return trip
Other Zhejiang Province-based logistic service providers	As project participants in the identification, development and provision of incremental technical assistance, capacity development, information and promotion activities of the project
United Nations Development Programme	Project implementation oversight on behalf of the GEF; provision of project management and technical assistance in addressing any project implementation issues.

**B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):**

The anticipated socio-economic benefits from the implementation of the GLIZP will be derived from the improved revenue generation that will be facilitated by the established and enforced policy and regulatory frameworks that are supportive of, and will sustain the application of green logistics systems in the province's logistics industry. The removal of barriers that will facilitate the widespread application of green logistics (from energy savings derived from the energy efficient materials management and physical distribution operations) will improve the economic stature of the province's logistic industry.

The anticipated economic benefits such as the (a) reduction of Zhejiang Province's freight truck empty load rates from 50% to 10%; (b) increased utilization of more cost-effective and energy efficient water transport systems; (c) direct energy savings from the application of energy efficiency technologies and practices in the materials management activities of LSPs; and, (d) reduction of logistics operations costs (half of which is on energy costs) for provincial manufacturing industries from the freight consolidation features of the new green logistics system. The increased economic benefits also translates into social

benefits. With an anticipated increased in the number of LSPs that will be applying green logistics technologies and techniques in their operations by end-of-project, new jobs are expected to be created with the application of green logistics techniques in the logistics industry in Zhejiang Province.

This proposed project will involve the promotion of improved materials management operations in LSPs that will also provide job opportunities particularly for women. Green logistics systems such as intelligent green warehousing systems can make the operations more energy efficient and also easier that would allow women to have gainful employment. In that regard, the project will contribute to improved employment opportunities for Chinese women, which will also be made possible through the implementation of professional training and skills enhancement under Component 3 of the project.

### **B.3. Explain how cost-effectiveness is reflected in the project design:**

The logistics industry in Zhejiang Province is relatively advanced inasmuch as many logistics companies or LSPs are advanced in their technology implementations in their business. Some have already implemented measures in improving the efficiency of their operations. However, there are still many of them that have not done so. To improve the efficiency of its logistics industry, Zhejiang Province can just let the individual LSPs do their respective actions to improve their operations. Such fragmented efforts however would not be optimal and will not achieve the maximum potential benefits in terms of energy savings and GHG emission reductions. Employing a more integrated approach of removing barriers to the widespread application of green logistics technologies and techniques, as applied in the proposed GLIZP project will address all barriers that prevents the entire logistics industry of the province in applying green logistics technologies and techniques. In that regard, that will be more cost-effective.

Considering the lifetime of the investments on green logistics demonstrations (in materials management and physical distribution), the direct CO<sub>2</sub> emission reduction that is attributable to this GEF project is about 1,749.3 ktons CO<sub>2</sub> by EOP. With the proposed GEF budget of US\$ 2,913,700, this translates to a unit abatement cost (UAC) of about US\$ 1.67/ton CO<sub>2</sub>, which is lower than the current average carbon price in the existing carbon exchanges in China (e.g., RMB 15.85/ton CO<sub>2</sub> or US\$ 2.4/ton CO<sub>2</sub> in the Hubei Carbon Exchange)<sup>7</sup>.

### **C. DESCRIBE THE BUDGETED M & E PLAN:**

The project will continuously monitor and evaluate all project components and activities towards achieving the expected outcome and outputs in line with the UNDP/GEF monitoring and evaluation (M&E) system. A formal M&E Plan will be adopted during the project inception corresponding to a full-scale project to track the activities and contributions of the activities by all the project partners, in terms of both in-cash and in-kind co-financing contributions. These M&E findings will be determined, verified, evaluated and reported during the planned two in-depth independent reviews during the mid-term and towards the end of the project.

<b>M&amp;E Activity</b>	<b>Responsible Parties</b>	<b>Budget US\$</b>	<b>Time frame</b>
Inception Workshop and Report	<ul style="list-style-type: none"> <li>Project Manager</li> <li>UNDP CO, UNDP GEF</li> </ul>	Indicative cost: 10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	<ul style="list-style-type: none"> <li>UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and</li> </ul>	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and

<sup>7</sup> Source: FactorCO<sub>2</sub>, Climate Daily News, 23 Sep 2016.

<b>M&amp;E Activity</b>	<b>Responsible Parties</b>	<b>Budget US\$</b>	<b>Time frame</b>
	institutions, and delegate responsibilities to relevant team members.		annually when required.
Measurement of Means of Verification for Project Progress on <i>output and implementation</i>	<ul style="list-style-type: none"> <li>▪ Oversight by Project Manager</li> <li>▪ Project team</li> </ul>	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RTA</li> <li>▪ UNDP EEG</li> </ul>	None	Annually
Periodic status/progress reports	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> </ul>	None	Quarterly
Mid-term Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: 40,000	At the mid-point of project implementation.
Final Evaluation	<ul style="list-style-type: none"> <li>▪ Project manager and team,</li> <li>▪ UNDP CO</li> <li>▪ UNDP RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: 40,000	At least three months before the end of project implementation
Project Terminal Report	<ul style="list-style-type: none"> <li>▪ Project manager and team</li> <li>▪ UNDP CO</li> <li>▪ local consultant</li> </ul>	0	At least three months before the end of the project
Audit	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ Project manager and team</li> </ul>	Indicative cost per year: 3,000	Yearly
Visits to field sites	<ul style="list-style-type: none"> <li>▪ UNDP CO</li> <li>▪ UNDP RCU (as appropriate)</li> <li>▪ Government representatives</li> </ul>	For GEF supported projects, paid from IA fees and operational budget	Yearly
<b>TOTAL Indicative COST</b>		<b>US\$ 102,000</b>	


**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):**

NAME	POSITION	MINISTRY	DATE
Jiandi Ye	GEF Operational Focal Point	Ministry of Finance – International Dept.	12 Aug 2013

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date	Project Contact Person	Telephone	Email Address
Adriana Dinu UNDP-GEF Executive Coordinator		September 26, 2016	Manuel L. Soriano Sr. Technical Advisor Energy & Climate Change	+66-2- 3049100 ext 2720	manuel.soriano@undp.org

## ANNEX A: PROJECT RESULTS FRAMEWORK

<b>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:</b> <i>Low carbon and other environmentally sustainable strategies and technologies are adapted widely to meet China's commitments and compliance with Multilateral Environmental Agreements</i>
<b>Country Programme Outcome Indicators:</b> <i>Cumulative CO<sub>2</sub> emissions reductions from 2011-2015; Baseline: 2011 Zero; Target: 2015 under UNDP supported project at 70 million tons CO<sub>2</sub> reduction</i>
<b>Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one):</b> <i>Mainstreaming environment and energy</i>
<b>Applicable GEF Strategic Objective and Program:</b> <i>Promote market transformation for energy efficiency in industry and the building sector</i>
<b>Applicable GEF Expected Outcomes:</b> <i>Reduction of GHG emissions from the widespread application of Green logistics in the Zhejiang Province</i>
<b>Applicable GEF Outcome Indicators:</b> <i>Cumulative CO<sub>2</sub> emissions reduction by end-of-project (EOP), ktons</i>

Project Strategy	Objectively Verifiable Indicators			Means of Gauging Success	Critical Assumptions
	Indicator	Baseline	Target		
<b>GOAL: Reduction of greenhouse gas (GHG) emissions through the widespread application of Green Logistics in the Zhejiang Province</b>	• Cumulative CO <sub>2</sub> emissions reduction by end-of-project (EOP), <i>ktons</i>	• 0	• 1,749.27	• M&E reports produced by the project management office based on activity and outputs reports submitted by relevant provincial government agencies on the energy consumption, savings and equivalent CO <sub>2</sub> emissions reduction in the Zhejiang province's logistics industry	• Continued commitment, support and active participation of Government of China through Zhejiang Provincial Development and Reform Commission (ZPRDC), enterprises and the public
	• Reduction in the annual growth rate of GHG emissions by EOP, %	• 0	• 3.0 %		
<b>OBJECTIVE: Widespread application of energy efficient green logistics<sup>8</sup> techniques and practices in the logistics industry in Zhejiang Province</b>	<ul style="list-style-type: none"> <li>• Cumulative fuel savings due to project intervention by EOP, <i>ktoe</i></li> <li>• No. of new jobs created with the application of green logistics techniques in the logistics industry in Zhejiang Province by EOP</li> </ul>	<ul style="list-style-type: none"> <li>• 0</li> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• 296.24</li> <li>• At least 1,000.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports on energy used and saved</li> <li>• Consolidated report from annual reports of ZPRDC, the Zhejiang Provincial Government and local logistics industry association,</li> </ul>	• High level of commitment of stakeholders (including the necessary co-financing from government agencies and LSPs) in the implementation of

<sup>8</sup> Supply chain management practices and strategies that reduce the environmental and energy footprint of freight distribution, and focuses on material handling, waste management, packaging and physical distribution (i.e., freight transport).

Project Strategy	Objectively Verifiable Indicators			Means of Gauging Success	Critical Assumptions
	Indicator	Baseline	Target		
					project activities and monitoring systems
<b>COMPONENT 1: POLICY AND REGULATORY SUPPORT FOR GREEN LOGISTICS</b>					
Outcome 1: Established and enforced policy and regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province	<ul style="list-style-type: none"> <li>No. of new provincial government legislation and policies that provide an enabling environment to support green logistics by EOP</li> </ul>	• 0	• At least 3	<ul style="list-style-type: none"> <li>Documentation of policies and regulations</li> <li>Approved and enforced policies and regulations in Zhejiang Province</li> </ul>	<ul style="list-style-type: none"> <li>Local Government and private logistics industry sector fully support and commit to the program and passage of relevant regulations and their implementation.</li> </ul>
<b>COMPONENT 2: GREEN LOGISTICS SYSTEMS DEMONSTRATION</b>					
Outcome 2: Improved energy efficiency in the materials management and physical distribution operations in the logistics industry in Zhejiang Province	<ul style="list-style-type: none"> <li>% empty load rate of freight transport in Zhejiang Province by EOP</li> <li>Annual fuel savings due to project intervention by EOP, ktoe/yr <ul style="list-style-type: none"> <li>Materials management, ktoe/yr</li> <li>Physical distribution, ktoe/yr</li> </ul> </li> <li>Annual GHG emission reduction by EOP, ktons CO<sub>2</sub> <ul style="list-style-type: none"> <li>Materials management, ktons CO<sub>2</sub></li> <li>Physical distribution, ktons CO<sub>2</sub></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>50%</li> <li>0</li> <li>0</li> <li>0</li> <li>0</li> <li>0</li> </ul>	<ul style="list-style-type: none"> <li>10%</li> <li>80.06</li> <li>30.06</li> <li>50.00</li> <li>471.36</li> <li>317.15</li> <li>154.21</li> </ul>	<ul style="list-style-type: none"> <li>Report on approved impact measurement methodology</li> <li>Statistics on empty load rate, energy consumption, logistics value, GHG emission to be monitored by the project</li> <li>Evaluation reports on energy efficiency performance in materials management and physical distribution</li> </ul>	<ul style="list-style-type: none"> <li>Government and provincial logistics industry provide support in gathering and providing necessary data on measuring and monitoring energy and environmental impacts</li> <li>Local Government and private logistics industry sector fully support and commit to the replication of successful results of the project</li> </ul>
<b>COMPONENT 3: CAPACITY BUILDING AND PROMOTION OF GREEN LOGISTICS SYSTEMS</b>					
Outcome 3: Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies	<ul style="list-style-type: none"> <li>No. of logistics companies actively employing green logistics technologies and techniques in their materials management operations by EOP</li> </ul>	• 0	• 100	<ul style="list-style-type: none"> <li>Monitoring reports by the project management office in cooperation with relevant provincial government agencies and logistics companies</li> </ul>	<ul style="list-style-type: none"> <li>Government and provincial logistics industry appreciate the value of green logistics concept and are willing to gain knowledge and</li> </ul>



Project Strategy	Objectively Verifiable Indicators			Means of Gauging Success	Critical Assumptions
	Indicator	Baseline	Target		
and practices in the logistics and manufacturing industries in Zhejiang Province <sup>9</sup>	• No. of logistics companies in Zhejiang that employ and practicing green logistic techniques and technologies in their physical distribution by EOP	• 0	• At least 50		skills in establishing and operating green logistics systems

---

<sup>9</sup> GLIZP will focus on Zhejiang Province. But the green logistic system in Zhejiang will certainly link with the logistic systems in other adjacent provinces and cities. One of the most important outcomes of this project is providing demonstrations in Component 2 which could be applied in other provinces later as part of the Sustainability Plan in Component 3.

**ANNEX B: RESPONSES TO PROJECT REVIEWS** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

**Responses to GEFSec Comments 28 April 2016**

Comments & Responses	Reference
<b>7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed?</b>	
<p><b>Comment</b>  <i>At the heart of the Guangdong Green Freight Project is a business model that encourages truck owners to purchase energy efficient technologies by offering rebates. This business model has been proved to be extremely effective. China's Ministry of Transport plans to scale up the model in the next Transport Five Year Plan.</i>  <i>The response avoided this core focus and instead emphasized the differences in scope between the two projects. Comment not cleared.</i></p> <p><b>Response:</b>  The design, development and implementation of the demos on energy efficient physical distribution (freight transport) schemes in the logistics industry shall take into account of the current development plans, policies and standards for freight transportation of China's Ministry of Transport (MoT). The developed schemes shall be in line with the MOT's next Five Year Plan (FYP), which, among others, considered the effective results of the application of the business model that was developed and promoted in the WB/GEF Guangdong Green Freight Project (GGFP). In addition, the EE freight transport schemes that will be showcased shall be based on the objectives of the 13th FYP on "green development" (support low carbon transportation system), and "innovative development" (establish economic belts along the coastline, rivers and major transportation lines); including the application of verified EE technologies on freight vehicles, integrated transport system; and optimization of transportation infrastructure planning and design. The last 3 are also among the interventions that were included in the WB/GEF GGFP. These are also considered in the GLIZP Project applying the experience and best practices from other sustainable transport initiatives such as the GGFP, as well as showcasing the cost-effective application of energy efficient water and water/road freight planning and management schemes; and, consolidated road freight transport system operated and managed using advanced logistics tracking and monitoring technologies. While the business model that the GGFP has promoted may have worked effectively in road-based freight transport systems in places like Guangdong, the GLIZP project will also make use of specific and feasible aspects of such model in Zhejiang Province in both road and combination road-water freight transport systems. Considering that the GEF funding for GLIZP is relatively lower than that for the GGFP, the project has been designed to focus on cost-effectively removing the identified barriers that are hindering the logistics industry of Zhejiang Province to sustainably implement business models that will make the operations (both materials management and physical distribution) of the various logistics service providers (LSPs) more energy efficient, environment friendly (i.e., green), and competitive.</p> <p>For good measure, the GLIZP project team will interact and consult with the implementers of the GGFP in the implementation of the technical and information barrier removal</p>	<p>ProDoc: Para 67</p> <p>ProDoc: Para 68</p>

Comments & Responses	Reference
<p>activities of the project. Suffice to say, the project team will continue to work in cooperation with the MOT and the transport department in the Zhejiang Provincial Government to ensure that best practices from projects such as the GGFP are cost-effectively applied. This is also to ensure that design, development and implementation of the demos on energy efficient physical distribution (freight transport) schemes in the logistics industry takes into account MOT's current development plans, policies and standards for road and water transport. The schemes shall be made in line with the MOT's integrated transport system; promotion of various modes of transportation; and optimization of transportation infrastructure planning and design. See also 1<sup>st</sup> para of response to Comment 13 below.</p>	
<p><b>Comment</b></p> <p><i>It is not acceptable that the respondent fixed his/her mistakes by simply adding footnotes. Please change the project document accordingly and minimize the use the footnotes. There are many other mistakes in the documents such as "Zhejiang Province" (page 9), "consuming public" (page 33). Incomplete sentences are often found, such as the sentence in para 53, page 33. Please treat the CEO endorsement document seriously. Comment not cleared.</i></p> <p><b>Response:</b></p> <ul style="list-style-type: none"> <li><i>The project proponents were required to reflect the responses to the comments. In this regard, footnotes were used since the responses only serve to back up or supplement the main case that is presented in the Project Document. To avoid these supporting texts cluttering the main case presented, these were presented as footnotes. Nonetheless, following the reviewer's advice these footnotes were removed and included in the main body of the Project Document. Please see responses to comments on Outputs 2.1, 2.2, 2.3 and 2.4 below.</i></li> <li><i>The misspelling of Zhejiang Province has been rectified. See also 2<sup>nd</sup> Para of response to Comment 13 below.</i></li> <li><i>"Consuming public" means the general public, which in the context of this project are the customers of the LSPs, and the consumers who make use of the goods/products that are packaged and distributed by the logistics industry. This common phrase has been changed to "general public".</i></li> <li><i>Project Document Para 53: Not sure what sentence in here is incomplete. Nonetheless, the following is a slightly modified version of the previous Para 53. Note that with the adjustments made in the Project Document, this is now Para 54 in the revised version.</i></li> </ul> <p><b>Output 3.4: Completed promotional workshops and/or activities for enhancing awareness and knowledge in green logistics systems</b></p> <p><i>Activity 3.4.1: Conduct of promotional workshops and related promotional activities for the dissemination of reference documents and knowledge products on the green logistics demonstration - This activity involves the conduct of promotional activities about lessons learned, benefits derived and overall support for the enhancement of knowledge and awareness on green logistics in different sectors of the economy. The workshops are for a</i></p>	<p>ProDoc: Paras 42, 43, 44 &amp; 45</p> <p>ProDoc: Para 54</p> <p>ProDoc: Para 54</p>

Comments & Responses		Reference													
<i>more general audience, and will be on broader or common topics (e.g., promoting reduction of packaging materials wastage, promoting packaging waste recycling, and, requirements for certified distribution facilities). The target participants in the promotional workshops are different from those in the training courses (Output 3.2). Thus the materials and documents for the training courses are prepared differently because those involved in the promotional workshops include the general public and members of the logistics industry associations.</i>															
<p><b>Comment:</b> <i>Component 1.3: The justification is yet to be provided. Please use a table to summarize each component’s goals, specific outputs, targeted audiences and long-term impacts. Further, please clarify term of “incremental features on green logistics”</i> Comment not cleared.</p> <p><b>Response:</b> Firstly, what the reviewer says Component 1.3 actually refers to Output 1.3, which is <i>Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry</i>. This is one of the outputs that contribute to the achievement of Outcome 1 (Established and enforced policy and regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province). Hence, there are no other specific outputs of Output 1.3 since it is already the specific output.</p>		ProDoc: Output 1.3, Para 39													
<table><tr><th colspan="2">Output 1.3: Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry.</th></tr><tr><td>Description</td><td>Guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry.</td></tr><tr><td>Purpose/Aim</td><td>Enhancing the generalized industrial EC&amp;EE guides and reference documents by designing these into guides/references on the application of green logistics in the planning and operation of businesses in the logistic industry (covering materials management and physical distribution).</td></tr><tr><td>Target Audience</td><td>Logistics service providers and logistics services customers Government authorities in-charge of the logistics industry; policy makers and regulatory enforcers</td></tr><tr><td>Activities</td><td>Development of guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry; Preparation, adoption, publication and dissemination of guides and reference documents for the application of energy efficient and environmentally-beneficial practices in the logistics industry in Zhejiang Province</td></tr><tr><td>GEF Incremental Support</td><td>Technical assistance to facilitate and complete the inputs to the development of the guides and references on EC&amp;EE practices in the logistics industry.</td></tr><tr><td>Impacts</td><td><u>Immediate:</u><ul style="list-style-type: none"><li><i>Availability and accessibility of pertinent information for achieving enhanced level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</i></li></ul><u>Medium to Long Term (if sustained, and together with other Component 1 Outputs)</u></td></tr></table>			Output 1.3: Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry.		Description	Guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry.	Purpose/Aim	Enhancing the generalized industrial EC&EE guides and reference documents by designing these into guides/references on the application of green logistics in the planning and operation of businesses in the logistic industry (covering materials management and physical distribution).	Target Audience	Logistics service providers and logistics services customers Government authorities in-charge of the logistics industry; policy makers and regulatory enforcers	Activities	Development of guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry; Preparation, adoption, publication and dissemination of guides and reference documents for the application of energy efficient and environmentally-beneficial practices in the logistics industry in Zhejiang Province	GEF Incremental Support	Technical assistance to facilitate and complete the inputs to the development of the guides and references on EC&EE practices in the logistics industry.	Impacts
Output 1.3: Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry.															
Description	Guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry.														
Purpose/Aim	Enhancing the generalized industrial EC&EE guides and reference documents by designing these into guides/references on the application of green logistics in the planning and operation of businesses in the logistic industry (covering materials management and physical distribution).														
Target Audience	Logistics service providers and logistics services customers Government authorities in-charge of the logistics industry; policy makers and regulatory enforcers														
Activities	Development of guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry; Preparation, adoption, publication and dissemination of guides and reference documents for the application of energy efficient and environmentally-beneficial practices in the logistics industry in Zhejiang Province														
GEF Incremental Support	Technical assistance to facilitate and complete the inputs to the development of the guides and references on EC&EE practices in the logistics industry.														
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"><li><i>Availability and accessibility of pertinent information for achieving enhanced level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</i></li></ul> <u>Medium to Long Term (if sustained, and together with other Component 1 Outputs)</u>														

Comments & Responses		Reference														
	<ul style="list-style-type: none"><li>Improvement of energy utilization efficiency in the provincial logistics industry, particularly in materials management and physical distribution.</li><li>Sustained energy savings and associated in the logistics industry operations; and associated GHG emission reductions</li></ul> <p>In the context of Output 1.3, “Incremental features on green logistics” means the enhancements/improvements in the baseline activities in Zhejiang Province on the promotion of, and information dissemination on, EC&amp;EE in industries (inclusive of the logistics industry). These enhancements/improvements are mainly the incorporation of green logistics techniques/measures and practices.</p>															
<p><b>Comment:</b> <i>Component 2: the original comment dated on Feb.19 (In table B, component 2 is listed as investment, but the description of component 2 in page 22-27 suggest that the \$2 million grant is fully used as TA) has not been addressed.</i></p> <p><b>Response:</b> In Part I, Sec B of the CER Doc, it is clearly stated that the incremental GEF funds (US\$ 2 million) allocated for Component 2 will be used for Investments to deliver Outputs 2.1, 2.2, 2.3 and 2.4; and for TA to deliver Outputs 2.5 and 2.6. The Investment (Inv)-related, and technical assistance (TA)-related activities under Component 2 are explained in the Project Document. The following table summarizes what the incremental GEF funds allocated for Component 2 will be used for:</p>		<p>CER Doc: Part I, Sec. B; Comp. 2</p> <p>ProDoc: Paras 42 to 45</p>														
<table><tr><th>Activity</th><th>Incremental GEF Support</th></tr><tr><td colspan="2"><b>Output 2.1: Completed designs and plans of demonstrations of green logistics techniques in materials management in the logistics industry in Zhejiang Province.</b></td></tr><tr><td>2.1.1: Conduct of feasibility analyses on the application and operation of energy efficient materials management system in the logistics industry.</td><td>Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best materials management system option that employs green logistics techniques to be demonstrated. [Inv]</td></tr><tr><td>2.1.2: Design of the modified materials management system (including the associated facilities and infrastructures) in the Zhejiang Province logistics system projects.</td><td>Incremental funds for the design and implementation of the energy efficient materials management demos, particularly for accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services from qualified national and international experts. [Inv]</td></tr><tr><td>2.1.3: Development of the implementation plans (including financing arrangements) for each demonstration energy efficient materials management system in the logistics industry.</td><td>Incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the materials management demonstrations. [Inv]</td></tr><tr><td colspan="2"><b>Output 2.2: Completed designs and plans of demonstrations of green logistics techniques in physical distribution in the logistics industry in Zhejiang Province.</b></td></tr><tr><td>2.2.1: Conduct of feasibility analyses on the application and operation of energy efficient</td><td>Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best</td></tr></table>		Activity	Incremental GEF Support	<b>Output 2.1: Completed designs and plans of demonstrations of green logistics techniques in materials management in the logistics industry in Zhejiang Province.</b>		2.1.1: Conduct of feasibility analyses on the application and operation of energy efficient materials management system in the logistics industry.	Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best materials management system option that employs green logistics techniques to be demonstrated. [Inv]	2.1.2: Design of the modified materials management system (including the associated facilities and infrastructures) in the Zhejiang Province logistics system projects.	Incremental funds for the design and implementation of the energy efficient materials management demos, particularly for accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services from qualified national and international experts. [Inv]	2.1.3: Development of the implementation plans (including financing arrangements) for each demonstration energy efficient materials management system in the logistics industry.	Incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the materials management demonstrations. [Inv]	<b>Output 2.2: Completed designs and plans of demonstrations of green logistics techniques in physical distribution in the logistics industry in Zhejiang Province.</b>		2.2.1: Conduct of feasibility analyses on the application and operation of energy efficient	Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best	<p>Annex IV</p>
Activity	Incremental GEF Support															
<b>Output 2.1: Completed designs and plans of demonstrations of green logistics techniques in materials management in the logistics industry in Zhejiang Province.</b>																
2.1.1: Conduct of feasibility analyses on the application and operation of energy efficient materials management system in the logistics industry.	Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best materials management system option that employs green logistics techniques to be demonstrated. [Inv]															
2.1.2: Design of the modified materials management system (including the associated facilities and infrastructures) in the Zhejiang Province logistics system projects.	Incremental funds for the design and implementation of the energy efficient materials management demos, particularly for accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services from qualified national and international experts. [Inv]															
2.1.3: Development of the implementation plans (including financing arrangements) for each demonstration energy efficient materials management system in the logistics industry.	Incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the materials management demonstrations. [Inv]															
<b>Output 2.2: Completed designs and plans of demonstrations of green logistics techniques in physical distribution in the logistics industry in Zhejiang Province.</b>																
2.2.1: Conduct of feasibility analyses on the application and operation of energy efficient	Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best															

Comments & Responses		Reference
physical distribution systems in the logistics industry.	physical distribution system option to demonstrated, including the combined road-water transport system. [Inv]	
2.2.2: Design of the physical distribution system (including the associated facilities and infrastructures for energy efficient water and water/road freight planning and management schemes) in the Zhejiang Province logistics system projects.	Incremental funds for accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services in physical distribution from qualified national and international experts, including those technologies and management experiences on combined road-water transport systems. Related support will be provided by the co-financing government agencies and the private groups which will be selected for the demonstration activity. [Inv]	
2.2.3: Development of the implementation plans (including financing arrangements) for each demonstration EE physical distribution systems in the logistics industry.	Incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the physical distribution demonstrations. [Inv]	
<b>Output 2.3: Installed and fully operational centralized logistic facility for demonstrating energy efficient materials management system.</b>		
2.3.1: Installation of the demonstration energy efficient centralized logistic facility.	Incremental funds for the installation of the green logistics elements (i.e., energy efficiency technology software and hardware) of the demonstration centralized logistics facility. [Inv]	
2.3.2: Operation of the demonstration centralized logistics facility in Zhejiang Province.	Incremental funds for the operation of the energy efficiency technology software and hardware that will be incorporated in the demo centralized logistic facility. This will also include funding for the capacity development of the centralized logistics facility personnel on the operation of these additional EE systems and equipment installed to make the facility operate in a green manner. [Inv]	
<b>Output 2.4: Installed and fully operational centralized freight transport facility for demonstrating energy efficient physical distribution system in Zhejiang Province</b>		
2.4.1: Installation of the demonstration energy efficient centralized freight transport facility.	Incremental funds for the installation of the green logistics elements (i.e., energy efficiency technology software and hardware) of the demonstration centralized freight transport facility. [Inv]	
2.4.2: Operation of the demonstration centralized freight transport system in Zhejiang Province.	Incremental funds for the operation of the energy efficiency technology hardware that will be incorporated in the demo centralized freight transport system. This will also include funding for the capacity development of the centralized freight transport facility personnel on the operation of these additional EE equipment and systems to be installed to make the facility operate in a green manner. [Inv]	
<b>Output 2.5: Documented annual evaluation reports on the energy performance and environmental impacts of each demo projects, and documented and disseminated demo project results.</b>		
2.5.1: Evaluation of the energy performance and environmental impacts of each demo EE materials management project.	Incremental technical assistance required in the evaluation of the performance and impacts of the implemented materials management demo projects. [TA]	

Comments & Responses		Reference
2.5.2: Documentation and dissemination of the results of each demo EE materials management project.	Incremental funds for technical services required for the documentation and dissemination of demonstration results of results. [TA]	
2.5.3: Evaluation of the energy performance and environmental impacts of each demo EE physical distribution project.	Incremental funds for technical assistance required in the evaluation of the performance and impacts of the implemented physical distribution demo projects. [TA]	
2.5.4: Documentation and dissemination of the results of each demo EE physical distribution project.	Incremental funds for technical services required for the documentation and dissemination of demonstration results. [TA]	
Output 2.6: Developed action plan for sustainability of the green logistics system demonstration program		
2.6.1: Development of the action plan for sustainability of the green logistics system demonstration program.	Incremental funds for technical assistance required in the development of sustainable follow-up plan related to this activity. [TA]	
<b>Comment:</b> <i>Component 2.1: Please minimize the use of footnotes in section B. Instead, add footnote 3 to output 2.1 text session.</i>		ProDoc: Para. 42
<b>Response:</b> Footnote #3 has been added to the description of Output 2.1 in the Project Document.		
<b>Comment:</b> <i>Component 2.2: Please minimize the use footnotes in section B. instead, add footnote 4 to output 2.2 text session.</i>		ProDoc: Para. 43
<b>Response:</b> Footnote #4 has been added to the description of Output 2.2 in the Project Document.		
<b>Comment:</b> <i>Component 2.3: Please minimize the use footnotes in section B. instead, add footnote 5 to output 2.3 text session. Further, please reword “green logistics-based centralized logistics facility.”</i>		ProDoc: Para. 44
<b>Response:</b> Footnote #5 has been added to the description of Output 2.3 in the Project Document. The phrase “green logistics-based centralized logistics facility” has been changed to “centralized logistics facility”.		
<b>Comment:</b> <i>Component 2.4: Please minimize the use footnotes in section B. instead, add footnote 6 to output 2.3 text session. Further, please reword “computerized green-logistics-based physical distribution system and simulation model and tools.”</i>		ProDoc:
<b>Response:</b> Footnote #6 has been added to the description of Output 2.4 in the Project Document. The		



Comments & Responses	Reference
phrase “computerized green-logistics-based physical distribution system and simulation model and tools” has been changed to “centralized freight transport facility”.	Para. 45
<p><b>Comment:</b>  <i>Component 3: Justification for the entire component 3 is yet to be provided. One suggestion is to provide a table summarizing the goals, outputs, targeted audience and long-term impacts of each sub-component, 3.1-3.6.</i></p> <p><b>Response:</b>  The project proponents believe that the description of the various Outputs under Component 3, as well that of the activities that will be carried out to deliver each output, have been adequately provided in the Project Document, Nevertheless, for further clarification and understanding of the reviewer about the various outputs, the aim, target audience, activities, GEF incremental support and anticipated impacts have been summarized in Annex A of this document</p>	<p>Annex A  <i>(this document)</i></p> <p>ProDoc:  Annex V</p>
<b>13. Comment on the project’s innovative aspects, sustainability, and potential for scaling up.</b>	
<p><b>Comment:</b>  <i>The latest response still have not addressed the important aspect of engaging with the Ministry of Transport. Therefore, it is not clear how the best practices in Zhejiang will be replicated in other provinces.</i>  <i>Further, the latest response made multiple mistakes by misspelling Zhejiang.</i></p> <p><b>Response:</b>  This is a new comment. This aspect was not mentioned by the reviewer in the previous comments. As stated in the project Document, “<i>The Zhejiang Provincial Government as the lead IP will maintain close contact with key central and provincial government agencies for the dissemination of the demonstration results and closely coordinate and guide the replication of the demonstrations. The strategy of assigning and close monitoring of the execution of key implementation roles to the relevant departments of the central and provincial governments (including the <u>Ministry of Transport</u>) will be employed.</i>” To elaborate further, the design, development and implementation of the demos on energy efficient physical distribution (freight transport) schemes in the logistics industry shall take into account MOT’s current development plans, policies and standards for freight transportation. The schemes shall be made in line with the MOT’s integrated transport system; promotion of various modes of transportation; and optimization of transportation infrastructure planning and design.</p> <p>The misspelled word has already been corrected.</p>	<p>ProDoc:  Paras 66 &amp; 67</p> <p>Para 68</p>
<b>15. Has the cost-effectiveness of the project been sufficiently demonstrated, including the cost-effectiveness of the project design as compared to alternative approaches to achieve similar benefits?</b>	
<p><b>Comment:</b>  <i>No. Please address comments in box 7.</i></p> <p><b>Response:</b>  Considering the above responses to the further comments under Question 7, and the additional explanations and clarifications to the previous responses to the same comments by the reviewer, the project proponents reiterate that the proposed project has sufficiently</p>	



Comments & Responses	Reference
demonstrated the cost effectiveness of the proposed GLIZP Project.	
<b>16. Is the GEF funding and co-financing as indicated in Table B appropriate and adequate to achieve the expected outcomes and outputs?</b>	
<p><b>Comment:</b>  <i>Further work is required. Please see comments in boxes 7, 13 and 15.</i></p> <p><b>Response:</b>            Considering the further responses and explanations provided in Questions 7, 13 and 15, the project proponents believe that the previous and further comments under these questions have been adequately and the necessary changes based on these responses, have been made in the CER Document and Project Document.</p>	

## Annex A: Detailed Summary of the Component 3 Outputs

Component 3 will address the barriers related to the low level of capacity, knowledge and skills of and cooperation among the relevant government entities, manufacturing and logistics industries on the application, design and operationalization of green logistics systems, as well as in the application of energy conservation and operational efficiency in the logistics industry and the lack of an effective information platform to share the successful experiences in the design, development and operation of green logistics system. The expected outcome from the delivery of the expected outputs under this component is the increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province.

It will build on current plans of the Zhejiang Provincial Government on promoting improved energy utilization performance in the provincial industry sector, in general, and in the logistics industry, in particular. The province has its Zhejiang Province Green Logistics Plan (ZPGLP) that intends to promote the application of “green logistics” technologies/techniques in the industry to make the operations of the logistics service providers (LSPs) more sustainable, energy efficient, and environment-friendly. Some of the big LSPs in the province have their own programs (ongoing and planned) with objectives that are by and large in line with that of the ZPGLP. After obtaining agreement from the implementers of these baseline projects, some of their activities were either subsumed into GLIZP, or modified/enhanced with the addition of incremental features (mainly those relevant to green logistics principles) or replaced with something that conform with green logistics techniques. For the baseline activities on the enhancements of technical capacity, knowledge and skills in the application of EC&EE technologies and/or techniques in the logistics industry, incremental features (mainly in line with green logistics principles) have been added. These, including the incremental activities on removing barriers, and the expansion of coverage of the beneficiaries of the capacity development activities, and the incremental one-on-one technical assistance in enhancing the capacity of small-to-medium size LSPs, are the ones that the incremental funding from GEF will be used for. The whole essence of Component 3 is to enhance the knowledge and awareness of the LSPs about the green logistics approach. That is why the proposed activities under Component 3 focuses on capacity development in adopting green logistics approach.

For further clarification and understanding of the reviewer about the various deliverables/outputs of Component 3, the following table summarizes the aim, target audience, activities, GEF incremental support and anticipated impacts of each output.

<b>Output 3.1: Completed assessment report on capacity development needs in the area of green logistics and developed green logistics capacity building program</b>	
Purpose/Aim	Clearer understanding of the current level of knowledge and the capacity needs of the Zhejiang Province logistics industry in the area of green logistics. This output is used for formulating the capacity development program on the cost-effective and proper application of green technologies in the materials management and physical distribution aspects of the logistics industry thereby making it operate in an energy efficient and environment-friendly manner.
Target Audience	Logistics service providers and logistics services customers; Government authorities in-charge of the logistics industry
Activities	Assessment of the capacity development needs in the area of green logistics; Development and

	adoption of green logistics capacity building program in Zhejiang;
GEF Incremental Support	Technical assistance required for the design and conduct of surveys and interviews and the analysis of findings for the capacity needs assessment, and in the preparation of the green logistics capacity building program.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>• <i>Implementation of appropriate actions for the enhancement of the level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</i></li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>• <i>Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province</i></li> <li>• <i>Energy savings and associated GHG emission reductions in the logistics industry</i></li> </ul>
<b>Output 3.2: Completed green logistics training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang Province.</b>	
Purpose/Aim	Enhancing the stand-alone corporate training programs of partner logistic companies into a major capacity development program to include green logistics principles (planning and applications) practices, techniques and methodologies
Target Audience	Provincial government officials that are involved in the logistics industry; small-to-medium size LSPs and logistics service customers
Activities	Development of materials and scheduling of the green logistics training courses; Conduct of training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang;
GEF Incremental Support	Technical assistance required for the design and development of training course materials; organization and conduct of the training courses.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>• <i>Increased level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</i></li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>• <i>Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province</i></li> <li>• <i>Energy savings and associated GHG emission reductions in the logistics industry</i></li> </ul>
<b>Output 3.3: Completed technical assistance program for assisting small-to-medium size LSPs on the application of green logistics systems</b>	
Purpose/Aim	Enhancement of the EC&EE programs of the big LSPs and that of the Zhejiang Provincial Government with the design, development and dissemination of web-based tools for the application of green logistics techniques and technologies; and provision of actual technical assistance in the application of green logistics technologies/techniques in the partner LSPs and selected small-to-medium LSPs.
Target Audience	Partner LSPs and selected small-to-medium LSPs
Activities	Publication of the technical guidance documents; Planning and dissemination of published technical documents and other relevant materials on green logistics including workshops, web-based tools, etc. for information dissemination and promotion on green logistics.

GEF Incremental Support	Technical assistance and resources for the publication and dissemination of the technical guidance documents in close coordination with ZPDRC and Fuyang City Government.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>Increased level of technical capacity and competitiveness of some small-to-medium size LSPs in the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>More cost-effective, energy efficient and environment-friendly operations in materials management and physical distribution by the logistics and manufacturing industries in Zhejiang Province</li> <li>Energy savings and associated GHG emission reductions in the logistics industry</li> </ul>
<b>Output 3.4: Conducted promotional workshops and/or activities to enhance awareness and knowledge in green logistics systems</b>	
Purpose/Aim	Enhancement of knowledge and awareness on green logistics in the different sectors of the national and local economy.
Target Audience	LSPs and the general public (e.g., logistics services customers; provincial logistics office personnel)
Activities	Conduct of promotional workshops and related promotional activities for the dissemination of reference documents and knowledge products on the green logistics demonstration; Codify, document and disseminate lessons learned, benefits derived from the application of smart, sustainable, energy efficient and environment benign technologies in materials management and physical distribution in the logistics industry.
GEF Incremental Support	Technical and logistical services required in the design and implementation of the promotional workshops and related activities.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>Increased level of knowledge and understanding by the logistics industry and logistics services customers about the economic, energy saving and environmental benefits of the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>Enhanced energy and environmental performance of the logistics industry in materials management and physical distribution operations</li> <li>More competitive logistics industry in China.</li> <li>Energy savings and associated GHG emission reductions in the logistics industry</li> </ul>
<b>Output 3.5: Completed and fully evaluated program for the promotion and capacity building on green logistics systems</b>	
Purpose/Aim	For the improvement and the sustenance of the capacity development program on green logistics. The results of the evaluation are then used as guide in the redesign or modification of the capacity development program to make it more in line with the capacity development needs.
Target Audience	Provincial government authorities in-charge of the logistics industry; LSPs, logistics services customers
Activities	Design and development of standards and tools for monitoring and evaluating the impacts of the promotion and capacity building activities and outputs of the project; Monitoring and

	evaluation of the capacity building and promotion of green logistics systems.
GEF Incremental Support	Technical assistance and materials for the development and adoption of the evaluation standards and tools; and conduct of the evaluation and preparation of reports.
Impacts	<p><u>Immediate:</u></p> <ul style="list-style-type: none"> <li>• <i>Implementation of appropriate actions for the enhancement of the level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</i></li> </ul> <p><u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u></p> <ul style="list-style-type: none"> <li>• <i>Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province</i></li> <li>• <i>Energy savings and associated GHG emission reductions in the logistics industry</i></li> </ul>
<b>Output 3.6: Designed, endorsed and implemented an energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province</b>	
Purpose/Aim	Provide basis and benchmarks among LSPs for measuring the effectiveness of the green logistics program for Zhejiang Province.
Target Audience	Provincial government authorities in-charge of the logistics industry; National government authorities on trade, industry and commerce; LSPs
Activities	Design of an energy performance rating program for LSPs in Zhejiang Province, including the rating scheme and energy database; Development and establishment of a green logistics information sharing system.
GEF Incremental Support	Technical assistance in the design and development of the energy performance rating scheme, and the green logistics information sharing system; initial implementation of the rating program and information sharing system, in close cooperation and resource inputs from ZPDRC.
Impacts	<p><u>Immediate:</u></p> <ul style="list-style-type: none"> <li>• <i>Potential increased level of competitiveness among LSPs; Improved motivation among LSPs to improve level of quality of services provided leading to more energy efficient and environment-friendly planning, management and operation of logistics systems</i></li> </ul> <p><u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u></p> <ul style="list-style-type: none"> <li>• <i>Increased level of competitiveness among LSPs all over China; Improved level of quality of services provided by LSPs nationwide; More cost-effective, energy efficient and environment-friendly operations in materials management and physical distribution by the logistics and manufacturing industries in China</i></li> <li>• <i>Energy savings and associated GHG emission reductions in the nationwide logistics industry</i></li> </ul>

## Responses to GEFSec Comments 15 April 2016

Comments & Responses		Reference
<b>7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed?</b>		
<p><b>Comment:</b></p> <p>1) Thank you. The World Bank's Guangdong Green Freight Project provides a good example on how to use market mechanisms to incentivize technology uptake. Please refer to the project and re-consider the business model.</p>		

Comments & Responses		Reference				
<p><b>Response:</b> The Guangdong Green Freight Project (GGPF) involves demonstrations, capacity building, financial and market mechanisms and promotion towards replication of energy efficiency technologies applicable to freight transport. Basically, the same approach as that of the proposed GLIZP Project, except that the GGPF is focused only on freight transport. The table below summarizes the major differences:</p> <table><tr><th>WB/GEF GGPF</th><th>UNDP/GEF GLIZP</th></tr><tr><td><p><b>Focus:</b> Freight Transport in Guangdong Province</p><p><b>Freight Transport System Addressed:</b> Trucks and energy utilization performance of truck-based freight systems</p><p><b>Logistics Management:</b> Energy efficiency in truck-based freight operations</p></td><td><p><b>Focus:</b> Logistics Industry (inclusive of Freight Transport) in Zhejiang Province</p><p><b>Freight Transport System Addressed:</b> Trucks and energy utilization performance of truck-based freight systems; Alternative freight transport systems (water transport system; and, water/road transport systems)</p><p><b>Logistics Management:</b> Energy efficiency improvements in the materials management and physical distribution operations in the logistics industry.</p></td></tr></table> <p>The whole strategic approach of the GLIZP Project is as described in the GEF-approved PIF wherein the introduction of applicable energy efficiency improvement technologies and techniques (i.e., the green logistics approach) will be demonstrated and applied to the various aspects of logistics industry operations. This is not only on the freight transport side but also on materials management (e.g., improved automation, fully automated warehousing, use of energy efficient equipment in materials handling and goods storage, as well as waste recycling and treatment). Many of the logistics service providers (LSPs) in Zhejiang Province, are not fully aware of these and their benefits. The approach (or business model) that will be applied in the project to enhance the uptake of green technology in the logistics industry in Zhejiang aims to facilitate reduced cost of operations resulting in better efficiency and business competitiveness and therefore higher profits. Hence, the project proponents believe that there is no need re-consider this approach, which is the one proposed in the GEF-approved GLIZP PIF.</p>		WB/GEF GGPF	UNDP/GEF GLIZP	<p><b>Focus:</b> Freight Transport in Guangdong Province</p> <p><b>Freight Transport System Addressed:</b> Trucks and energy utilization performance of truck-based freight systems</p> <p><b>Logistics Management:</b> Energy efficiency in truck-based freight operations</p>	<p><b>Focus:</b> Logistics Industry (inclusive of Freight Transport) in Zhejiang Province</p> <p><b>Freight Transport System Addressed:</b> Trucks and energy utilization performance of truck-based freight systems; Alternative freight transport systems (water transport system; and, water/road transport systems)</p> <p><b>Logistics Management:</b> Energy efficiency improvements in the materials management and physical distribution operations in the logistics industry.</p>	
WB/GEF GGPF	UNDP/GEF GLIZP					
<p><b>Focus:</b> Freight Transport in Guangdong Province</p> <p><b>Freight Transport System Addressed:</b> Trucks and energy utilization performance of truck-based freight systems</p> <p><b>Logistics Management:</b> Energy efficiency in truck-based freight operations</p>	<p><b>Focus:</b> Logistics Industry (inclusive of Freight Transport) in Zhejiang Province</p> <p><b>Freight Transport System Addressed:</b> Trucks and energy utilization performance of truck-based freight systems; Alternative freight transport systems (water transport system; and, water/road transport systems)</p> <p><b>Logistics Management:</b> Energy efficiency improvements in the materials management and physical distribution operations in the logistics industry.</p>					
<p><b>Comment:</b> 3) <i>The response is not clear. Please clarify the following:</i></p> <ul style="list-style-type: none"><li>• <i>What is "attendant technical support?"</i></li></ul>						
<p><b>Response:</b> That's the associated technical support that have to be considered and provided to address the relevant needs of the stakeholders in adopting and applying green logistics technologies. In line with the approach that will be employed for the GLIZP project, the provision of significant level of technical support that is responsive to the needs of the industry to adopt and apply green logistics techniques/measures, will be among the project interventions.</p> <ul style="list-style-type: none"><li>• <i>What is the "appropriate business models that will be applied in the implementation of green logistics operations?"</i></li></ul>		CER Doc: Annex B; (Response Matrix - 19 Feb 2016) Footnote 17				

Comments & Responses	Reference
<p><b>Response:</b></p> <p>By “business model”, the project proponents also meant “business approach”. The business approach to adopting/applying energy efficient technologies/techniques to make the logistics operation energy conserving and waste reducing is in line with improving business performance and competitiveness with the generation of energy and energy cost savings and more efficient operations, while contributing to supply chain optimization and GHG emission reduction. The proposed interventions of the project are collectively meant to facilitate moving of the logistics business and industry through green and low carbon actions through the application of practical, ‘green’ processes and technologies. It is based on the principle of sustainability. The business approach is to ensure sustainability, optimize business case driven logistics services – from materials management to physical distribution (i.e., freight transport). Best practices in the application of green logistics in other regions in China and in other countries will be considered in formulating what will be appropriate for Zhejiang considering its existing logistics infrastructures, facilities and markets during the project implementation.</p>	<p>CER Doc: Annex B; (Response Matrix - 19 Feb 2016) Footnote 18</p>
<p>• <i>What is "for the schemes that will used in the demonstrations on application of cutting-edge green logistics techniques in the materials management and physical distribution aspects of the logistics service provision business?"</i></p> <p><b>Response:</b></p> <p>The proposed project includes specific schemes for showcasing the application of green logistics techniques in the operations of the logistics companies that will host the demos. For the demo in Zhejiang Fuyang Port International Co. Ltd., the scheme will involve the installation and operation of the specific requirements in modernizing and equipping the system of reliable information management technologies in various phases of freight handling operations by increasing the container full-load rate from the current low load rate. And by utilizing the Dong Zhou dock land and water port, this scheme will showcase the effectiveness of the combination road- waterway transport that will not only reduce pressure on existing road infrastructures, but also reduce freight transport energy consumption. For the other demonstration hosted by Fuyang Hangzhou Transfar Logistics Base Co., Ltd., the scheme will involve the systematic and efficient scheduling of transport modes and combined road and water transport in a centralized system by addressing the problem of asymmetric information, and improve goods-vehicles matching efficiency, and reduce truck empty-load rates. This will facilitate widespread use of freight trucks both on the outbound and inbound trips. The schemes for the materials management demos will depend on the operating systems in the identified host demo logistic companies. This could be on the application of more energy efficient cold storage systems, application of energy efficient equipment, application of automated warehousing system, etc. The detailed design and implementation of these schemes is part of the activities under Component 2 of the project.</p>	<p>CER Doc: Annex B; (Response Matrix - 19 Feb 2016) Footnote 19</p>
<p><b>Comment:</b></p> <p><i>Component 1.1: The comment on how to translate analysis into policy regulation is not addressed.</i></p>	

Comments & Responses	Reference
<p><b>Response:</b></p> <p>This concern is addressed in the activities that will deliver Output 1.2, particularly Activity 1.2.2. The project proponents are reiterating their response to this same previous comment that: <i>“Regarding developing policy regulations, based on the results of the analysis on the situation of the logistics industry in Zhejiang (Output 1.1), the additional, and other necessary improvements on, policies and regulations will be determined, developed, approved and enforced (as other outputs of Component 1)”</i>. This means that based on the findings and recommendations from Output 1.1, policies and implementing rules and regulations on the promotion and practice of green logistics in the logistics industry in Zhejiang Province will be formulated and recommended for approval and enforcement.</p>	<p>CER Doc: Part I, Sec. B, Outputs 1.1 &amp; 1.2 ProDoc: Paras 37 &amp; 38</p>
<p><b>Comment:</b></p> <p><i>Component 1.3: The explanation does not justify GEF funding for all three components: 1.3, 3.2 and 3.3. GEF funding should be dedicated to more impactful activities.</i></p> <p><b>Response:</b></p> <p>The project proponents view and claim that Outputs 1.3, 3.2 and 3.3 are necessary, fully justified and strategic in creating the overall impacts of the project considering the Zhejiang situation. Please find below clearer elaboration of Outputs 1.3, 3.2 and 3.3, particularly the description of their respective baselines and the proposed alternative to enable the eventual delivery of more global environmental benefits, clearly describing the alternative impactful activities that will be carried out. With the implementation of the incremental features of the alternative activities to deliver these complementary outputs, these will collectively contribute to the realization of Outcomes 1 and 3:</p> <ul style="list-style-type: none"> <li>• Output 1.3: Published and disseminated guides and reference documents for the application of energy conserving (EC) and energy efficient (EE) practices in the logistics industry. <u>Baseline:</u> The ZPDRC promotes and provides published information on the implementation of EC&amp;EE in industries. These baseline general information from the industrial EC&amp;EE guides and references are not specifically applicable to the logistics industry in Zhejiang Province, let alone incorporate green logistics techniques/measures and practices. <u>Alternative:</u> Enhancing the generalized industrial EC&amp;EE guides and reference documents by designing these into guides/references on the application of green logistics in the planning and operation of businesses in the logistic industry (covering materials management and physical distribution). This will also apply to the enhancements that will be incorporated in the Zhejiang Province Green Logistics Plan. The incorporation of incremental features on green logistics, which will be instrumental in the delivery of impactful results in the logistics industry, is clearly something that is eligible for GEF funding.</li> <li>• Output 3.2: Completed green logistics training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang Province (e.g., concepts, techniques, practices, methodologies): <u>Baseline:</u> Some of the big logistics service providers (LSPs) in the logistics industry such as those that are partnering with the ZPDRC and Fuyang Municipal Government have budgeted</li> </ul>	<p>ProDoc: Para 39</p> <p>ProDoc: Para 50.</p>



Comments & Responses	Reference
<p>corporate training programs for their personnel (selected) mainly on typical logistics courses and logistics operations.</p> <p><u>Alternative:</u> Enhancing the stand-alone corporate training programs of partner logistic companies into a major capacity development program to include green logistics principles (planning and applications) practices, techniques and methodologies, and include among the trainees relevant provincial government officials that are involved in the logistics industry. Moreover, selected operations personnel from a number of small-to-medium size LSPs will also be included in this more impactful alternative program, which clearly includes significant incremental features that are eligible for GEF funding.</p> <ul style="list-style-type: none"> <li>• Output 3.3 has been revised to <i>Completed and technical assistance program for assisting small-to-medium size LSPs on the application of green logistics systems</i>. This will still involve the development and dissemination of technical web-based tools on green logistics systems, as well actual technical assistance on the application of green logistic systems. This focus more on the development and dissemination of technical web-based tools on green logistics systems, as well as provision of actual technical assistance to selected small-to-medium LSPs on the green logistics applications: <u>Baseline:</u> Aside from the EC&amp;EE initiatives in some of the big LSPs, there are currently no plans by the majority of the LSPs in the logistic industry on the application of green logistic systems.</li> </ul> <p><u>Alternative:</u> A technical assistance program in the logistics industry building on the EC&amp;EE programs of the big LSPs that will involve in the design, development and dissemination of web-based tools for the application of green logistics techniques and technologies. In addition, the program will also include the provision of actual technical assistance in the application of green logistics technologies/techniques in the partner LSPs and selected small-to-medium LSPs. This alternative output features incremental services in the form of actual technical assistance in the application of green logistics. It will bring about the necessary impactful results in the logistics industry that are clearly something eligible for GEF funding.</p>	<p>CER Doc, Part I, Sec. B, Comp. 3, Output 3.3</p> <p>ProDoc; Para 51</p>
<p><b>Comment:</b> <i>Component 2: Please see my comment above.</i></p> <p><b>Response:</b> This comment is unclear as to what is really being referred to as “comment above” since there are many. If this comment refers to the previous comment by the reviewer on Component 2, then that has been fully responded to, and addressed. Please refer back to the response given to previous comment by the reviewer about Component 2. It would be helpful if vague comments like these are avoided.</p>	
<p><b>Comment:</b> <i>Component 2.1: No action has been taken. Comment not cleared.</i></p> <p><b>Response:</b> The previous comment by the reviewer requests clarification of the “language”, which has been adequately addressed in the previous response matrix. The project proponents are confused about the essence of this comment on Output 2.1. Clearly the previous comment was acted upon and relevant revisions in line with the changes done</p>	<p>CER Doc: Part I, Sec. B, Output 2.1;</p>

Comments & Responses	Reference
and highlighted in the CEO Endorsement Request (CER) Document.	Footnote 3
<p><b>Comment:</b>  <i>Component 2.2: No action has been taken. Comment not cleared.</i></p> <p><b>Response:</b>            Similar to the response to the rather vague comment on Output 2.1., the previous comment by the reviewer only requests clarification of the “language”, which has been adequately acted upon in the previous response matrix. The project proponents are confused about the meaning of this comment on Output 2.2. Clearly the comment was acted upon and relevant revisions in line with the changes made have been done and highlighted in the CEO Endorsement Request (CER) Document.</p>	CER Doc: Part I, Sec. B, Output 2.2; Footnote 4
<p><b>Comment:</b>  <i>Component 2.3: Please provide the name of the technology instead of naming it "green logistics-based centralized logistic facility." Further, the questions on "who will pay for the purchase of the facility and what is the estimated cost" are not answered in the project document.</i></p> <p><b>Response:</b>            The phrase “green logistics-based centralized logistics facility” does not refer to a technology! Rather, it refers to the deployment of the appropriate combination of smart, energy conserving, energy efficient and environment friendly technologies and techniques to make a centralized logistics establishment operate in a “green” manner. Such facility will be operated with the collective application of known and commercially available technologies such as: energy efficient lighting, energy efficient appliances and devices, efficient motors for materials handling, computerized production planning and management tools, process automation systems, waste recycling systems, waste heat recovery, etc., to make the operation “green” or one that will reduce energy consumption and GHG emissions. This combination of appropriate technologies will be confirmed based on the results of the studies to be conducted in determining what will be appropriate to a particular situation. This explanation, in addition to the clarification that was already provided as footnote #16 (Page 27 of revised Project Document) sufficiently clarifies the meaning of the phrase in question. In response to the previous comments regarding cost of the demonstration by the reviewer, the following, among others, was stated in the previous response: “For this demonstration, the Zhejiang Provincial Government and the selected host logistics company will shoulder bulk of the cost (US\$ 4.63 million)”. The Project Document also includes this information in the details of co-financing and supported by the commitment letters to cover the amount of investment required.</p>	CER Doc: Part I, Sec. B, Output 2.3; Footnote 5  ProDoc: Output 2.3, Para. 44; Footnote 16
<p><b>Comment:</b>  <i>Component 2.4: please provide the name of the technology instead of naming it "computerized green-logistics-based physical distribution system and simulation model and tools." The project document does not explain if it is a fully commercialized technology.</i></p> <p><b>Response:</b>            Similar to the response to the comment on Output 2.3, the phrase “computerized</p>	CER Doc:

Comments & Responses	Reference
<p>green-logistics-based physical distribution system and simulation model and tools” does not refer to a technology! Rather, it refers to the deployment of the appropriate combination of smart, energy conserving, energy efficient and environment friendly technologies/techniques to make a physical distribution (i.e., freight transport) unit of a logistics company operate in a “green” manner. Such unit will employ a combination of these known and commercially available energy efficient transport technologies and practices applied to logistics operations such as: energy efficient engines, conversion kits to more efficient fuels, computer-aided load matching and dispatching, combined water and land transport, computer-aided preventive maintenance system, etc., that will make the transport operations be in line with the “green logistics” concept, which will is more energy-efficient and environment-friendly than the present non-optimal freight transport management systems. The specific technology applications will also be guided by the results of the studies to be conducted in determining what will be appropriate. This explanation in addition to the definition already provided as footnote #15, (Page 28 of the revised Project Document) is believed by the project proponents to have sufficiently clarified the meaning of the phrase in question. Similarly, in response to the previous comments by the reviewer regarding cost of the demonstration, the following, among others, was stated in the previous response: “For this demonstration, the Zhejiang Provincial Government and the selected host logistics company will shoulder bulk of the cost (US\$ 7.95 million)”. The Project Document also includes this information in the details of co-financing and supported by the commitment letters to cover the amount of investment required.</p>	<p>Part I, Sec. B, Output 2.4; Footnote 6</p> <p>ProDoc: Output 2.4, Para. 45; Footnote 17</p>
<p><b>Comment:</b></p> <p><i>Component 2.5: this component is not justified because it is not clear if the demonstrated technologies have been fully commercialized or, at least, have been adopted by other logistics companies in Zhejiang province.</i></p> <p><b>Response:</b></p> <p>This is a new comment on Output 2.5. The previous comment was that this output is redundant. The project proponents assume that the previous comment has already been adequately addressed in that it is indeed very necessary to document, report and disseminate the information regarding the energy performance and environmental impacts of each demonstrations on green logistics applications in materials management and physical distribution. In response to the new comment – in line with the responses to the comments on Outputs 2.3 and 2.4, the project proponents reiterate that the technologies whose applications in the logistics industry will be demonstrated are known and commercially available smart, energy conserving, energy efficient and environment friendly technologies. These include for materials management - energy efficient lighting, energy efficient appliances and devices, efficient motors for materials handling, computerized production planning and management tools, process automation systems, waste recycling systems, waste heat recovery, etc. For physical distribution - energy efficient truck engines, conversion kits to more efficient transport fuels, computer-aided load matching and dispatching, combined water and land transport, computer-aided preventive and predictive maintenance system, etc.</p>	<p>CER Doc: Part I, Sec. B, Outputs 2.3 &amp; 2.4; Footnotes 5 &amp; 6</p> <p>ProDoc: Outputs 2.3 &amp; 2.4, Paras 44 &amp; 45; Footnotes 16 &amp; 17</p>

Comments & Responses	Reference
<p>Some big logistics companies in Zhejiang may have the information about, and financial resources to deploy, some of these commercially available technologies to make their operations more efficient, profitable and competitive, energy efficient and environment friendly. These are the entities that the GLIZP project will partner with in the demonstration of the application of “green logistics” principles/concepts. In this regard, this fully justifies the need to document the transformation process to green logistics through a robust monitoring and evaluation system on the energy and operational performance of the demonstrations. Hence, the project proponents believe that this activity is fully justified and not redundant as previously commented by the reviewer.</p>	
<p><b>Comment:</b>  <i>Component 3: The response does not address the overall comment on component 3. At the heart of green logistics is the improvement of energy efficiency and therefore mitigation of carbon emissions. The private sector has vested interests in energy efficiency improvement, as it increases companies' profit margins. Component 3 could be better designed by promoting "vested interests" instead of selling abstract "green logistics" concept to the private sector. Comment not cleared.</i></p> <p><b>Response:</b>  Component 3 is based on the fact that the private sector (i.e., the logistics industry) has in general low level of knowledge and awareness about smart, sustainable, energy conserving, energy efficient and environment friendly technologies, techniques and practices, which by and large comprise “green logistics”. This situation is particularly true with small-to-medium size logistics companies. Private sector entities, particularly logistic services providers (LSPs) in Zhejiang that have “vested interests” in improvement of energy efficiency and mitigation of carbon emissions, are among those in the logistics industry that know and are aware of the need for, and benefits of, carrying out actions/measures that will enhance the efficiency of how they use energy in their business activities and operations. Only those who know, and resources to use, would have what the reviewer says as “vested interests” in energy efficiency improvements. Such LSPs are aware that in doing so they not only improve their business performance but are also contributing to the mitigation of GHG emission reductions through their optimal use of energy. They may refer such actions as simply applying energy efficiency or low carbon technologies, and may not be aware that what they are doing is part and parcel of “green logistics”. Some of them may just be aware of such technologies, but the reality is that they do not know how to apply them in their businesses, let alone finance such actions.</p> <p>Hence, the whole essence of Component 3 is to enhance the knowledge and awareness of the LSPs about the green logistics approach. It does not just focus on the adoption of these known technologies, which when adopted altogether will constitute the “green logistics” approach in the logistics business. In reality, most of the LSPs are not aware of “green logistics”. They are not aware of the various technologies/techniques that are available for them to implement with the aim of making their logistics operations green. Currently, if LSPs have the money to invest, they would rather invest in capacity enhancement rather than in efficiency improvements. That is why the proposed activities under Component 3 focuses on capacity development in adopting green</p>	<p>CER Doc: Part 1; Sec. B, Comp. 3; Footnote 7</p> <p>ProDoc: Para 49; Footnote 19</p>

Comments & Responses	Reference
<p>logistics approach. This, after all should be in line with the Zhejiang Province Green Logistics Plan. The capacity development program builds on existing and planned EC&amp;EE initiatives of the provincial government for the industry sector in the province. The rather fragmented EC&amp;EE activities in the industry (i.e., stand-alone corporate training programs of some big LSPs) can be enhanced into an industry-wide capacity development program that will train the logistics industry people as well as government personnel of agencies that are involved in the logistics industry. The project proponents believe that this additional explanation and their responses to the previous comment on Component 3 address fully this new comment of the reviewer.</p>	
<p><b>Comment:</b>  <i>Component 3.1: Please refer to comment 3. Comment not cleared.</i></p> <p><b>Response:</b>  The project proponents assume that what is referred to as <u>comment 3</u> is on the new comments on Component 3. In that regard, please refer to the response above to the new comments on Component 3. It is also not clear what comment is not cleared, and why it is not cleared. Since there is no mention about Outputs 3.1 and 3.5, it is also assumed that the previous comment: <i>Component 3.1 and 3.5 overlap</i>, is already sufficiently addressed by the previous response provided. That these 2 outputs do not overlap, and are actually sequential outputs. Both are necessary to sustain the capacity development program that will be designed, developed and implemented. In that regard, the project proponents reiterate that both Outputs 3.1 and 3.5 are important in regards to the capacity development program that will be designed and implemented, and therefore have to be retained because of their full relevance and complementarity:</p> <ul style="list-style-type: none"> <li>• Output 3.1 refers to the results and recommendations of the capacity needs assessment that is used for formulating the capacity development program. The identified capacity needs will be addressed in the design of the capacity development program (Output 3.2), and reassessed in the evaluation of the implementation of the capacity development program (Output 3.5).</li> <li>• Output 3.5 refers to the results of the assessment of the capacity development program implementation.</li> </ul> <p>Output 3.5 is necessary for the improvement and the sustenance of the capacity development program. As in all capacity development programs, all training or capacity building interventions are evaluated in terms of their impacts/relevance, and whether these address the identified capacity development needs (Output 3.1). The results of the evaluation are then used as guide in the redesign or modification of the capacity development program to make it more in line with the capacity development needs.</p>	<p>CER Doc:  Part I, Sec,  B; Comp. 3;  Outputs  3.1 &amp; 3.5  Footnotes  8 &amp; 9.</p> <p>ProDoc:  Para 50</p> <p>ProDoc:  Para 54</p>
<p><b>Comment:</b>  <i>Component 3.4: Please refer to comment 3. Comment not cleared.</i></p> <p><b>Response:</b>  The project proponents assume that what is referred to as <u>comment 3</u> is on the new comments on Component 3. In that regard, please refer to the response above to the new comments on Component 3. It is also not clear what comment is not cleared, and</p>	<p>ProDoc:  Para 51;  Activity</p>

Comments & Responses	Reference
<p>why it is not cleared. Since there is no mention about Output 3.4, it is also assumed that the previous comment: “Component 3.4: <i>What are the differences between training courses and workshops documents? Is this component necessary?</i>” is already sufficiently addressed by the previous response provided.</p> <p>The training courses are for selected industry personnel on specific green logistics subjects (e.g., energy efficient cold storage, operation and maintenance of energy efficient freight trucks). The workshops are for a more general audience, and will be on broader or common topics such (e.g., promoting packaging waste recycling, requirements for certified distribution facilities). The target participants in the promotional workshops are different from those in the training courses (Output 3.2). Thus the materials and documents for the training courses are prepared differently because those involved in the promotional workshops include additionally the consuming public and members of the logistics industry associations. In view of the difference, Output 3.4 is very relevant and necessary in promoting green logistics technologies for enhancing awareness and knowledge.</p>	<p>3.2.2</p> <p>Footnote 20 Para 53</p>
<b>13. Comment on the project’s innovative aspects, sustainability, and potential for scaling up.</b>	
<p><b>Comment:</b> <i>Comment not addressed.</i></p> <p><b>Response:</b> This is another vague comment that could have been explained clearer as to why the reviewer thinks the previous comment was not addressed whilst the project proponents believed they have adequately explained how the proposed intervention can be replicated in other provinces or nationwide. For the benefit of the reviewer, the following further explanation of the previous response is provided:</p> <p>All the enabling conditions (e.g., policy and regulatory frameworks, continuing education program for the logistics industry) that will be established in Zhejiang Province will be enforced. The GLIZP project will facilitate such setting up of enabling environment and enforcement. The results obtained, and experiences that will be gained in the formulation, design, development, approval and enforcement of these enabling conditions will be documented and presented to the logistics industries in other provinces in China. The relevant local government agencies in these provinces that are involved in the provincial logistic industry can be assisted in pursuing the same actions that will be carried out under the GLIZP Project in Zhejiang Province. Apart from the information provided, technical assistance to such like-minded local governments can be provided to replicate the experience gained in the promotion and application of green logistics in their respective logistics industry.</p> <p>All of the successful interventions that will be implemented under the project will not only be documented but will also be replicated. The suitable sites in Zhejiang and in other provinces where the potential replications will be promoted and implemented will be identified, their feasibility evaluated, and investment requirements assessed. The design of such replications will be discussed and coordinated with the relevant LSPs (for privately funded replications) and the provincial governments (for public sector</p>	<p>CER Doc: Part I, Sec. B, Comp. 1, Output 1.4</p> <p>ProDoc; Footnote 15</p> <p>ProDoc; Footnote 14.</p>

Comments & Responses	Reference
<p>funded replications). Any less successful result from any of the important interventions that will be implemented will also be assessed as to the reasons behind the result, with the aim of improving the design and implementation arrangements. These can also be planned for further demo and promotion, and later on replicated where feasible. All of these have to be planned during the GLIZP project implementation.</p> <p>All of the above will be made possible through proper planning, the result of which is Output 1.4 (Approved follow-up plan for the replication of the applications of the piloted green logistics policies in Zhejiang Province in other provinces and cities). In this regard, and as explained in the previous response to this same comment, the GLIZP Project will include the development and approval of a follow-up plan for the replication of the application of the piloted green logistics policies in Zhejiang Province in other nearby provinces and cities. In regards the replications, their identification, feasibility analysis, investment requirement, and design will be addressed during the formulation of a sustainable follow-up plan for the GLIZP project. This will be done towards the end of the project, when all the relevant information about the results and evaluation of the energy performance of each demos, lessons learned, and experiences gained have all been documented. The results gathered, experiences gained, and lessons learned, will be considered in the design of the actual plan for the replications in other provinces or even nationwide, including the implementation arrangements for the design, funding, implementation, operation, monitoring and evaluation of the replications.</p>	
<b>15. Has the cost-effectiveness of the project been sufficiently demonstrated, including the cost-effectiveness of the project design as compared to alternative approaches to achieve similar benefits?</b>	
<p><b>Comment:</b> <i>No. Please address comments in box 7.</i></p> <p><b>Response:</b> Considering the above responses to the new comments under Question 7, and the additional explanations and clarifications to the previous responses to the same comments by the reviewer, the project proponents reiterate that the proposed project has sufficiently demonstrated the cost effectiveness of the proposed GLIZP Project.</p>	
<b>16. Is the GEF funding and co-financing as indicated in Table B appropriate and adequate to achieve the expected outcomes and outputs?</b>	
<p><b>Comment:</b> <i>Further work is required. Please see comments in boxes 7, 13 and 15.</i></p> <p><b>Response:</b> Considering the responses provided in Questions 7, 13 and 15, the project proponents believe that the previous and new comments under these questions have been adequately and the necessary changes based on these responses, have been made in the CER Document and Project Document.</p>	

## Responses to GEFSec Comments (19 February 2016)



Comments & Responses			Reference																		
6. Is (are) the baseline project(s), including problem(s) that the baseline project(s) seek/s to address, sufficiently described and based on sound data and assumptions?																					
<p><b>Comment:</b> <i>1) Please describe the share of each transportation mode (air, road, rail and waterborne) in Zhejiang's existing logistics market.</i></p> <p><b>Response:</b> According to the 2014 Zhejiang Province Statistical Bulletin, the share of transportation modes in the Zhejiang Logistics Market is as follows:</p> <table><tr><th>Transportation Modes</th><th>Freight Volume in 2014 (billion ton-km)</th><th>Share (% of Total Volume)</th></tr><tr><td>Air</td><td>Nil</td><td>Nil</td></tr><tr><td>Road</td><td>141.9</td><td>14.86</td></tr><tr><td>Rail</td><td>22.3</td><td>2.33</td></tr><tr><td>Waterborne</td><td>790.6</td><td>82.80</td></tr><tr><td>Total</td><td>954.8</td><td></td></tr></table> <p>The waterborne mode of transport dominates the provincial logistics market at more than 82 % because of the extensive availability of navigable rivers. As Zhejiang is a coastal province, the development of rail freight system has not progressed significantly, so its share in total freight volume is very small. While air transport has continued to increase over the years, its share has remained practically nil, which is comparable to the share of air freight transport in the overall national freight transport market at 1 %.</p>			Transportation Modes	Freight Volume in 2014 (billion ton-km)	Share (% of Total Volume)	Air	Nil	Nil	Road	141.9	14.86	Rail	22.3	2.33	Waterborne	790.6	82.80	Total	954.8		ProDoc: Section 1.1, Para. 15, page 5
Transportation Modes	Freight Volume in 2014 (billion ton-km)	Share (% of Total Volume)																			
Air	Nil	Nil																			
Road	141.9	14.86																			
Rail	22.3	2.33																			
Waterborne	790.6	82.80																			
Total	954.8																				
<p><b>Comment:</b> <i>2) Please briefly describe the logistics network coverage condition in Zhejiang province.</i></p> <p><b>Response:</b> The Zhejiang logistics industry situation vis-à-vis the national and global context is described in Part II, Sec. 1: Situation Analysis of the ProDoc. In addition regarding the logistics network coverage condition, the following summarizes the current situation:</p> <p>a. <i>Zhejiang province includes 11 municipalities and cities, namely Hangzhou, Ningbo, Wenzhou, Shaoxing, Huzhou, Jiaxing, Jinhua, Quzhou, Zhoushan, Taizhou and Lishui. Railways are available in 10 cities except Zhoushan City. As for the water transport, this is available in these cities where there are navigable rivers. The main water transport route is the Qiantang (formerly Zhejiang) River, which passes through all these cities and interlinks all of them except Lishui City.</i></p> <p>b. <i>In terms of logistics and information technology, through the promotion and application of the national transport logistics public information platform, the cross-enterprise, cross-regional, cross-industry interoperability problems in Zhejiang Province are addressed. Zhejiang has deployed nine switching nodes in the country, inter-connecting about 148,000 logistics companies. The data exchange volume has reached around 400 million daily exchanges, and has stabilized at the 800,000 level. This comprehensive networking has reduced the overall cost of acquiring and providing information technology and improved efficiency of logistics operation in the Zhejiang network. The logistics park station that is involved in the project currently covers 16 stations with customs supervision and nine with bonded warehouse functions. At present, there has been some improvement in the</i></p>																					



Comments & Responses	Reference
<p><i>conversion of the logistics park station into information technology application resulting to 46.3% of the stations using the information technology software and 23% using a smart card port as it starts to apply green logistics techniques. Further enhancements will be carried out as part of the project activities.</i></p>	
<p><b>7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed?</b></p>	
<p><b><u>Comment:</u></b>  <i>There are many opportunities in greening China's logistics industry. However, we cannot see the opportunities in this project. The project can be significantly improved in three ways:</i></p>	
<p><i>1) Market mechanism: The logistics industry is extremely fragmented in Zhejiang province, as evidenced by the number listed in the project document (there was 11,000 legal logistics entities in the province in 2012). This fragmented market is a major bottleneck to the uptake of new technologies, including energy efficiency technology. Therefore, the project should consider an innovative business model to consolidate the market and facilitate the uptake of EE technologies.</i></p> <p><b><u>Response:</u></b>          Considering the extensive fragmentation and diversity of transport and logistics operators, the planned business model to address the need to promote the widespread practice of green logistics technologies and practices will involve the following:</p> <ul style="list-style-type: none"> <li><i>a. Regular consultations with the logistics industry regarding the introduction or enhancement of green logistics in their operations, as the case maybe</i></li> <li><i>b. Enabling small-to-medium size logistic service providers to invest on green logistics technologies by working together on freight transport management systems; inventory control; cargo track and trace systems using global positioning systems; decision support systems and electronic data interchange technology in a common configuration and platform that could be integrated in the local and regional level thereby promoting unified approach and maximizing the impacts and benefits.</i></li> <li><i>c. Formulation and enforcement of strategies and policies and regulations; establishment of performance standards and making critical investments to assist in the development and implementation of demonstrations on operation of model logistics parks, conduct adaptive research and dissemination of information on the best practices and lessons learned.</i></li> </ul> <p>The planning, funding, and supervision of logistics industry development will be handled at the provincial and municipal levels based on local logistics needs and guided by national strategies, plans, and policies. The project will involve the two key logistics service companies for the demonstration of green logistics technology demonstrations on materials handling and physical distribution. These companies will play the aggregating roles to integrate these small LSPs together. These integration will be supported by the Provincial government through the issuance of supportive policies that the project will formulate, recommend and promote; as well as the green logistics technology applications that will be demonstrated through the project, taking into consideration cost-effectiveness and the sustainability aspects.</p>	<p>ProDoc: Sec. 2.4, Para. 27 – 28</p> <p>CER Doc: Part II, Sec. A.5</p>
<p><i>2) Alibaba: Zhejiang province is home to Alibaba, the largest online retailer in the</i></p>	

Comments & Responses	Reference
<p><i>world. Alibaba' sales, to a large extent, dominate Zhejiang's logistics market. In this sense, the project is comparatively irrelevant without engaging with Alibaba.</i></p> <p><b>Response:</b>  The Alibaba Group Holding Ltd. Alibaba is a major player in China's e-commerce industry. Per China's categorization of business establishments, Alibaba is neither a logistics business operator nor a trader but a third-party service provider with an established trading platform. Its long-term aim is to make logistics less of a bottleneck for the fast-growing e-commerce industry. In line with this aim, the company presents itself as a green hand in logistics services provision making good use of the internet.</p> <p>The two major green logistics technology applications demonstrations of the GLIZP Project in Zhejiang Fuyang Port International Co. Ltd.; and, Fuyang Hangzhou Transfar Logistics Base Co., Ltd. will also involve many business transactions on the Alibaba platform in terms of the provision of logistics services through a logistics network that aims to make 24-hour domestic deliveries possible. The network is open to manufacturers, online sellers, delivery services and third-party service providers to help build the end-to-end chain. Since Alibaba is based in Hangzhou in Zhejiang Province, the project will involve Alibaba as a major e-commerce logistics provider service in the province under the project's implementation of relevant policy formulation and capacity building interventions, in the design and implementation of the green logistics technology application demonstrations; and in the facilitation of their wider adoption in the logistics industry in Zhejiang province and in other provinces in China (See Box 6.2). Together with the major logistics companies and other logistics service providers in the province, Alibaba will be consulted in the implementation of specific activities of the project, particularly on investment promotions, demonstration and formulation and enforcement of policies and standards for green logistics technology applications in the materials management and physical distribution aspects of the logistics industry.</p>	<p>ProDoc: Sec. 1.3, Table 2 Para. 23</p>
<p><i>3) Investment: the proposed \$2 million investment is in fact TA. The project should focus on its investment component and really demonstrate some cutting-edged technologies or business models.</i></p> <p><b>Response:</b>  About 80% of the \$ 2 million from GEF funding, US\$ 1.66 million, is for investment-related (Inv) activities that result to Outputs 2.1 to 2.4 which include attendant<sup>10</sup> technical support for engaging the services of local and international experts on green logistics technology applications; capacity development activities for establishing the conducive environment for the cost-effective application of green logistics techniques and practices; for developing the appropriate business models<sup>11</sup> that will be applied in the implementation of green logistics operations; and for the schemes that will used in the demonstrations on application of cutting-edge green logistics techniques in the</p>	<p>CER Doc: Part I, Sec. B, Component 2</p>

<sup>10</sup> Associated technical support that have to be considered and provided to address the relevant needs of the stakeholders in adopting and applying green logistics technologies.

<sup>11</sup> By "business model", the project proponents also meant "business approach". The business approach to adopting/applying energy efficient technologies/techniques to make the logistics operation energy conserving and waste reducing is in line with improving business performance and competitiveness with the generation of energy and energy cost savings and more efficient operations, while contributing to supply chain optimization and GHG emission reduction.

Comments & Responses	Reference
<p>materials management and physical distribution (i.e., freight transport) aspects of the logistics service provision business<sup>12</sup>. The said GEF funding includes US\$ 800,000 for purchase of equipment and services to support the installation and operation of the demonstration facilities in materials management and physical distribution which are mainly co-financed US\$ 10.58 million investment on green logistics demonstration. The incremental funding requirement for technical assistance is very necessary for the facilitation of the modifications and/or enhancements in the baseline demonstration activities to accommodate the green logistics technology features. The remaining US\$0.34 million of GEF funding is intended for technical assistance (TA) in the evaluation and dissemination of demonstration results as well as the development of the sustainability action plan for the green technology demonstration and replication in other provinces and cities in the region for Output 2.5 and 2.6.</p> <p>With this clarification, Component 2 GEF funding distribution has been corrected in the CER Doc.</p>	
<p><b><u>Comment:</u></b>  <i>Component 1.1: GEF grant cannot support research reports. Therefore, the component should be reworded as analysis. Further, there is no indication if the analysis will be translated into policy regulation.</i></p> <p><b><u>Response:</u></b>  Agree on the rewording. Regarding developing policy regulations, based on the results of the analysis on the situation of the logistics industry in Zhejiang in Output 1.1, the necessary improvement on or additional policies and regulations will be determined (Activity 1.1.2), developed, approved and issued (as other outputs of Component 1).</p>	<p>CER Doc: Part I, Sec. B, Output 1.1</p>
<p><b><u>Comment:</u></b>  <i>Component 1.3 seems to overlap with component 3.2 and 3.3.</i></p> <p><b><u>Response:</u></b>  The project proponents view this not as an overlap but as interlinked. Output 1.3 and Outputs 3.2 and 3.3 need to be separated under the project's pertinent policy and technical components, respectively, because of the differences in the nature of activities and outputs. Thus, in achieving Outcomes 1 and 3, these outputs complement each other. Output 1.3 (Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry) is focused on the policy aspect of the guides and references while Output 3.2 (Completed green logistics training courses for government authorities and relevant</p>	<p>CER Doc: Part I, Sec. B, 1.3, 3.2 and 3.3</p> <p>ProDoc: Para. 39, Paras 50 &amp;</p>

<sup>12</sup> The proposed project includes specific schemes for showcasing the application of green logistics techniques in the operations of the logistics companies that will host the demos. For the demo in Zhejiang Fuyang Port International Co. Ltd., the scheme will involve the installation and operation of the specific requirements in modernizing and equipping the system of reliable information management technologies in various phases of freight handling operations by increasing the container full-load rate from the current low load rate. And by utilizing the Dong Zhou dock land and water port, this scheme will showcase the effectiveness of the combination road- waterway transport that will not only reduce pressure on existing road infrastructures, but also reduce freight transport energy consumption. For the other demonstration hosted by Fuyang Hangzhou Transfar Logistics Base Co., Ltd., the scheme will involve the systematic and efficient scheduling of transport modes and combined road and water transport in a centralized system by addressing the problem of asymmetric information, and improve goods-vehicles matching efficiency, and reduce truck empty-load rates. This will facilitate widespread use of freight trucks both on the outbound and inbound trips. The schemes for the materials management demos will depend on the operating systems in the identified host demo logistic companies. This could be on the application of more energy efficient cold storage systems, application of energy efficient equipment, application of automated warehousing system, etc. The detailed design and implementation of these schemes is part of the activities under Component 2 of the project.

Comments & Responses	Reference
<p>stakeholders in the logistics and manufacturing industries in Zhejiang Province (e.g., concepts, practices, methodologies) and Output 3.3 (Completed and disseminated technical guidance documents including web-based tools on green logistics systems) focus more on the technical aspects that will be useful in capacity development and training of technical staff. The documents produced in Output 1.3, among other guidance documents, will also be introduced in the training courses and the development of training materials of Component 3.</p>	51.
<p><b><u>Comment:</u></b>  <i>Component 2: In table B, component 2 is listed as investment, but the description of component 2 in page 2227 suggest that the \$2 million grant is fully used as TA.</i></p> <p><b><u>Response:</u></b>  Please refer to Response in Box (3) above.</p>	
<p><b><u>Comment:</u></b>  <i>Component 2.1 in table B: The language is not clear.</i></p> <p><b><u>Response:</u></b>  To describe clearly, Output 2.1 is comprised of completed designs and plans of the demonstrations of the application of green logistics techniques in materials management in selected logistics companies in Zhejiang Province. Materials management is that aspect of the logistics industry that includes operations such as packaging, warehousing, cold storage, etc.). Output 2.1 includes reports that describe the concept and design, and the implementation plan for each demo on the application of green logistics technologies for materials management operations in the logistics industry, and efforts towards more efficient materials use, including packaging and recycling. It also include the engineering plans for the facilities/systems that will be designed, installed and operated for the demonstrations.</p>	CER Doc: Part I, Sec. B, Output 2.1
<p><b><u>Comment:</u></b>  <i>Component 2.2 in table B: The language is not clear.</i></p> <p><b><u>Response:</u></b>  To describe clearly, Output 2.2 is comprised of completed designs and plans of demonstrations of application of green logistics techniques in physical distribution in selected logistics companies in Zhejiang Province. Physical distribution is that aspect of the logistics industry that is referred to as freight transport, i.e., for the transport of goods. Output 2.1 includes reports that describe the concept and design, and the implementation plan for each demo on the application of green logistics technologies for physical distribution (i.e., freight transport) in the logistics industry, and efforts to ensure that the mobility of freight related to logistics operations is performed in a sustainable and environmentally friendly manner. It also include the engineering plans for the facilities/systems that will be designed, installed and operated for the demonstrations.</p>	CER Doc: Part I, Sec. B, Output 2.2
<p><b><u>Comment:</u></b>  <i>Component 2.3: please explain what “green logistics-based centralized logistic facility” is. Who will pay for the purchase of the facility? What is the estimated cost?</i></p> <p><b><u>Response:</u></b>  It is a centralized facility for materials management that is designed and operated based on the principles of green logistics technology. That means goods receipt, warehousing, storage/handling, packaging and other logistics services prior to goods delivery, all in</p>	CER Doc: Part I, Sec. B, Output

Comments & Responses	Reference
<p>one central facility. This is based on principles of a more environment-friendly (i.e., greener) logistics flow processing through centralized processing of goods/materials handling that improve resource utilization, reduce pollution of the environment, unified recovery and processing of packaging waste, and reduce waste contamination. Such centralized logistics facility is meant for the provision of integrated logistics services that use advanced technology planning and implementation of goods/materials warehousing, handling, packaging and packaging waste recovery, recycling and disposal. The one that will be demonstrated under the project in Zhejiang will be a centralized goods handling facility. For this demonstration, the Zhejiang Provincial Government and the selected host logistics company will shoulder bulk of the cost (US\$ 4.63 million).</p>	<p>2.3</p> <p>ProDoc: Output 2.3, Para. 44</p>
<p><b><u>Comment:</u></b> <i>Component 2.4: Please explain what “computerized green-logistics-based physical distribution system and simulation model and tools” are. Is it a fully commercialized technology? What is the estimated cost?</i></p> <p><b><u>Response:</u></b> This is a centralized facility for physical distribution (i.e., freight transport) that is designed and operated based on the principles of green logistics technology. That means goods transshipment processing, scheduling, and transport all in one central facility. This is based on principles of a more environment-friendly (i.e., greener) logistics flow processing (from individual or central collection points, transshipment operations, and delivery to receiving points), improved resource utilization, and reduced pollution of the environment. Such centralized logistics facility is meant for the provision of integrated logistics services that use advanced technology planning and implementation of goods/materials distribution processing, and freight transport and other logistics activities. The one that will be demonstrated under the project in Zhejiang will be a regional logistics network system that involves drop-and-pull transport scheme connecting with four modes of transportation--waterway, air, road and railway, and integrating sea port, airport, river port and dry port. For this demonstration, the Zhejiang Provincial Government and the selected host logistics company will shoulder bulk of the cost (US\$ 7.95 million).</p>	<p>CER Doc: Part I, Sec. B, Output 2.4</p> <p>ProDoc: Output 2.4, Para. 45</p>
<p><b><u>Comment:</u></b> <i>Component 2.5: This component seems to be redundant.</i></p> <p><b><u>Response:</u></b> Whatever green logistics technology applications were demonstrated have to be regularly monitored in terms of operational and energy performances, and their impacts. Hence, it is required to evaluate the results of these demonstrations, which in the case on an annual basis and produce the annual evaluation reports on the energy performance, economic and environmental impacts of each demo project in materials management and physical distribution. Moreover, these reports have to be disseminated. Considering the fact that there are many logistics companies (of various technical and financial capacities) in the province, the publication and dissemination of such reports would be helpful for these small-to-medium size logistics companies for their capacity development, which will contribute to the overall transformation of the local logistics industry into something that is more energy efficient and environment-friendly (i.e., greener). In that regard, Output 2.5 is very relevant. The actual activities that will deliver Output 2.5 were verbalized by the stakeholders during the stakeholder consultations that</p>	<p>CER Doc: Part I, Sec. B, Output 2.6</p>

Comments & Responses	Reference
<p>were conducted in the logical framework analysis (LFA) exercise during the project design stage. Such activities will need significant technical assistance to ensure proper coverage, description, and analyses of the demonstration projects are achieved and thereby contribute to the realization of improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang Province.</p>	
<p><b><u>Comment:</u></b>  <i>Component 2.6: this component cannot be categorized as investment.</i></p> <p><b><u>Response:</u></b>  Agree, it is actually TA including Output 2.5. This has been corrected in the CER Doc.</p>	<p>CER Doc:  Part I, Sec.  B, Outputs  2.5 &amp; 2.6</p>
<p><b><u>Comment:</u></b>  <i>Component 3 can be trimmed down, so more funding can be dedicated to demonstration.</i></p> <p><b><u>Response:</u></b>  The concept of green logistics is still relatively new to many of the small-to-medium size logistics companies in China. In fact, there are those who say that concept of green logistics has not been fully established within the local logistics industry, particularly that in Zhejiang Province. Many of these logistics enterprises even consider the concept as an illusion, that it cannot bring any economic benefits for them, and will increase logistics costs. There is very limited knowledge of its effective application within the industry. Some government leaders' awareness of green logistics is merely in terms of ideology, in the formulation of regional economic development plans, a one off pursuit of localized improvement, and short-term economic benefits.</p> <p>The companies that embrace the concept of green logistics have existing personnel that need capacity building on this concept (fundamentals/principles, application, operation and maintenance of green logistics systems). There are few professionals in the logistics industry in the province. The education system in this field is also considered relatively new. Presently, the logistics management personnel in many logistics companies lack professional training, are not professionally certified, and lack capacity in operating or guiding the operation of a logistics systems that are considered cost and energy efficient and environment-conscious as the green logistics concept require. With such state of professional and technical capacities in the logistics industry in the province (and to certain extent – in all of China), the logistics industry's development is still long way to go green.</p> <p>The proposed outputs in Component 3 are based on the results of the logical framework analysis (LFA) of the barrier concerning the current level of knowledge, technical capacity and awareness in the logistics industry in Zhejiang Province, which are described above. These are based on the desirable, realistic and achievable conditions that the project stakeholders aspire to be established by solving the identified capacity and knowledge/awareness-related barriers. Hence, to address the barriers regarding the low level of capacity, knowledge and skills of and cooperation among the relevant project participants, the capacity building, information and promotional activities are very necessary as identified during the LFA exercise. These barrier removal activities</p>	<p>ProDoc:  Sec. 2.6,  Paras 48 –  54;</p> <p>Section 1.2,  page 7</p>



Comments & Responses	Reference
<p>are necessary to enable these project stakeholders to embark on, and implement green logistics techniques and practices in their logistics business operations.</p>	
<p><b><u>Comment:</u></b>  <i>Component 3.1 and 3.5 overlap. Please delete one of them.</i></p> <p><b><u>Response:</u></b>  These 2 outputs do not overlap. Rather, they are sequential outputs that are necessary to sustain the capacity development program that will be designed, developed and implemented based on Output 3.1. Output 3.1 refers to the results and recommendations of the capacity needs assessment that is used for formulating the capacity development program. Output 3.5 refers to the results of the assessment of the capacity development program implementation. Such evaluation is necessary for the improvement and the sustenance of the capacity development program. As in all capacity development programs, all training or capacity building interventions are evaluated in terms of their impacts and relevance, and redesigned or modified based on the evaluation results to make them more in line with the capacity development achievements.</p>	<p>ProDoc:  Sec. 2.6,  Paras. 49  and 53</p>
<p><b><u>Comment:</u></b>  <i>Component 3.2: Please explain in what format the proposed training courses will be presented. How will the training courses be circulated? Who are the targeted audiences?</i></p> <p><b><u>Response:</u></b>  The training courses will be conducted in a seminar/workshop format to be conducted for the key participants to the project. That means government authorities and relevant stakeholders in the logistics and manufacturing industries in the province targeting participants that were identified through a training needs analysis in Activity 3.1.1.</p>	<p>ProDoc:  Sec. 2.6,  Paras. 49  and 50</p>
<p><b><u>Comment:</u></b>  <i>Component 3.3: the technical guidance documents are designed for policy makers or logistics industry players? Is there a need assessment for the guidance documents?</i></p> <p><b><u>Response:</u></b>  The technical guidance documents are designed for logistics industry players (i.e., logistic company management, technical and operations personnel) based on the findings and recommendations of Output 3.1 on capacity needs assessment.</p>	
<p><b><u>Comment:</u></b>  <i>Component 3.4: what are the differences between training courses and workshops documents? Is this component necessary?</i></p> <p><b><u>Response:</u></b>  Output 3.4 is very necessary in promoting green logistics technologies for enhancing awareness and knowledge about the application of these to a wider audience within the logistics industry and in related supply chain establishments. The training courses are for selected industry personnel on specific green logistics subjects (e.g., energy efficient cold storage, operation and maintenance of energy efficient freight trucks). The workshops are for a more general audience, and will be on broader or common topics such (e.g., promoting packaging waste recycling, requirements for certified distribution facilities). The target participants in the promotional workshops in Output 3.4 are different from those in the training courses in Output 3.2. Thus the training materials and documents for Output 3.2 are prepared differently because those involved in the</p>	<p>ProDoc:  Section 2.6,  Para. 52,  pages 30-31</p>

Comments & Responses		Reference
promotional workshops for Output 3.4 include additionally the consuming public and members of the logistics industry associations.		
<b>13. Comment on the project's innovative aspects, sustainability, and potential for scaling up.</b>		
<p><b>Comment:</b>  <i>It is not clear how the proposed intervention can be replicated in other provinces or nationwide.</i></p> <p><b>Response:</b>            For program sustainability, the proposed intervention includes the development and approval of a follow-up plan for the replication of the application of the piloted green logistics policies in Zhejiang Province in other nearby provinces and cities. <u>How the replications will be done will be addressed during the formulation of the follow-up plan, which is towards the end of the project. By that time, there would have been results gathered, experiences gained, and lessons learned, which will be considered in the design of the actual plan for the replications in other provinces or even nationwide, including the implementation arrangements for the design, funding, implementation, operation, monitoring and evaluation of the replications.</u></p>		ProDoc: Sec. 3, Para. 64  Section 2.6, Para. 47, Activity 2.6.1
<b>15. Has the cost-effectiveness of the project been sufficiently demonstrated, including the cost-effectiveness of the project design as compared to alternative approaches to achieve similar benefits?</b>		
<p><b>Comment:</b>  <i>No. Please address the issues related to project design and project components as explained in box 7.</i></p> <p><b>Response:</b>            The project proponents believe that the issues in Question 7 have been adequately, and the necessary changes have been made in the CER document and project document, based on the responses provided.</p>		
<b>16. Is the GEF funding and co-financing as indicated in Table B appropriate and adequate to achieve the expected outcomes and outputs?</b>		
<p><b>Comment:</b>  <i>It is not clear at this stage, because the outputs in Table B need clarification and redesign.</i></p> <p><b>Response:</b>            The project proponents believed that the responses provided have adequately responded to the comments/questions of the reviewer. The GEF funding and co-financing amounts for the designed project outputs remain the same as initially proposed, except for the adjustments in the distribution of the Inv and TA portions in Component 2.</p>		CER Doc: Sec. B

### Responses to STAP Comments (24 February 2014)

Comments & Responses		Reference
<b>III. Further guidance from STAP</b>		
STAP has the following recommendations that could be addressed during project preparation:		
<p><b>Comment:</b>  <i>g. Since GEF funding is less than 10% of total project costs, the total abatement cost</i></p>		



<p><i>is likely to be closer to \$2/t CO<sub>2</sub> avoided over the life of the project (compared with the \$0.16/t CO<sub>2</sub> quoted) but that is still relatively low.</i></p> <p><b>Response:</b> Yes. Agree. The initial estimate of US\$ 0.16/ton CO<sub>2</sub> as unit abatement cost (UAC) was based on preliminary data that were provided by the project partners in Fuyang City during the PIF development. During the PPG exercise, the project development team was able to get more up to date information, and the final estimated UAC is US\$ 1.67/ton CO<sub>2</sub>. This is based on the estimated direct impacts of the project in terms of what could be essentially attributable to the GLIZP's planned demonstration activities in improving materials management, optimizing road freight transport, and increased utilization of combined road-waterways container transport.</p>	<p>ProDoc Sec 2.8; Para. 58, page 36</p>
<p><b>Comment:</b> <i>h. Calculating direct GHG emission reductions is challenging as it is not possible to anticipate the level of some anticipated changes such as the degree of freight shifting from road to more efficient waterways. But STAP would recommend project proponents to communicate with the other freight-related projects listed above to share experience and knowledge. It would be particularly useful in having a common approach to GHG accounting for this sector. STAP encourages project proponents to explore the usability of the GEF GHG transportation methodology but acknowledges that the freight sector would require a different specific approach to GHG accounting going beyond what current methodology considers (<a href="http://www.stapgef.org/calculating-greenhouse-gas-benefits-of-global-environment-facility-transportation-projects/">http://www.stapgef.org/calculating-greenhouse-gas-benefits-of-global-environment-facility-transportation-projects/</a>).</i></p> <p><b>Response:</b> Yes. Agree that the calculation methodology for direct GHG emissions reduction is quite challenging and needed simplified assumptions for lack of data to come up with the reference estimates. For the physical distribution sector, the estimation procedure and formulae that were used for road freight transport CO<sub>2</sub> emission reductions were based on the GEF prescribed methodology. However, in the case of the CO<sub>2</sub> emission reductions from combined road-waterways container transport, the same assumptions that the local logistics companies are using were applied in conjunction with the GEF methodology. The industry uses a different unit of measure, which then have to be converted to the common unit of measure (tons of oil equivalents) that were used for the materials management sector. These estimates have to be validated during the project implementation. The project includes the development and use of a monitoring and evaluation system that will quantify actual energy savings and CO<sub>2</sub> emission reductions from the project demonstrations in selected logistic companies, and from the expected replications to be made by the other companies.</p>	<p>ProDoc: Annex IV</p>
<p><b>Comment:</b> <i>i. For a project of this nature, systematic barrier analysis is highly recommended. Currently presented list of barriers is incomplete (page 6). For example, how the barrier of decentralized logistics providers will be addressed, particularly "informal" provider sector? Project proponents could find useful recommendations for establishing low-carbon transport systems developed by STAP at: <a href="http://www.stapgef.org/sustainable-low-carbon-transport/">http://www.stapgef.org/sustainable-low-carbon-transport/</a>.</i></p> <p><b>Response:</b> The project team revisited the barrier analysis done at the PIF stage and affirmed the same listed barriers in the current situation. Further explanation and updated</p>	<p>ProDoc: Section 1.2,</p>

<p>information to emphasize the described barriers have been included to provide better understanding of these barriers. The comment that the barrier analysis is incomplete seems to be because the proposed solution was not included in the description. The section on barrier analysis is meant to describe the analysis of the nature, extent/magnitude and the causes of each barrier. The proposed solutions are embodied in the description of the project activities, which are for the removal of the barriers. Nevertheless, the recommended STAP study has been used in coming up with the design of the activities (i.e., the solutions) that will remove the identified barriers including the solutions to the barriers preventing the Zhejiang provincial government in adopting low carbon transport systems.</p>	<p>p. 10 – 11.</p>
<p><b>Comment:</b></p> <p>j. <i>Project strengths are in supporting "soft" measures such as policy and regulatory support, designs and plans for green logistics systems, and capacity building activities. However, as the PIF acknowledges the logistics industry in China faces lot of problems, including non-standard supply chain, low truck availability, and long loading time. The fleet is largely outdated and energy inefficient. What are the existing and/or envisaged financial incentives and funding support that central and provincial governments and financial institutions could provide in upgrading freight-related "hardware" or improving this pillar of the ASI framework? The project financial sustainability has to be assured and described in the project document.</i></p>	
<p><b>Response:</b></p> <p>The “soft” technical assistance measures and the equipment investment in the demonstration of green logistics techniques that will be implemented under the GLIZP project are considered by the project proponents and partner logistics service providers (LSPs) as the necessary incremental elements needed by the Zhejiang logistics industry to supplement their baseline activities in improving the operation and management of the industry. These incremental activities are intended to mainstream energy efficiency in the materials management and physical distribution aspects of the provincial logistics industry; and are on top of other related logistics operations that will ultimately result to better efficiency, reduced operating costs, and optimal logistics costs. The major LSPs who will participate in the project have made their decisions to upgrade their outdated facilities and transport units towards more energy-efficient and environment friendly modes of operation. Their participation is in terms of their own share in investments and technical support in improving their facilities and freight transport units, and should contribute to the financial sustainability of the project. The Zhejiang Provincial and Fuyang City governments are also putting up their financial support to the project.</p>	<p>ProDoc: Part 2, Para 63.</p>
<p>In regards the upgrading freight-related "hardware", it should be noted that some of the baseline projects that are described in the Project Document (Part II, Sec. 1.4: Baseline Analysis) are the initiatives of the Provincial and city governments in Zhejiang, as well as major logistics services companies. In regards the financial sustainability of the project after the GEF support, the project has been designed to include activities on ensuring the approval and implementation of sustainable follow-up plans for the green logistics system demonstration program, and for the replication of the piloted green logistics policies in Zhejiang and in other provinces in China. An M&amp;E system will be developed and implemented for tracking the progress of the green logistics replications during and after the GLIZP project.</p>	<p>ProDoc: Part 2: Sec. 1.4, pp. 8-11 Part 2. Sec. 2.6, Outputs 1.4 and 2.6</p>

## Responses to Council Comments (March 2014 ISWP)

Comments & Responses	Reference
<p><b>Germany</b>  <u>Suggestions for improvement to be made during the drafting of the final project proposal:</u> <i>The STAP emphasizes the importance of the project in view of freight transport accounting for 70% of China's transport GHG emissions in 2005. According to the STAP, the GEF portfolio includes only a few projects focused on freight (Colombia GEF ID04603), Morocco GEF ID-5358). However, there are other projects that might be interesting to connect with. Germany recommends the following:</i></p>	
<p><b>Comment:</b>  <i>Exchange with the "ASEAN-German Technical Cooperation. The Regional Programme "Cities, Environment and Transport in the ASEAN Region" (<a href="http://www.citiesenvironmenttransport.org">http://www.citiesenvironmenttransport.org</a>). The project assists partner institutions in the region in improving air quality, promoting energy efficient transport and increasing competitiveness, while simultaneously achieving GHG emissions reductions. The program includes a sustainable ports program.</i></p> <p><b>Response:</b>  The team has gathered information on the Sustainable Port Development Program in the ASEAN Region, which will run until 2015 in its second phase of implementation with 12 ports in 7 ASEAN countries and considered that GLIZP should be able to exchange experiences in improving transport/logistic system possibly under the ASEAN-China cooperation. Similarly, GLIZP shall monitor developments in other similar freight transport projects in other countries and learn from their experiences and lessons learned and benchmark relevant energy efficiency and environmental improvement through application of green logistics concept, particularly in the aspects of policy, regulatory and standards development. The project has incorporated the STAP suggestion in Activity 1.1.1.</p>	<p>ProDoc, Sec. 2, Activity 1.1.1</p>
<p><b>Comment:</b>  <i>The indicated framework needs to be further elaborated and be supplemented by quantitative indicators, such as the number of other provinces and cities being targeted, the target value for the reduction of empty truck loads, and so forth. Such information has generally already been provided in the PIF, but is not yet part of the indicative project framework.</i></p> <p><b>Response:</b>  The finalized project logical framework (PPM) includes only quantitative indicators. Each indicator has a baseline and target value. The target values of the indicators will be monitored annually, as per the Annual Targets Table in Annex V.</p>	<p>ProDoc: Part 4, and Annex V</p>
<p><b>Comment:</b>  <i>In the section "Global Environmental Benefits," item d) mentions "reduction of logistics costs" as an environmental benefit. In the view of Germany this is not an environmental benefit and needs to be modified.</i></p> <p><b>Response:</b>  Noted. The reduction of logistics cost is an economic benefit, not an environmental benefit. This has been corrected and reflected in the Project Document and CEO Endorsement Request Document.</p>	<p>ProDoc: Para 59; CER Doc: Part II, Sec. B2</p>

<p><b>Comment:</b> Germany requests to verify at CEO endorsement the availability of all mentioned sources of co-finance as also recommended by STAP.</p> <p><b>Response:</b> Yes. The co-financing letters from the committed co-financers (e.g., (Zhejiang Provincial Government, Fuyang City Government, Fuyang Hangzhou Transfar Logistics Base Co., Ltd., Zhejiang Fuyang Port International Co. Ltd., and UNDP) are included in the Project Document. The activities that are co-financed by these project partners are described in the Project Document.</p>	ProDoc: Annex II: CER Doc: Part I, Sec. C
<p><b>Japan Comment:</b> Japan acknowledges the importance of the project and would like to have detailed information of it. We sincerely request the Secretariat to provide is the draft final project document for consultation.</p> <p><b>Response:</b> The GEFSec will provide the draft final project document for consultation.</p>	
<p><b>U.S.A. Comment:</b> The United States, in light of its policies for certain development projects, abstains from the decision on this project.</p> <p><b>Response:</b> Noted. Thanks for the comments.</p>	

**China: Greening the Logistics Industry in Zhejiang Province  
Responses to GEFSec Comments (27 August 2013)**

Comments & Responses	Reference
<p><b>8. (a) Are global environmental/adaptation benefits identified? (b) Is the description of the incremental/additional reasoning sound and appropriate?</b></p> <p><b>Comment:</b> Yes. Please provide detailed estimation of GHG emission reductions, including the effects of water transport systems, by the CEO Endorsement stage.</p> <p><b>Response:</b> The GHG emission reduction calculations are presented in Annex IV of the Project Document. The analysis of the GHG emission reductions from the combined road-waterways transport systems are also included.</p>	ProDoc: Annex IV
<p><b>16. Is the GEF funding and co-financing per component appropriate and adequate to achieve the expected outcomes and outputs?</b></p> <p><b>Comment:</b> HT, August 27, 2013: b) While the PPG amount has been brought down, the total of the project cost, PPG and Agency fees (\$3,300,002) exceeds the amount in the endorsement letter (\$3,300,000). Please revise the Agency fee for the project (\$276,802) to \$276,800.</p> <p><b>Response:</b></p>	

The Agency fee has been revised to US\$ 276,800.	PIF: Part I: Project Info
<b>23. Is PIF clearance/approval being recommended?</b>  <u><b>Comment:</b></u> <i>HT, August 27, 2013:</i> <i>As in the comment in box 16, please revise the Agency fee for the project (\$276,802) to \$276,800.</i>  <u><b>Response:</b></u> The Agency fee has been changed to the correct amount of US\$ 276,800.	PIF: Part I: Project Info

**China: Greening the Logistics Industry in Zhejiang Province**  
**Responses to GEFSec Comments (9 April 2013)**

Comments & Responses	Reference
<b>4. Is the project aligned with the focal area/multifocal areas/ LDCF/SCCF/NPIF results framework and strategic objectives?</b>  <u><b>Comment:</b></u> <i>Energy efficiency improvement in the logistics sector can be covered by CCM-4. Therefore, it seems reasonable to narrow down the FA objectives to CCM-4 unless there are no specific reasons to bring up CCM-2.</i>  <u><b>Response:</b></u> In this project proposal the logistics sector is considered as an industry comprising of establishments that include mainly of logistics service providers (LSPs). These LSPs provide either or both services for materials and facilities management (e.g., warehousing, cold storage, packaging, waste recycling/reuse, etc.) or/and physical distribution (e.g., freight transport and goods delivery). The energy efficiency interventions in the materials and facilities management services are considered contributing to CCM-2 (EE in buildings and industrial sectors). The energy efficiency interventions in the physical distribution services are contributing to CCM-4 (sustainable transport and urban systems). The proposed project can be considered to be a CCM-4 project if one is to consider the logistics industry as an urban system with the relevant infrastructures (e.g., ports, freight consolidation areas, warehouses, etc.) being established, constructed, operated and maintained by a city. This is not the case in Zhejiang Province and Fuyang City. In that regard, the proposed project is being proposed as contributing to both CCMs 2 and 4.	PIF: Part II, Sec. B.2, 1 <sup>st</sup> Para, p. 15
<b>5. Is the project consistent with the recipient country's national strategies and plans or reports and assessments under relevant conventions, including NPFE, NAPA, NCSA, NBSAP or NAP?</b>  <u><b>Comment:</b></u> <i>Please explain that the PIF has relevance to the 2nd National Communication submitted by the Government of China in November, 2012</i>  <u><b>Response:</b></u> This proposed project is in line with the climate change mitigation plans and actions that are presented in China's Second National Communication (2NC). The 2NC supports the	PIF: Part II, Sec B.1, p.

country's plans and programs that it intends to pursue during the 12th FYP period, which is on industrial structure optimization in combination with further technological advances, enhanced project measures, strengthened management and guidance to substantially improve its energy efficiency. This is to curb the high energy consumptions and high GHG emissions from energy consuming industries, such as the logistics industry. This will involve reasonably controlling the total energy consumption and enhancing the energy use management in industry, construction, transportation, public institutions, urban and rural construction as well as consumption sectors; enhancing energy conservation management of major energy consumers; enabling enterprises take up energy-saving and low-carbon actions. This proposed PIF, which is on improving the energy utilization efficiency in the material management and physical distribution operations in the Chinese logistics industry, is expected to contribute to the achievement of the country's GHG emission reduction targets.	14
<b>7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed? Please address the following comments:</b>	
<p><b><u>Comment:</u></b>  <i>a) Role of the national government is unclear, while the National Development and Reform Commission (NDRC) is listed as one of the executing partners. Involvement of the national government seems necessary to replicate the outcomes and outputs in other provinces and cities.</i></p> <p><b><u>Response:</u></b>  It is not the NDRC that is being proposed as executing partner but the provincial DRC in Zhejiang Province. The Zhejiang Provincial DRC is under the NDRC. Through this linkage, the successful results of the various interventions (particularly the demonstrations), as well as the supporting frameworks, policies and regulations that will be developed and established under the project, as well as whatever best practices that will be generated and lessons learned from the project can be easily shared with other provinces. The NDRC, while not directly involved in the project, will facilitate potential application and replication of the green logistics technologies/techniques and practices that will be promoted under the project. Moreover, the provincial DRCs usually share and collaborate among themselves in the implementation of specific development initiatives that they are mutually interested in. That practice will definitely be useful not only in the dissemination of the project results, but also in collaborative efforts to replicate green logistics principles, technologies/techniques and practices.</p>	PIF: Footnote 16
<p><b><u>Comment:</u></b>  <i>b) Component 1: Please describe how many provinces and cities are envisaged to replicate the green logistics policies.</i></p> <p><b><u>Response:</u></b>  The major port cities in Zhejiang (Ningbo and Beilun) are among the initial cities that are targeted to replicate the green logistics policies that the project will demonstrate. At the later part of the project implementation, at least 5 other cities that have sizable logistics industry (e.g., Dalian, Qingdao, Tianjin, Quanzhou, and Yangshan) will be targeted for the replication of green logistics principles, technologies/techniques and practices. The indicative cities targeted for replication are port cities with big logistics establishments (logistics services providers – LSPs), that serve several large scale manufacturing industries. These are areas that are similar to the port cities in Zhejiang Province such as Hangzhou and Fuyang, and where the optimized combination of land and water freight transport systems can potentially generate more efficient operations energy-wise and cost-wise, and in so doing reduce road freight transport-related air pollution and realize GEBs.</p>	PIF: p. 8, Component 1

<p><b><u>Comment:</u></b>  <i>c) Component 2: Please add quantifiable outputs in the Indicative Project Framework (e.g., GHG emission reductions, reduction of empty load rates).</i></p> <p><b><u>Response:</u></b>  Output statements that reflect the realization of quantifiable outcomes such as those suggested (GHG emission reduction and reduction of empty load rates) are now included in Component 2 in the Project Framework.</p>	<p>PIF: Sec B;  Component 2, p. 3</p>
<p><b><u>Comment:</u></b>  <i>d) Component 3: Case studies of international best practices in green logistics duplicate with research report on green logistics systems developed and implemented in other countries (Component 1). Please streamline the activities without duplication.</i></p> <p><b><u>Response:</u></b>  Those that will be studied in Component 1 are on the energy utilization performances of the typical and “green” logistics systems that are in operation in other developing countries like China. Such systems may not be regarded as exhibiting “best practices” in energy efficient and cost-effective logistics systems operation. The intention here is to benchmark the energy utilization performance of various typical and green logistics systems (good and bad). The information would be useful as references/bases for appropriate green logistics policy formulation. This research work will produce a compendium of various energy conservation, energy efficiency and environment conserving measures, techniques, and practices that have been developed and implemented in various countries. Such measures, techniques and practices shall be in the materials management and physical distribution operations in the logistics industry in various countries that have significant trade relations with China, particularly developing countries whose economic growth is similar to the country. Among the information that will be covered include: (a) green logistics technology or process descriptions, specific energy consumption of such technologies/processes, investments costs involved, energy utilization and cost performances, economic/financial performance, specific support policies and regulations, lessons learned (successful, less successful, and bad), etc. This is for the purpose of guiding the policy makers in coming up with the necessary policy and institutional frameworks that will support the implementation of green logistics systems.</p> <p>In Component 3, the focus is on case studies of international best practices in green logistics as applied in developed countries that can be emulated by LSPs in China, and is mainly for capacity development purposes. These may include, among others the best practices in terms of sustainability, mobility, livability, global competitiveness, efficiency (process/procedures), cost effectiveness, environmental friendliness, congestion alleviation, safety and security, energy conservation and energy efficiency, labor requirements and social impacts. These case studies will supplement the technical guidance document and web-based tools on green logistics that will be developed and disseminated to Chinese LSPs.</p> <p>These 2 are completely different in scope, purpose and target beneficiaries/users.</p>	<p>PIF:  Component 1, Footnote 12, p. 8</p> <p>PIF:  Component 3, Footnote 14, p. 9</p>
<p><b>10. Is public participation, including CSOs and indigenous people, taken into consideration, their role identified and addressed properly?</b></p> <p><b><u>Comment:</u></b>  <i>The description on the stakeholders (page 11, "Science &amp; Technology, and ... the International Copper Association (ICA)") is not understandable. Please correct it.</i></p>	

<p><b><u>Response:</u></b> Apologies for this inadvertent mistake. The irrelevant texts in the description have been removed.</p>	<p>PIF: p. 11, 3<sup>rd</sup> Para</p>
<p><b>13. Comment on the project’s innovative aspects, sustainability, and potential for scaling up.</b></p> <p><b><u>Comment:</u></b> <i>The proposal is innovative because it seeks to maximize GHG emission reductions by optimizing the combination of land transport and water transport systems. Regarding the replication, please address the comment in box 7b).</i></p> <p><b><u>Response:</u></b> Comment 7b has been addressed. Please see response above.</p>	
<p><b>16. Is the GEF funding and co-financing per component appropriate and adequate to achieve the expected outcomes and outputs? Please address the following comments:</b></p>	
<p><b><u>Comment:</u></b> <i>a) Given the important role of the national government, please explore possibilities to receive co-financing from the national government.</i></p> <p><b><u>Response:</u></b> The co-financing from the national government will be worked out during the planned PPG exercise. While the proposed project is a local government initiative by the Zhejiang Province DRC, it is well recognized that the mother unit, which is the NDRC, could play a very important role in facilitating the replication of green logistics technologies/techniques in other provinces. It is in that light that the project proponents will convince/encourage the NDRC to provide additional co-financing for this noteworthy development effort in the provinces.</p>	
<p><b><u>Comment:</u></b> <i>b) Please bring down the PPG amount to \$100,000 as well as the Agency Fee for PPG.</i></p> <p><b><u>Response:</u></b> The requested PPG amount (and the corresponding Agency Fee) has been reduced to the maximum amount of US\$ 100K for GEF projects of up to US\$ 3 million grant.</p>	<p>PIF: Part I, Sec E, p.4</p>
<p><b>17. At PIF: Is the amount that the Agency is bringing to the project in line with its role? Any comment on the indicated amount and composition of co-financing?</b></p> <p><b><u>Comment:</u></b> <i>Please provide information on the UNDP's budget for China and justify the level of co-financing (\$250,000).</i></p> <p><b><u>Response:</u></b> The UNDP’s co-financing will be used mainly for project management (including travel for project inspections, audits, monitoring and evaluation activities). This co-financing will come from allocated core funding to support energy and environment activities of the country office in line with the realization of goals of the current country program in China. The final amount of UNDP co-financing will be determined during the PPG exercise and is expected to be not less than US\$ 250,000.</p>	<p>PIF: p. 14, Last Para</p>
<p><b>23. Is PIF clearance/approval being recommended?</b></p>	



<p><b><u>Comment:</u></b>  <i>Not at this stage. Please address the above comments.</i></p> <p><b><u>Response:</u></b>  The project proponents believe that they have adequately addressed all of the relevant comments on the PIF. They are looking forward to the CEO approval of the proposed PIF.</p>	
---	--

**ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS<sup>13</sup>**

**A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:**

<b>PPG Grant Approved at PIF: US\$ 100,000</b>			
<b>Project Preparation Activities Implemented</b>	<b>GEF/LDCF/SCCF/NPIF Amount (\$)</b>		
	<b>Budgeted Amount</b>	<b>Amount Spent to Date</b>	<b>Amount Committed</b>
Conduct of Studies and Surveys	25,000	25,000	0
Conduct of Logical Framework Analysis (LFA) workshop	25,000	25,000	0
Identification and assessment of demonstrations of the application of green logistics technologies/techniques	5,000	5,000	0
Detailed design of the project components and activities	20,000	20,000	0
Conduct of stakeholder and project partner coordination meetings, and establishment of project implementation and management arrangements	10,000	10,000	0
Preparation of the UNDP-GEF Project Document (ProDoc) and GEF CEO Endorsement Request (CER) Document	12,500	12,500	0
Finalization of the ProDoc and CER Document	2,500	2,495.18	4.82
<b>Total</b>	<b>100,000</b>	<b>99,995.18</b>	<b>4.82</b>

The implementation of the activities for the design, development and preparation of the GLIZP project, despite some delays, was overall satisfactory. The project development team that was formed by UNDP-China, on behalf of the implementing partner, ZPDRC, carried out the activities based on the agreed project initiation plan. The design of the various project activities, were based on the logical framework analysis (LFA) that was conducted in 2014. The logical framework analysis (LFA) that was carried out by the team together with the stakeholders was mainly to verify and confirm the project results framework that was developed and presented in the GEF-approved GLIZP PIF. It confirmed the previously defined project goal and objective, and expected outcomes. The previous information about the ongoing and planned programs of the Zhejiang Provincial government, and Fuyang City government, and that of the various partner logistics companies were verified, processed and analyzed to obtain a clear understanding of the current situation concerning the issues and concerns regarding the provincial logistics industry. This included the plans and programs of the provincial government on the enhancement of the performance and energy utilization efficiency of the logistics industry (particularly on materials management and physical distribution). On physical distribution (i.e., freight transport), actions towards reducing the zero load trips, and the utilization of water transport eon, and reviewed. The discussions with the key stakeholders and project partners (mainly the 2 main logistics companies in Fuyang City) have made possible the identification of relevant issues and barriers that need to be addressed and considered in

<sup>13</sup> If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

the development and implementation of the GLIZP project. The discussions with the stakeholders and project partners also resulted in getting commitments for the co-financing of the baseline activities that were subsumed into the project; the Zhejiang provincial government's contribution to the funding of some of the incremental activities, as well as in the agreed project coordination mechanisms and the project implementation arrangements. The detailed GLIZP project components and activities were designed using the outputs of the PPG exercise.

There were some problems and difficulties towards the end of the project preparation involving some delays in the provision of data, some data that need to be scrutinized and verified further, etc. This happened when the local partners in Zhejiang Province were not able to provide some of the required information, and the local consultants of the project team have to carry out some more additional research. Nonetheless, despite these and the resulting delays, the project design and preparation tasks were completed.

**ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

*No reflows of funds are foreseen under this Project.*



## United Nations Development Programme

Country: People's Republic of China

### PROJECT DOCUMENT<sup>1</sup>

**Project Title:**

**Greening the Logistics Industry in Zhejiang Province (GLIZP)**

*Low carbon and other environmentally sustainable strategies and technologies are adapted widely to meet China's commitments and compliance with Multilateral Environmental Agreements*

**UNDAF Outcome(s):**

**UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:** Low carbon and other environmentally sustainable strategies and technologies are adapted widely to meet China's commitments and compliance with Multilateral Environmental Agreements

**UNDP Strategic Plan Secondary Outcome:**

**Expected CP Outcome(s):** Reduction of GHG emissions from the application energy efficient green logistics techniques and practices in Zhejiang Province

*(Those linked to the project and extracted from the country programme document)*

**Expected CPAP Output (s):** Mainstreaming environment and energy

*Those that will result from the project and extracted from the CPAP)*

**Executing Entity/Implementing Partner:** Zhejiang Provincial Development and Reform Commission

**Implementing Entity/Responsible Partners:** Zhejiang Provincial Development and Reform Commission and United Nations Development Programme

#### Brief Description

GLIZP is aimed at widespread application of energy efficient green logistics technology (techniques and practices) in the logistics industry in Zhejiang Province. A barrier removal approach will be applied to achieve effective and extensive application of green logistics concepts in the province's logistics industry. The project is expected to transform the logistics industry in Zhejiang Province into one where the interplay of operational efficiency, environmental friendliness and energy efficiency/conservation ensures sustainable operation and development of the logistics industry in serving the commercial and manufacturing sectors in the province in the collection, storage and delivery of goods in an efficient, energy conserving, waste-reducing manner. This will be achieved through the implementation of activities grouped into three project components: (1) Policy and Regulatory Support for Green Logistics, (2) Green Logistics Systems Demonstration, and (3) Capacity Building and Promotion of, Green Logistics Systems. The project is financially supported through the GEF (USD 2,913,700) and co-financed by the UNDP (USD 250,000), the Zhejiang Provincial Government and Fuyang City Government (USD 3,480,000) and from partner logistics companies (USD 8,400,000). The total project cost is USD 15,043,700. The project is expected to benefit not only the province, but also the entire logistics industry in China in general. The estimated potential direct CO<sub>2</sub> emission reduction attributed to the project is 1,749,273 ton CO<sub>2</sub>, which translates into a unit abatement cost of US\$ 1.67/ ton CO<sub>2</sub>.

<sup>1</sup>For UNDP supported GEF funded projects as this includes GEF-specific requirements

Programme Period:	<u>2015-2019</u>	Total resources required	<u>\$ 15,043,700</u>
Atlas Award ID:	<u>00087745</u>	Total allocated resources:	
Project ID:	<u>00094666</u>	• GEF	\$
PIMS #	<u>5238</u>	• <u>2,913,700</u>	
Start date:	<u>Jan 2016</u>	• Others:	
End Date	<u>December 2019</u>	◦ Government	<u>\$ 3,000,000</u>
Management Arrangements	<u>NIM</u>	◦ Private Industry	<u>\$ 2,940,000</u>
PAC Meeting Date		◦ UNDP	<u>\$ 250,000</u>
		Sub-total	<u>\$ 6,190,000</u>
		In-kind contributions	<u>\$ 5,940,000</u>

Agreed by (Government):

\_\_\_\_\_  
Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

\_\_\_\_\_  
Date/Month/Year

Agreed by (UNDP):

\_\_\_\_\_  
Date/Month/Year

## List of Abbreviations & Acronyms

Abbreviation	Meaning
AAA	Triple A standing in rating system
APR/PIR	Annual Project Report/Project Implementation Review
AWP	Annual Work Plans
CO <sub>2</sub>	Carbon dioxide
CPAP	Country Program Action Plan
CTA	Chief Technical Advisor
EE	Energy efficiency
EOP	End-of-project
EPC	Engineering, procurement and construction
ERC	Evaluation Resource Center
FCG	Fuyang City government
GDP	Gross domestic product
GEB	Global environmental benefits
GEF	Global Environmental Facility
GHG	Greenhouse gasses
GLIZP	Greening the Logistics Industry in Zhejiang Province
GOC	Government of China
GWh	Gigawatt-hours, or million kWh
FHTLBCL	Fuyang Hangzhou Transfar Logistics Base Co., Ltd.
IPLP	International Ports Logistics Project
kton	Kilotons or 1,000 tons
kWh	Kilowatt-hours
L	Liter
LSP	Logistics services providers
M&E	Monitoring and evaluation
MOT	Ministry of Transportation
NDRC	National Development and Reform Commission
NGO	Non-government organization
NIM	National Implementation Modality
NPD	National Project Director
NPM	National Project Manager
OFP	Operational Focal Point
PIF	Project Identification Form
PMU	Project Management Unit
PPG	Project preparation grant
PPR	Project Progress Reports
PSC	Project Steering Committee
SBAA	Standard Basic Assistance Agreement
TAC	Technical Advisory Committee
TEU	Twenty-foot equivalent unit (TEU) <sup>2</sup>
toe	Tons of oil equivalent
TOR	Terms of reference
TOR	Terms of Reference
TRPLP	Transformation of Road and Port Logistics Project
UNDP	United Nations Development Program
ZFPICL	Zhejiang Fuyang Port International Co. Ltd.
ZPDRC	Zhejiang Provincial Development and Reform Commission

<sup>2</sup> An approximate unit of cargo capacity used to describe the capacity of container ships and container terminals.

## Table of Contents

	<b>Page</b>
<b>1. Situation Analysis</b>	<b>1</b>
1.1 Context and Global Significance	1
1.2 Barrier Analysis	6
1.3 Stakeholder Analysis	7
1.4 Baseline Analysis	8
- Baseline Definition	11
<b>2. Strategy</b>	<b>12</b>
2.1 Project Rationale and Policy Conformity	12
2.2 Country Ownership/Country Eligibility	12
2.3 Country Drivenness	12
2.4 Design Principles and Strategic Considerations	13
2.5 Alternative Scenario	15
2.6 Project Goal, Objective, Outcomes and Output/Activities	18
2.7 Key Indicators and Risks	31
2.8 Cost Effectiveness	32
<b>3. Sustainability and Replicability</b>	<b>33</b>
Sustainability and Replicability	33
<b>4. Project Results Framework</b>	<b>35</b>
Total Budget and Work Plan	38
<b>5. Management Arrangement</b>	<b>48</b>
<b>6. Monitoring Framework and Evaluation</b>	<b>50</b>
<b>7. Legal Context</b>	<b>54</b>

<b>Annexes</b>	
Annex I: Risk Analysis	61
Annex II: Agreements	64
Annex III: Description of Project Demonstrations	69
Annex IV: Summary of Allocation of Incremental GEF Funds for Component 2	70
Annex V: Detailed Summary of the Component 3 Outputs	72
Annex VI: GHG Emission Reduction Estimates	74
Annex VII: Annual Targets	83
Annex VIII: Terms of Reference	85
Annex IX: Service Agreement between UNDP and IP	89
Annex X: UNDP-GEF Social & Environmental Screening	92
<b>Signature Page</b>	<b>99</b>

<b>List of Tables</b>		
Table 1	Estimated Annual Baseline Fuel Consumption and CO <sub>2</sub> Emission in the Materials Management Operations and Logistics Transport in Fuyang City, Zhejiang Province	2
Table 2	Role of GLIZP Stakeholders	7
Table 3	Projects and Programs of Zhejiang as Baseline Projects of GLIZP	11
Table 4	Summary of Expected Results of Baseline and Alternative Scenarios	17
Table 5	GLIZP Environmental Impacts	36
Table 6	GLIZP Cost Sharing Matrix (US\$) from Government and Industry	51
Table 7	Sources of Co-financing	51
Table 8	Project M&E Plan and Budget	57

<b>List of Figures</b>	
Figure 1: Graphical Summary of Expected Annual Energy Consumption in the Zhejiang Province Logistics Industry under Baseline and Alternative Scenarios	18
Figure 2: Graphical Summary of Expected Results from the GLIZP Project (In terms of Energy Savings)	18
Figure 3: Graphical Summary of Expected Results from the GLIZP Project (In terms of Annual CO <sub>2</sub> Emission Reductions)	19
Figure 4: Graphical Summary of Expected Results from the GLIZP Project (In terms of Cumulative CO <sub>2</sub> Emission Reductions)	19
Figure 5: GLIZP Project Organizational Structure	52



## 1. SITUATION ANALYSIS

### 1.1. Context and Global Significance

1. For a country like China, which for the past 2 decades has been experiencing rapid economic growth, activities such as the production, handling, storage, and physical delivery of products/goods (including raw materials) have increased significantly. Trucking, the most common, yet the most energy inefficient form of freight/cargo transport, accounts for 75% of the annual total volume of freight transport in China (compared to 75% by rail in the USA). Currently, the logistics industry in China faces lots of problems, including non-standard supply chain equipment, low truck availability, low quality of diesel fuel due to the difference between China's crude oil standards and international standard and long loading time. As a result, operational expenses (mainly on energy consumption for physical distribution, i.e., freight transport; and materials management, i.e., inventory carrying) in China's logistics industry account for 18.3% of the GDP, compared with 6% in Germany and 5% in France.
2. To cope up with the rapid economic growth, logistics infrastructure investments have been spectacular; in the last five years. China has spent more than about US\$1.5 trillion on 639,000 km of new roads, 33,000 km of new freeways and 15,500 km of new railway lines. It has created 1,700 deep water ports and 170 airports. But all of these are not integrated. As a result, despite of these huge investments, the logistics efficiency in China is very low compared to that in other countries. National average empty truck load is 50% to 60%<sup>3</sup>. Also, average fuel consumption per distance by trucks is about 30% higher than those in the developed countries. The logistics across China cost<sup>4</sup> a massive 18% of GDP in Q1 2012, about double that of developed countries. China's higher logistics cost is related to the capacity and skills of its logistics services providers (LSPs). The country's LSPs are yet to progress further towards added value and more sophisticated services. The logistics industry is fragmented, with more than 1,000 "unskilled providers".
3. China's total social logistics cost exceeded 10 trillion RMB in 2013, making up 18% of GDP. Logistics energy consumption remained high, amounting to 272.3 million tce to 311.2 million tce (ton of coal equivalent) in the same year. In general, energy takes up 27% - 31% of operating cost of the China's logistics industry. According to rough estimates, energy consumption cost has climbed to 40% or even 80% of total cost for transport LSPs. With the dawning of rapid-development phase for modern logistics in China, reliance by the logistics industry in petroleum has become irreversible. The high petroleum price contributes to the rising transportation cost, which significantly adds to logistics cost. As energy price fluctuates, this certainly exerts certain impacts on logistics enterprises and industry in terms of rising of operating cost, shrinking of profit and capital shortage of domestic LSPs.

---

<sup>3</sup> From various news articles in the Green Freight website (<http://www.greenfreightandlogistics.org/>); CAI-Asia China Office, 901A, Reignwood Building, No.8 Yong An DongLi, Jianguomenwai Avenue, Beijing 100022 China; [cpo@cai-asia.org](mailto:cpo@cai-asia.org). One of the reasons cited is the operations of inefficient and imbalanced transport networks that do not make use of trans-regional alliances to help improve supply chain coordination, and offer more integrated services, including returnable packaging and multi-modal transport.

<sup>4</sup> Physical distribution (freight transport) accounts for typically 50% of the overall cost. Bulk of this cost is for energy use. The next big cost item is inventory carrying (which cover warehousing, cold storage, packaging, waste recycling/reuse), and much of this is for energy used in these materials management logistics activities. Higher energy consumption from these 2 major logistics activities translates to higher GHG emissions from the logistics industry.

4. In general, average petroleum fuel (based on data from interviewed truck operators) easily takes up 40% to 50% of a vehicle's operating cost, which is a high percentage for the road logistics industry. Moreover, each operator has to absorb around 40% in tolls, vehicle depreciation cost, food and lodging, thus ending up with meager profit.
5. Out of the China's total energy consumption reaching 3.89 billion tce in 2013, the logistics industry share was 7% to 8%, which is equivalent to 272.3 million to 311.2 million tce. The estimated overall energy consumption of China's logistics industry is 4.79 to 5.47 tce/10,000 RMB GDP, with reference to the corresponding total GDP of 56.9 trillion RMB of China<sup>5</sup>. Based on the data from National Bureau of Statistics, China's transportation, warehousing and post sectors consume 10% of overall energy.
6. Effective logistics provision is among the most critical factors for China's economic development, and in some particular circumstances, it could be the very important consideration. Modernization of logistics operations can effectively enhance a country's industrial structure and improve quality of economic operation. As a result of the shift in global energy supply forms and the enhanced green energy awareness in recent years, energy supply has become a key element that can potentially affect the development of the country's logistics industry.
7. Looking at Zhejiang's logistics industry, the present energy consumption in materials management operations and physical distribution operations (trucks for road transport and ships for marine transport) is shown in Table 1. The annual carbon dioxide (CO<sub>2</sub>) emission produced by the freight trucks is about 19 million tons CO<sub>2</sub>.<sup>6</sup>

**Table 1: Estimated Annual Baseline Fuel Consumption and CO<sub>2</sub> Emission in the Materials Management Operations and Physical Distribution in Zhejiang Province**

Logistics Industry Operation	Handling Capacity ('000 tons) <sup>7</sup>	Actual Tons Materials Handled in 2013 ('000 tons)	Average Energy Consumption (toe/ton handled)	2013 Annual Fuel Consumption (ktoe)	2013 Annual CO <sub>2</sub> emission (ktons)
<b>A. Materials Management*</b>					
Warehousing	2,760,992	1,380,500	4,340.0	1,584.05	16,713.53
Cold storage	2,279	1,140	3.5	1.31	13.80
Packaging	288,000	144,000	452.7	165.23	1,743.40
Waste handling, etc.	16,000	8,000	25.0	9.18	96.85
<i>Sub-total</i>				<b>1,759.76</b>	<b>18,567.57</b>
<b>B. Physical Distribution</b>					
Road Transport	No. of Vehicles	Ave. Annual miles travelled per vehicle (km per vehicle)	Specific Fuel Consumption (L/100km)	2013 Annual Fuel Consumption (ktons diesel) <sup>a</sup>	2013 Annual CO <sub>2</sub> Emissions (ktons)
Large-size vehicle	149,522	63,451	31.89	2,517.23	7,841.19
Middle-size vehicle	46,836	64,953	25.48	644.91	2,008.90

<sup>5</sup> This is based on the assumption that energy consumption per unit of GDP (tce/10,000 RMB) can be translated to the total energy consumption (tce/domestic (or regional) 10,000 RMB GDP).

<sup>6</sup> The empty-loading ratio of transport trucks has direct bearing on energy efficiency performance. If it can be reduced to 10% from the current 50%, the energy utilization efficiency of logistics industry will be greatly improved thus having direct effect on energy-saving and emission reduction objectives. A reduction of 10% in fuel consumption will amount to 10% CO<sub>2</sub> emission reduction.

<sup>7</sup> Derived from actual tons handled assuming 50% capacity utilization as estimated by the team; needs to be verified during implementation.

Small-size vehicle	598,023	40,947	13.49	2,748.36	8,561.16
<i>Sub-total</i>	794,381			<b>5,910.51</b>	<b>18,411.24</b>
<b>Combined Road-Water Transport</b>	<b>2014 No. of Vehicles or vessels</b>	<b>Annual mileage by a single vehicle (Km per truck or Km per ship)</b>	<b>Specific Fuel Consumption (liter diesel/100km)</b>	<b>2014 Annual Fuel Consumption (million liters diesel/year)</b>	<b>2014 Annual CO<sub>2</sub> Emissions (ktons)</b>
Container-trucks**	200,000	4,400	42	36.96	98.68
Container-ships***	288	21,000	375	1.56	4.17
*The annual energy consumptions for the major sections of the materials handling services were estimated by the local experts obtained by data gathering, on-site monitoring and measurement in selected key logistic companies and extrapolated according to the total volume handled, in the absence of consolidated data in the province.					
**The average one-way transport distance of containers from Shanghai port and Ningbo port to Fuyang is 220 kilometers. A container lorry contains a large container (equals 2 TEU) and the fuel consumption is 42 liters per hundred kilometers.					
***The waterway transportation uses inland river container ships, which contains 36 TEU per ship. The one-way distance from Ningbo port and Shanghai port to Dongzhou pier is 250 kilometers and the fuel consumption is 375 liters per hundred kilometers.					

8. In April 2012, Zhejiang Provincial People's Government promulgated the "Action Plan for the revival of inland waterways in Zhejiang Province (2011-2015)" ([2012] No. 18). According to this document, Department of Transportation of Zhejiang Province issued "Combined Transport on Ocean and River" Development Plan. According to this plan, marine transport is designed for the entire Zhejiang Province; Zhejiang Shipping Authority is the competent authority. Currently, there are eight inland terminal companies participating in the program with the involvement of Jiaxing, Huzhou, Hangzhou and Shaoxing four cities.
9. Zhejiang contains some of the largest ocean berths for container ships in China. The Beilun Port, in the city of Ningbo, is capable of handling ships over 300,000 tons annually. Zhejiang's second largest port, the Port of Zhoushan, is the largest petroleum transfer port in China, handling ships up to 250,000 tons. Northern Zhejiang is well connected to neighboring Jiangsu and Shanghai through an extensive network of highways and railways. Three double track railways connect Zhejiang's capital city, Hangzhou, to Shanghai, Jianxi, and Ningbo. Railways in Zhejiang carry over 28 million tons of freight annually. Also, the world's longest sea bridge, which opened in 2008, directly connects Ningbo and Shanghai, cutting travel time between the two cities in half. Seven airports serve Zhejiang, carrying 242,000 tons annually and offering commercial service to international Asian destinations.<sup>8</sup>

By the end of 2012, Zhejiang had 11,000 logistics legal entities, 105 of which are AAA rated, accounting for 12.7% of the national total. In 2013, these figures climbed to 13,000, 139 and 11.0%, respectively. More logistics enterprises have transitioned from providing warehousing service to providing comprehensive, multi-dimensional and integrated services, and from contracting with logistics business to developing specialized logistics business. Though new logistics models such as highway port, dry-port, and logistics financing have taken the stage, findings show that small-sized LSPs still make up the bulk of business, while significantly big proportion of them engaging in conventional loading and unloading, warehousing and shipment with rampant unregulated competition.

10. The Green Logistics concept has been considered as the answer to improving the energy efficiency performance in the logistics industry. Green Logistics comprise of

<sup>8</sup> <http://understand-china.com/?manufacturing=zhejiang-logistics>

supply chain management practices and strategies that reduce the environmental and energy footprint of logistics companies in materials management, waste management, packaging and physical distribution (i.e., freight transport). Its application has a significant potential market in China due to the increasing development of the Chinese industrial sector and transportation services and the growing awareness of environmental protection. Environment conscious Chinese companies, particularly those engaged in the global market, are becoming increasingly aware of the importance of efficiency and energy saving. For these companies, the interest and willingness to apply this supply chain management technique is present but there is lack of understanding of how this can be done. LSPs and manufacturers have begun to work more closely to deepen the development of the supply chain. Nonetheless, there is a lot more to be done to bring China up to a globally competitive standard.

11. The overall knowledge and understanding about energy efficiency in China's logistics industry remains weak and exhibits the progressively decreasing trend from the east coast to the inland area to the west. Technological progress is the main factor affecting energy efficiency. In some regions, negative growth in technology application slowed down and even hampered the improvement of energy efficiency in the logistics industry.
12. As cost control in production operations has somehow reached its limit for manufacturing enterprises, profit margin is decreasing with increasing logistics cost. Outsourcing of logistics business has gradually been accepted by the enterprises. As logistics outsourcing emerges as the development trend, energy efficiency initiatives will not garner enough attention.
13. Many of the LSPs in Zhejiang Province do not have their own freight transport vehicles and drivers. Hence, they are usually affected by transport energy cost and energy efficiency issues. Those with freight transport vehicles or freight transport fleets have to deal with, among others, the individual drivers' understanding about energy-efficiency. For most freight transport drivers, energy efficiency is not a big concern. For them, what matters most is how much they can earn with each trip they make, and this general attitude is not only true in Zhejiang Province but in all other places in China.
14. In Zhejiang, with the three decades of reform and opening up to the world, Zhejiang's economy has experienced extremely fast-paced development, with a GDP growth that is 3 percentage points higher than the national average. The tremendous growth has led to huge resources and energy consumption requirements, and as a result, Zhejiang is facing shortage of resources supply. The Provincial Government guided by "easy customs and large logistics" vision is paying great attention to the development of logistics industry. It plans to build a regional logistics network system founded on drop-and-pull transport, connecting with four modes of transportation--waterway, air, pipeline and railway, and integrating sea port, airport, river port and dry port. With the logistics supply network as its backbone, logistics information network as its bond and regional processing and distribution network as its branches, the planned regional logistics network system will pave the way for the development of green logistics in Zhejiang Province.
15. In connection with the above-mentioned marine transport development plan, Hangzhou Fuyang Universal Logistics began its operation in May 2012. The combined ocean-land transportation plan, which has been proposed in this project, follows the same basic principles of energy efficiency on transport. It is noted that another project funded by GEF, the Guangzhou Cargo Transport project, can be used as reference for the GLIZP Project. However, there will be difference in intermodal

infrastructure of combined transport on ocean and river between Guangzhou and Zhejiang which could compare approaches and achievements in terms of energy saving.

According to the 2014 Zhejiang Province Statistical Bulletin, the share of transportation modes in the Zhejiang Logistics Market is as follows:

<b>Transportation Modes</b>	<b>Freight Volume in 2014 (billion ton-km)</b>	<b>Share (% of Total Volume)</b>
Air	Nil	Nil
Road	141.9	14.86
Rail	22.3	2.33
Waterborne	790.6	82.80
Total	954.8	

The waterborne mode of transport dominates the provincial logistics market at more than 82 % because of the extensive availability of navigable rivers. As Zhejiang is a coastal province, the development of rail freight system has not progressed significantly, so its share in total freight volume is very small. While air transport has continued to increase over the years, its share has remained practically nil, which is comparable to the share of air freight transport in the overall national freight transport market at 1%.

In addition regarding the logistics network coverage, the following summarizes the current situation:

- a. Zhejiang province includes 11 municipalities and cities, namely Hangzhou, Ningbo, Wenzhou, Shaoxing, Huzhou, Jiaxing, Jinhua, Quzhou, Zhoushan, Taizhou and Lishui. Railways are available in 10 cities except Zhoushan City. As for the water transport, it passes through all these cities and interlinks 10 cities except Lishui City.
  - b. In terms of logistics information technology, through the promotion and application of the national transport logistics public information platform to address the cross-enterprise, cross-regional, cross-industry interoperability problems of logistics information platform, Zhejiang has deployed nine switching nodes in the country, inter-connecting about 148,000 logistics companies. The data exchange volume has reached around 400 million daily exchanges, and later stabilized at 800,000. This has reduced the cost of information technology and improved the efficiency of logistics operation. The logistics park station currently operates 16 with customs supervision and nine with bonded function. At present, there has been some improvement in the conversion of park station into information technology application resulting to 46.3% of the stations using the information technology software and 23% using a smart card port.
16. At present, there is no unified definition on “green logistics” in China and abroad. Green logistics technique is still at its infancy in China, and the service level and related studies on the subject have remained at initial very limited stage. A wide variation stands between China and the advanced countries in the world in green logistics concepts, policy and technology. On the one hand, while the green logistic idea has been introduced in China, the green concept has not penetrated deeply into the logistics industry.
17. China’s logistics industry still lack understanding about green logistics. However, as the pressure of environmental protection escalates, the government has gradually



recognized the significance of green logistics. This is evident in some programs such as in the Marine Transport Development Plan of Zhejiang, where the green logistics principles and concepts can be seen in the energy saving approaches that include:

- a) Conversion of the land and water transport into the water-water transit by avoiding road transport because the carrying capacity per unit of water transport is bigger and the energy consumption per unit is significantly smaller than the road-based mode;
- b) Shift to more energy-efficient prime movers (ships versus collection trucks) improves the fuel efficiency and carrying capacity and loading rates;
- c) Improvement in logistics operation by lowering the percentage of empty back trips; and,
- d) Reduction in external maintenance costs (and additional energy consumption in the repair) attributed to road deterioration in using road transport.

18. Green logistics presents great development potential in China. The preconditions for the application of “green logistics” include policy support for the application of green logistics and promotion of green logistics technologies (e.g., logistics automation, information technology access, intelligent green warehousing, integrated multi-modal freight transport, etc.). In recent years, the Government of China (GOC) has placed green logistics into the country’s development agenda, and is making substantial efforts in promoting awareness about the importance of energy efficient logistics operations in the logistics industry. Meanwhile, many regions have endorsed related innovative technical approaches such as electric vehicle for urban area delivery and automatic pickup cabinet, especially the vigorous promotion of automatic pickup cabinet at residential areas of Hangzhou, with the ultimate goal of improving logistics efficiency and curbing exhaust emission in the process of transportation. In conclusion, though green logistics boasts enormous development potential in Zhejiang and even in other logistics centers in China, green logistics awareness needs to be enhanced and green logistics concept needs to be further publicized.

19. For instance, in Zhejiang's Marine Transport Development Plan, there is the potential of improving the current performance in terms of energy consumption in tons of oil equivalent (toe) per ton hauled per kilometer of travel. According to the current implementation of the plan, 36 TEU (twenty-foot equivalent unit) vessels will consume 900 liters of fuel by sailing 400 kilometers. The equivalent energy usage intensity value is  $3.64 \times 10^{-6}$  tons of standard coal/ton-km (or  $2.55 \times 10^{-6}$  toe/ton-km). The annual amount of containers handled in Zhejiang province is 22 million TEU in 2014, of which the ocean-river transport system accounts for approximately 300,000 TEU, or 1.36%. With more encouragement and targeted intervention to enhance the utilization of combined land-water transport, it is predicted that the intermodal container system of ocean-river transport can have the potential of raising the water-based transport mode to 6% and 12% in 2020 and 2025, respectively. Therefore, the market prospect is bright.

20. To some extent, there exist some program strategies in logistics in China. In 2012, China unveiled related policies of “Five-year Circular Economy Development Plan” and “12th Five-Year Plan for Energy Conservation and Emissions Reduction,” championing transport energy-saving by the whole society, green transport act and enhancing transport vehicle energy-saving rate. At the same time, the GOC through policy guidance, encouraged the whole society to save energy, cut emissions and pursue green and low-carbon lifestyle. With the suitable combination of green logistics and low-carbon economy concepts, China can usher in brand-new opportunity under the broad context of development of low-carbon economy worldwide. The Chinese government has made solemn commitment of 40% - 50% reduction in carbon

emissions per GDP unit in 2020 from the 2005 level. Hence, it is imperative to strive to develop low-carbon economy, reduce energy consumption and cut down on CO<sub>2</sub> emissions in the logistics industry.

21. In the case of the Zhejiang logistics industry, for it to realize the energy and environmental benefits from the application of green logistics technologies, it has to address the issues and specific challenges in regards the existing policies and regulations that govern the industry, technical issues in the application of green logistics technologies (techniques and practices), as well as capacity issues within the industry. From among the eight (8) possible areas that are under the Zhejiang Marine Development Plan, the Fuyang area is the most appropriate and representative area for green logistics development for the province that will benefit in greater increments starting in Fuyang and subsequently to the other cities in Zhejiang Province.

## **1.2. Barrier Analysis**

22. The following are the identified major barriers to the application of “green logistics” in China:

- *Lack of comprehensive, consistent and enforced policies (and implementation and institutional arrangements) supporting the application of green logistics systems in the logistics industry.* This stems from the following immediate causes: (a) lack of information on current status of the local logistics industry vis-à-vis what is present in the practice overseas to be the basis of policy formulation; and, (b) lack of information on, and analysis of, existing policies and regulations that could affect the application of green logistics system. This barrier leads to the following effects: (a) lack of standards, certification system, incentives and support facilities on the implementation of green logistics system; and (b) lack of implementing rules and guidelines on green logistics.
- *Low level of confidence of the logistics industry on the viability of green logistics applications and infrastructures.* The application of green Logistics technologies and techniques are regarded as new high tech approach in the logistics industry, and is relatively expensive. When the current system seems to work anyway (although in an inefficient, wasteful and a lengthy process compared to those in developed countries), there is no incentive for logistics firms to modernize and apply energy efficient and environment conserving practices. As such, the absence of on-the-ground applications and models of such new system (and its associated components) as well as good practices and models affect the acceptability of new techniques such as green logistics system. This is further exacerbated by the difficulties in financing the infrastructure requirements of such system. While the local LSPs may appreciate the system for its benefits, it would take the provision of certain financial/fiscal incentives and support to convince them to pursue investment and adoption of such system.
- *Low level of capacity, knowledge and skills of and cooperation among the relevant government entities, manufacturing and logistics industries on the application, design and operationalization of green logistics systems, as well as in the application of energy conservation and operational efficiency in the logistics industry.* This results from the lack of an effective training program to develop skills in the design, development and operation of green logistics system. The overall knowledge and understanding about energy efficiency by China's logistics sector remains weak. While the logistics industry and the provincial government have laid down improvement programs, such efforts to provide capacity

development and to motivation to the LSPs to learn and apply green logistics needs to be bolstered further.

- *Lack of an effective information platform to share the successful experiences in the design, development and operation of green logistics system.* The concept of green logistics has not fully taken root in the province. The LSPs and end users lack information on innovative ideas and models on technological progress regarding the application of green logistics technologies in China and other parts of the world. The Provincial Government does not have a sort of information exchange and networking platform to pave the way for the full development of green logistics in Zhejiang.

### 1.3. Stakeholder Analysis

23. The stakeholders of this project include the relevant entities in the Zhejiang Province that are involved in materials management and freight transportation business. The following table lists down the stakeholders of the GLIZP Project and their respective roles during project implementation:

**Table 2: Role of GLIZP Stakeholders**

Stakeholder	Roles and Responsibilities in Project Implementation
Zhejiang Provincial Development and Reform Commission) <sup>9</sup>	As main implementing partner for the implementation of the GLIZP Project in connection with the overall project direction and management, organizational, financial and administrative support, capacity development activities of the staff involved under the project, policy and decision making, achievement of the expected outputs, monitoring and documentation of results, sustainability of activities and outputs in ensuring attainment of expected outcomes during and after the project and liaison and coordination with the other stakeholders and beneficiaries. ZPDRC shall assume the leadership role in coordinating and motivating the players of the logistics industry towards its goals in the materials management and physical distribution
Fuyang City Government	As project collaborator in the identification, design and implementation of the demonstration of applications of green logistics technologies, techniques and practices in logistics operations in Fuyang City and related capacity development. Fuyang City Government in cooperation with the ZPDRC shall spearhead the resource mobilization and investment in the required demonstration facilities for green logistics in the materials management and physical distribution, including combined road and water transport.
Zhejiang Fuyang Port International Co. Ltd.	As project collaborator for the identification, design and implementation of demonstration of green logistics applications in materials management operations and related capacity development. This will involve the installation and operation of the specific requirements in modernizing and equipping the system on reliable information technology application in various phases of operations by increasing the container full-load rate from the current low load rate. And by relying on the Dong Zhou dock land and water resources, this scheme will transfer land transport into waterway transport thereby reducing pressure on

<sup>9</sup> The Zhejiang Provincial DRC, which is under the NDRC, is the executing agency for this project. Through its direct linkage with the NDRC, the successful results of the various interventions (particularly the demonstrations), as well as the supporting frameworks, policies and regulations that will be developed and established under the project, as well as whatever best practices that will be generated and lessons learned from the project can be easily shared with other provinces. The NDRC, while not directly involved in the project, will facilitate potential application and replication of the green logistics technologies/techniques and practices that will be promoted under the project.



Stakeholder	Roles and Responsibilities in Project Implementation
	roads, as well as reduce energy consumption.
Fuyang Hangzhou Transfar Logistics Base Co., Ltd.	As project collaborator for the identification, design and implementation of demonstration of green logistics applications in physical distribution operations and related capacity development. This will involve the systematic and efficient scheduling of transport modes and combined road and water transport in a centralized platform by addressing the problem of asymmetric information, and improve goods-vehicles matching efficiency, reduce truck empty-loaded rate based on highway port network information platform, thus advocating widespread use of empty trucks on return trip
Other Zhejiang Province-based logistic service providers	As project participants in the identification, development and provision of incremental technical assistance, capacity development, information and promotion activities of the project

#### 1.4. Baseline Analysis

24. Efforts to improve efficiency in the logistics industry in Zhejiang Province include 2 planned projects under the Zhejiang Fuyang Green Logistics Platform program of the provincial government and by the Fuyang City government. These are:

- Transformation of Road and Port Logistics Project – This project is on the improvement of logistics management and technology applications, and logistics system optimization. It will involve the construction of a logistics information exchange center, a transportation center, an express transport center, a central warehouse, and additional complementary service facilities. From offline to online, Transfar Road-Port is an integration operator for Chinese highway logistics platform. For online, it is a set of operating and dispatching system based on the internet cloud technology and information. For offline, there is the entity platform network of highway harbor throughout national trunk line traffic. With the online system linking with the offline system, an entirely new O2O<sup>10</sup> environment-friendly China highway logistics scheme is formed. With both large network systems constituting an intelligent logistics circle, the system can connect goods owners, logistics enterprises and truck operators, thus providing a one-stop resolution for many highway logistics demands, including transportation information trade, drivers' living facilities and truck operating facilities and so on. Meanwhile, the online system also focuses on the efficient operation of people, trucks and goods. Transfar uses the GPS satellite positioning, mobile internet and cloud computing technology by building two Transfar Intelligent logistics systems, namely, the Cloud Truck and Cloud Logistics systems. It aims forge a universal platform for goods dispatching, a high-quality life service circle for goods transport and a reliable good faith operation system for logistics. The intention is to come up with a more efficient logistics operations combining sea, air and road transport systems, to optimize logistics operations towards achieving objectives of logistics, such as efficiency, congestion alleviation, and, energy conservation.
- International Port Logistics Project - This project will entail the supporting facilities on the construction of a 170,000 m<sup>2</sup> of a modern combined custom and quarantine inspection warehouse, and 20,000 m<sup>2</sup> of container handling facilities, e.g. a block set by the customs, supporting building for FS6000 facilities (quick examine

<sup>10</sup> The "O2O" e-commerce model is gaining popularity in China's market. "O2O" refers to the linkage of online sales and marketing with offline business operation and consumption. There are now different types of O2O e-commerce operators on the mainland and the O2O model takes various forms in practice.

system for import/export containers), a building for customs information release and drivers to have rest facilities for 4,000m<sup>2</sup> working office, etc. It will have the related functions of import/export processing, customs clearance, bonded warehousing, and cargo movement. It will be the service center for import/export inspection and transport. The project will also plan to utilize the planned Dongzhou Port to connect to three rivers and replace current road transport with water transport and reduce empty return transport.

25. Other related initiatives on improving the energy utilization performance and environment quality in the logistics industry of the province provided very relevant information and experiences for the GLIZP project design which have already been taken into account in the formulation of the GLIZP activities. These reference projects are the following:

- Energy Savings in Transportation Propulsion Engineering Project
- Implementation of the Fuyang City "Trade Logistics 12th Five-Year Plan"
- Sea-railway Joint Transportation Engineering Project by Ningbo Municipal Government
- Drop and Pull Transport Removal Project of Zhejiang Yushi International Logistics Co., Ltd.
- Zhejiang Province Initiatives in the Construction of Logistics Park (Base)
- Zhejiang Province Initiatives in Information Exchange Center for Purchasing and Inventory Management of Logistics Resources
- Combined Transport on Ocean and River Development Plan

26. As a province with relatively advanced status in domestic logistics industry, Zhejiang Province has been making constant efforts to exploring measures for logistics efficiency reduction to prevent climate warming, and the provincial government has taken lead in adopting many measures. In addition, the standardization of road-port system that can provide reference for the Internet-based interaction in road-port systems forms mainly the standardization of provincial project. This looks forward to the next step of standardizing the practices in the province vis-a-vis the national ratings. Relevant initiatives that were launched in recent years and are planned to be the baseline projects of GLIZP include the following:

- *Stage out Action Plan for Rejuvenation of Inland Water Navigation in Zhejiang Province* - This project aims to promote development and investment in inland river navigation and sea-river joint transportation for the period 2013-2017. With this project, there has been significant progress in sea-river joint transportation in Huzhou. For instance, the Chuanda Logistics in Anji County, Huzhou has established a logistics base to meet demand for container transportation which reached 120,000 containers in 2013 for import and export from inland water to Shanghai Port. Currently, new expansion engineering is on the way for study and implementation by Chuanda. A similar facility under the project is the Jiaying inland water container logistics base. The Hangzhou Dongzhou port as an inland water container port, has already shipped 1,863 containers in 2014. It was increased to 1,992 containers from January to April in 2015. The project is still ongoing and will serve as baseline for GLIZP in adopting and expanding in the facilities the concept of green logistics by helping complete the waterway network design and the project design for the ship-type standardization and upsizing.
- *13th Five Year Plan for the Development of Modern Logistics Industry in Zhejiang Province* – This Plan will be implemented from 2016 to 2020 by Zhejiang Provincial Government which targets to develop a modern logistics industry in the

province using the green logistics concept as part of the plan. In order to realize the plan, a number of activities will be undertaken such as promotion of the development of logistics finance, fostering large-scale logistics enterprises; conducting logistics personnel training, establishment of a logistics information platform, establishment of logistics distribution and transportation networks, promotion of the logistics industry technology innovation, and other related activities. GLIZP will help to train logistics industry personnel, draft financial support policies, design logistics information platform, and other relevant activities along the objectives of this 13<sup>th</sup> Five Year Plan.

- *Setting of the Standards of Zhejiang Province Green Logistics* - Since 2010, the Zhejiang Provincial Government has started to accelerate the standardization of practices and designs in logistics industry which also gradually introduced green logistics as a consideration in setting industry standards. These activities were led by the Research Academy of Standardization of Zhejiang Province. Right now, the setting of standards in the province is moving forward, although the progress is still very low since more studies and practices need to be undertaken. GLIZP could help draft standards for regulating the management and supervision of logistics enterprises to control pollution emissions and promote efficiency in energy consumption.
- *Hangzhou Modern Logistics Development Plan* - This Plan was initiated in 2006, and will extend to 2020 under the leadership of the Hangzhou Municipal Government. Its targets are to develop modern logistics system in Hangzhou City. In order to realize this Plan, a number of activities will be undertaken such as the construction of logistics parks, provision of one-stop customs clearance services, construction of harbor logistics center, construction of logistics information platform, fostering logistics park functional planning, training of logistics personnel, and other related activities. At present, progress is being achieved in most activities but the progress in adopting a green logistics system as one of its targets for the city's logistics industry is still lagging behind. GLIZP will help to design the one-stop service system and harbor logistics center, draft the logistics park operations plan, and train logistics park personnel under the concept of green logistics.
- *Transportation Information Platform (including App Promotion)* - The establishment of a transportation information platform was initiated in 2000 and sustained up to the present by Fuyang Hangzhou Transfar Logistics Base Co., Ltd. as a continuing plan within the company. With the introduction of the green logistics concept, the establishment of the platform is improving gradually. The key approach in establishing the platform is to create a road-port network information system and promoting the internet-based application and use it to address the problem of asymmetric information which has existed widely in the company. Right now, minimal progress has been made. With GLIZP, the green logistics technique will help to improve energy efficiency in the performance of transport vehicles and in the physical distribution of materials and goods by reducing truck empty load rate.
- *Improvement of Container Full-Load Rate and Implementation of the Water-Land Transshipment Project* - This project started from 2014 on a continuing basis by Zhejiang Fuyang Port International Logistics Co., Ltd. The target of the project is to improve the container full-load rate and implement water-land transshipment. A number measures are being undertaken to realize the target, such as establishment of a container logistics center with a load optimization information

system and platform and completion of the Dongzhou jetty port facilities which could help reducing empty load rates and energy consumption. With this relatively new project, the implementation has already achieved some progress. GLIZP will help in designing and building a loading platform to reduce empty load rates in container transportation.

27. The projects and programs of Zhejiang that are considered as baseline projects of GLIZP include the following projects. These activities will be subsumed into GLIZP and is understood that the corresponding budget will be considered as co-financing to attain the outputs for the GLIZP project, as summarized below:

**Table 3: Projects and Programs of Zhejiang as Baseline Projects of GLIZP**

Program/Project	Owner/Funder	Subsumed Activities	GLIZP Output
<ul style="list-style-type: none"> <li>Stage out Action Plan for Rejuvenation of Inland Water Navigation in Zhejiang Province (2013-2017)</li> </ul>	Zhejiang Provincial Government	Development of joint sea-river transportation, inland water transport investment promotion, complete backbone waterway construction, high-grade channel network construction, speed up the standardization and upsizing of ship of river vessel	Completed waterway network design and the project design for ship-type standardization and upsizing
<ul style="list-style-type: none"> <li>13th Five Year Plan for development of Modern logistics industry in Zhejiang Province</li> </ul>	Zhejiang Provincial Government	Promotion of the development of logistics finance; foster large-scale logistics enterprises; logistics personnel training; logistics information platform construction; the construction of logistics distribution and transportation networks, to promote the logistics industry technology innovation	Trained logistics industry personnel, Draft financial support policies Logistics information platform design Operational green logistics distribution and transport network system
<ul style="list-style-type: none"> <li>Setting of the standards of Zhejiang province Green Logistics</li> </ul>	Zhejiang Provincial Government	Set the standards of green logistics	Draft standards for regulating the management and supervision of logistics enterprises to control pollution emissions and energy consumption
<ul style="list-style-type: none"> <li>Hangzhou Modern Logistics Development Plan</li> </ul>	Hangzhou City Government	Construction of logistics parks, one-stop customs clearance services, construction of harbor logistics center, construction of logistics information platform, fostering logistics park functional planning, and training logistics personnel	Completed design of one-stop service system and harbor logistics center Logistics Park operations plan Completed training of logistics park personnel
<ul style="list-style-type: none"> <li>Transportation Information Platform (including App Promotion)</li> </ul>	Fuyang Hangzhou Transfar Logistics Base Co., Ltd.	Relying on the Port road network information platform to address the problem of asymmetric information	Improved energy performance efficiency of vehicles and goods to reduce truck empty load rate
<ul style="list-style-type: none"> <li>Improvement of container full-load rate, implement water-land transshipment project</li> </ul>	Zhejiang Fuyang Port International Logistics Co., Ltd.	Establish container logistics center and optimize information platform, complete Dongzhou jetty port facilities, reduce empty load rate, reduce energy consumption	Design of a building loading platform to reduce empty load rate

## **2. STRATEGY**

### **2.1. Project Rationale and Policy Conformity**

28. The objective of the proposed project is the widespread application of energy efficient green logistics techniques and practices in the logistics industry in Zhejiang Province. To achieve this, the identified barriers to the effective and extensive application of green logistics in the logistics industry in the province have to be removed. Thus a barrier removal approach will be applied.
29. The objective of GLIZP is aligned with GEF-5 Climate Change Mitigation Focal Area Objective No. 2 (CCM-2) which is to: Promote Market Transformation for Energy Efficiency in Industry and the Building Sector and will contribute to the reduction of greenhouse gas emissions through the transformation of the development of the green logistics industry in Zhejiang Province
30. Thus, GLIZP's goal falls within the following GEF Expected Focal Area Outcomes and Outputs:
- GEF 5 CCM-2 Outcome 2.1: Appropriate policy, legal and regulatory frameworks adopted and enforced (Output 2.1: Energy efficiency policy and regulation in place and Output 2.3: Energy savings achieved)
  - GEF 5 CCM-4 Outcome 4.1: Sustainable transport and urban policy and regulatory frameworks adopted and implemented (Output 4.1: Cities adopting in low-carbon programs and Output 4.3: Energy savings achieved)

### **2.2. Country Ownership/Country Eligibility**

24. China ratified the UNFCCC on 5 January 1993. It has completed and submitted its Second National Communications to the UNFCCC, which highlighted that EC&EE, in general, and energy efficiency in logistics, in particular and among the measures each country are considering for the reduction of GHG emissions.

### **2.3. Country Drivenness**

25. Stakeholders' consultations have been held in conjunction with the Logical Framework Analysis that was conducted to come up with the project framework design. These were also carried out to obtain key logistics companies and other stakeholders regarding project-related issues, concerns, and barriers regarding development and implementation of a green logistics industry in Zhejiang Province towards the adoption of the program on a wider scale in other parts of the country.
26. The GLIZP Project is closely aligned with other government initiatives that are also supported by UNDP and/or GEF, in a strategic, integrated and synergistic approach. These undertakings all demonstrate China's drive and commitment to further pursue a highly complementary project on improving energy efficiency in the logistics industry. The relevant government agencies and related Logistics Service Providers (LSPs), and industry manufacturers have been adequately consulted and have shared experiences and suggestions in addressing the identified barriers affecting the successful implementation of green logistics in Zhejiang Province and China as a whole.

### **2.4. Design Principles and Strategic Considerations**



## 27. Proposed Alternative Scenario:

The planned alternative scenario that will be facilitated through this proposed project is the transformation of the logistics industry in Zhejiang Province into one that operates based on the 3 basic pillars for urban-based green logistics: mobility, sustainability and livability, wherein the interplay of operational efficiency, environmental friendliness and energy efficiency/conservation is vital for ensuring sustainable operation and development of the province's logistics industry. The transformation that will be at least influenced through the various interventions that will be carried out under the proposed project is expected to bring about a logistics industry based in Fuyang City that will satisfactorily serve the commercial and manufacturing sectors in Zhejiang Province in the delivery and collection of goods in an efficient way, such as using an Internet-based platform to improve vehicle matching efficiency of the network technology and service, without disrupting the sustainable, mobile, livable and environmental friendly character of the city<sup>11</sup>. This will significantly reduce, if not eliminate, the empty load rates of freight trucks that are mainly owned by individual industrial companies transporting their own raw materials and finished products. The barrier removal activities that will be carried out in the project will make possible the effective implementation of green logistics systems in the industry thereby enabling more efficient, energy conserving, wastes reducing materials management and physical distribution operations that in the end will translate to not only significant monetary savings, but also substantial GHG emission reductions. Such alternative scenario to what could be expected if the current logistics systems will continue business-as-usual will not only benefit the logistics industry in Zhejiang Province and the other provinces around the region but ultimately also the entire logistics industry in China, in general.

Considering the extensive fragmentation and diversity of transport and logistics operators, the planned business model to address the need to promote the widespread practice of green logistics technologies and practices will involve the following:

- a. Regular consultations with the logistics industry regarding the introduction or enhancement of green logistics in their operations, as the case maybe.
- b. Enabling small-to-medium size logistic service providers to invest on energy conservation and energy efficiency (EC&EE) and green logistics technologies through the provision of incentive schemes for the LSPs, particularly the small-to-medium size LSPs, to assist them identify, evaluate, develop, plan and implement their selected options.
- c. Enabling the LSPs to work together on improved and more energy efficient freight transport management systems; inventory control; cargo track and trace systems using global positioning systems; decision support systems and electronic data interchange technology in a common configuration and platform that could be integrated in the local and regional level thereby promoting unified approach and maximizing the impacts and benefits.
- d. Formulation and enforcement of strategies and policies and regulations; establishment of performance standards and making critical investments to assist in the development and implementation of demonstrations on operation of model logistics parks, conduct adaptive research and dissemination of information on the best practices and lessons learned.

---

<sup>11</sup> This can comprise of private freight transport companies that employ advance logistic tracking and monitoring technologies that can serve the product (raw materials and finished goods) transport of various industrial companies. This can contribute to ensuring that trucks are optimally used during both off-bound and in-bound legs of the trip, thereby significantly reducing instances of empty loads.

The planning, funding, and supervision of logistics industry development will be handled at the provincial and municipal levels based on local logistics needs and guided by national strategies, plans, and policies. The project includes the “green logistics” activities of two logistics service companies<sup>12</sup> for the demonstration of green logistics technology on materials management and physical distribution, and those of at least 20 small and medium size LSPs that will be selected for a pilot incentive scheme that will provide for pre-investment financing for energy efficiency and green logistics projects. These companies will demonstrate how to integrate the energy efficiency and green logistics initiatives of the LSPs operating in the logistics industry of the province. This integration will be supported by the Provincial Government through the issuance of supportive policies that the project will formulate, recommend and promote; as well as the green logistics technology applications that will be demonstrated through the project, taking into consideration cost-effectiveness and the sustainability aspects.

28. **Components:** The following are the proposed components of the project that is comprised of activities that would facilitate the realization of the envisioned alternative scenario for the logistics industry in Zhejiang Province:

- **Component 1: Policy and Regulatory Support for Green Logistics** – This component will address the barrier related to the inadequate policies and regulatory frameworks that support the promotion and application of green logistics technology in the logistics industry in Zhejiang Province. The establishment and enforcement of policies and regulations including incentives<sup>13</sup> for projects on the application and operation of green logistics systems in the provincial logistics industry is the expected outcome from the delivery of the expected outputs under this project component (Outcome 1).

**Component 2: Green Logistics Systems Demonstration** – This component is meant to address the barrier regarding the low level of capacity, knowledge and skills of, and cooperation among the relevant government entities, manufacturing and logistics industries on the application, design and operationalization of green logistics systems, as well as in the application of energy conservation and operational efficiency in the logistics industry. It is also intended to enhance the level of confidence of the logistics industry on the viability of green logistics applications and infrastructures. With the interventions that will be carried out under this component, improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang Province is expected (Outcome 2). The activities that will be carried out under this component will be in cooperation with the logistic companies that are interested in the application of green logistics technologies/techniques in their operations. There will be 2 sets of activities that will be carried out under this component. The first set is mainly technical assistance activities that will include the design and planning of the green logistics demonstrations; as well as the installation, and operation of the systems and hardware that are required in the demonstrations. This will include the demonstration of the green logistics projects of the LSPs that will avail of pre-investment financing incentives in Component 1. The results of the demonstrations/pilots will serve as models for the LSPs in the province in their decisions regarding the adoption of energy efficiency or green logistics technologies/techniques in their materials management and/or physical distribution operations. The other set of activities is mainly on the documentation and dissemination of the demonstration results and the

<sup>12</sup> Fuyang Hangzhou Transfar Logistics Base Co., Ltd., and Zhejiang Fuyang Port International Logistics Co., Ltd.

<sup>13</sup> These incentives could be for financing pre-investment requirements for green logistics and energy efficiency projects. These pre-investment activities could include data gathering and analysis, and the conduct of feasibility studies, energy audits, environmental impact assessment, etc.

energy performance and environmental impacts of all demonstrations. It also includes action planning for sustainability and upscaling of the green logistics system demonstration program.

- **Component 3: Capacity Building and Promotion of Green Logistics Systems –** This component will consist of interventions which are aimed at removing the barrier concerning the lack of an effective information platform to share the successful experiences in the design, development and operation of logistics systems that are based on green logistics principles. Considering the highly fragmented and diverse logistics operations in the province, and the varied levels of knowledge among the LSPs in regards green logistics or energy efficiency, this component includes a comprehensive package of outreach, training and promotional activities to the stakeholders, particularly the small-to-medium size LSPs. The successful completion of the activities under this component will contribute to achieving an increased application of energy efficient technologies (techniques and practices) in the materials management and physical distribution operations in the logistics (and also the manufacturing) industries in Zhejiang Province (Outcome 3).

29. Comparative Advantage of UNDP to Implement the GLIZP Project: This project, which focuses on the logistics industry, contributes to the achievement of the outcome - *more people enjoy a cleaner, healthier environment as a result of improved environmental protection and sustainable green growth* as stated in the UNDP-China Country Program Document 2016 – 2020. It also contributes to the achievement of Outcome 2: *More people enjoy a cleaner, healthier and safer environment as a result of improved environmental protection and sustainable green growth*, as mentioned in the China UNDAF 2016-2020. Moreover, this program is directly in line with the UNDP EITT's signature program on low emission urban and transport infrastructure, specifically focusing on GHG emission reduction from the logistics industry in Zhejiang Province. With its country presence, UNDP-China is well-positioned to implement this proposed project as it has, and currently have, a proven track record of successful implementation of energy efficiency projects in the country, as well as sustainable transport projects in other developing countries in Asia. The optimization and improvement of the energy performance of energy consuming processes and operations in industry are included in most of these energy efficiency projects that were carried out in industries and buildings, by and large such interventions are also, with appropriate adjustments, are also applicable to the materials management and physical distribution processes and operations in the logistics industry in China.
30. For this project, the UNDP will be providing cash co-financing, which will be used mainly for project management (including travel for project inspections, audits, monitoring and evaluation activities). This co-financing will come from allocated core funding to support energy and environment activities of the country office in line with the realization of goals of the current country program in China. The amount of UNDP co-financing for this project is US\$ 250,000.
31. As one of the leading UN agency in China supporting the GOC in addressing climate change issues in the country; its staff members' substantial experience in the successful implementation of GEF-funded projects in the country; and its overall substantial experience and expertise in working in partnership at the decentralized level with local governments, private sector, policy makers and civil society, justify its capacity and qualification to implement this proposed project. As in other climate change mitigation and energy projects, UNDP-China will be backstopped by technical expertise available in the UNDP Bangkok Regional Hub (BRH) in Bangkok, Thailand in the design, preparation and implementation of this proposed project.



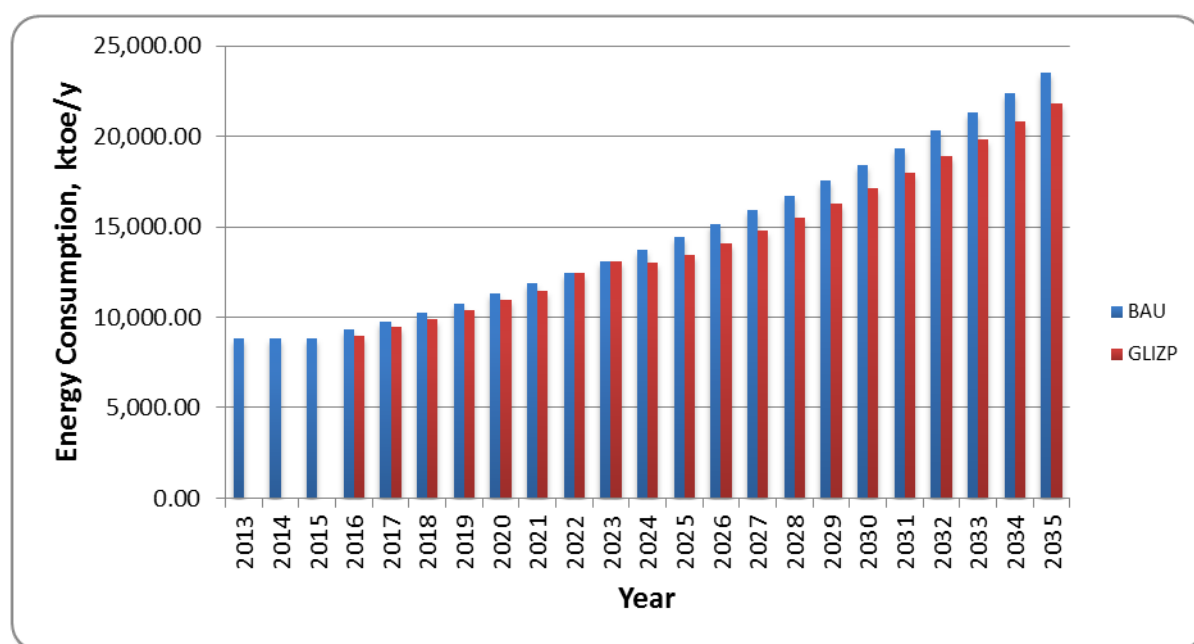
## 2.5. Alternative Scenario

32. Of the total annual energy savings potential for the whole logistics industry of Zhejiang Province in materials management and physical distribution of 222.62 kilotons of oil equivalent (ktoe)/yr by 2019, GLIZP is expected to contribute annual energy savings of 80.06 ktoe/yr by 2019 or at the end of the project (EOP) in Year 4. The energy savings attributable to GLIZP will grow to 122.62 ktoe/yr in 2029 or after 10 years from EOP. The equivalent annual reduction of CO<sub>2</sub> emissions is estimated at 471.36 kilotons (kt) CO<sub>2</sub> per year in 2019 and 665.12 kt CO<sub>2</sub> per year in 2029. Cumulatively, reduction of CO<sub>2</sub> emissions attributable to GLIZP amounts to 1,749.27 kt CO<sub>2</sub> by 2019 and 7,121.41 kt CO<sub>2</sub> by 2029. More details are seen in **Annex IV**.

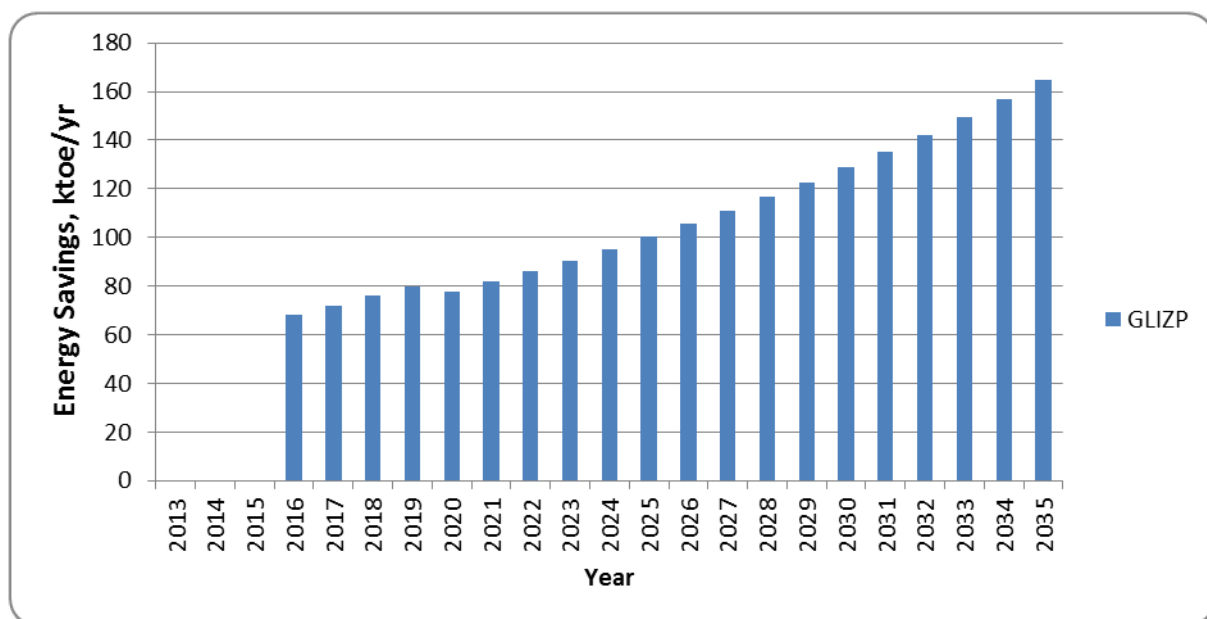
**Table 4: Summary of Expected Results of Baseline and Alternative Scenarios**

	Baseline Year 0	EOP Year 4	10 yrs after EOP	15 yrs after EOP
Baseline Energy consumption (ktoe/yr)	8,146.90	10,397.73	16,936.81	22,696.95
Alternative Energy consumption (ktoe/yr)	7,848.42	10,175.12	16,591.82	22,234.18
Annual Energy Savings, ktoe				
• Total ZP Potential		• 222.62	• 344.99	• 462.77
• Attributable to GLIZP		• 80.06	• 122.62	• 164.69
Annual GHG emissions reduction, kt CO <sub>2</sub>				
• Total ZP Potential		• 1,135.45	• 1,637.83	• 2,196.24
• Attributable to GLIZP		• 471.36	• 665.12	• 892.43
Cumulative reduction of GHG emissions attributable to GLIZP, kt CO <sub>2</sub>		1,749.27	7,121.41	11,876.48

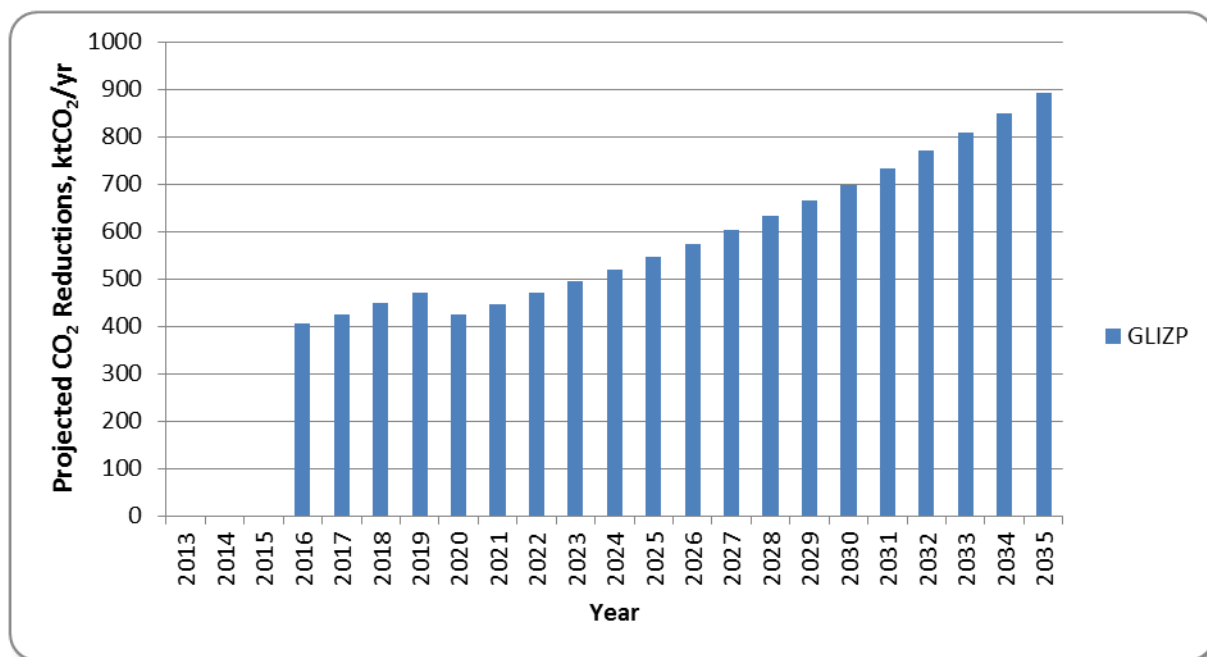
The annual energy consumption for logistics operations (materials handling and physical distribution) under the Baseline and the Alternative Scenarios in the logistics industry in Zhejiang Province were calculated to estimate the savings resulting from the GLIZP intervention. The results are presented in **Figure 1** which is a graphical presentation of the baseline year 2013, projected 2015 - 2019 (GLIZP Project implementation period), projected 2029 (ten years after EOP) and projected 2035 (fifteen years after EOP).



**Fig. 1: Expected Annual Energy Consumption in the Zhejiang Province Logistics Industry under Baseline and Alternative Scenarios**

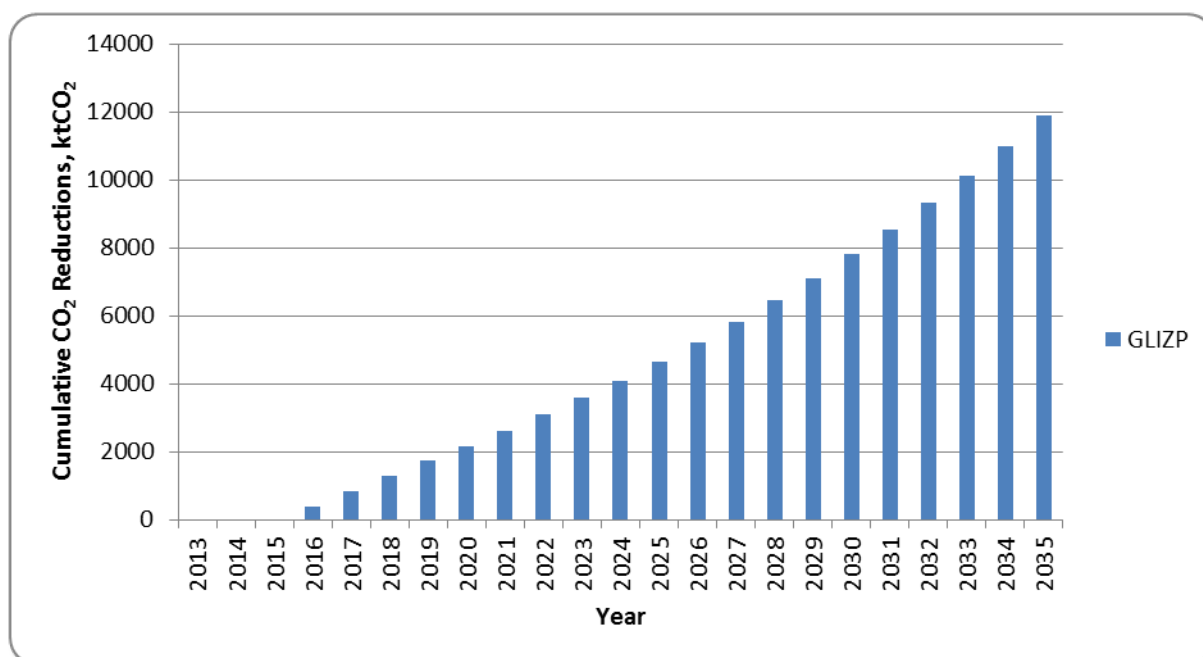


**Figure 2: Graphical Summary of Expected Results from the GLIZP Project (In terms of Energy Savings)**



**Figure 3: Graphical Summary of Expected Results from the GLIZP Project (In terms of Annual CO<sub>2</sub> Emission Reductions)**

**Figure 3** presents the graphical summary of the expected results from the GLIZP Project in terms of annual CO<sub>2</sub> emission reductions as described in **Table 4** above.



**Figure 4: Graphical Summary of Expected Results from the GLIZP Project  
(In terms of Cumulative CO<sub>2</sub> Emission Reductions)**

**Figure 4** presents the graphical summary of the expected results from the GLIZP Project in terms of cumulative CO<sub>2</sub> emission reductions as described in **Table 4** above.

## 2.6. Project Goal, Objectives, Outcomes and Outputs/Activities

33. The overall goal of the GLIZP Project is reduction of greenhouse gas (GHG) emissions in the logistics industry and freight transport sector of Zhejiang Province. The successful implementation of the GLIZP Project will contribute to the realization of this goal and contribute to the achievement of China's climate change mitigation targets. The resulting energy savings and associated GHG emission reduction from the application of appropriate green logistics technologies that will be facilitated by the project, can translate to significant quantities of CO<sub>2</sub> emission abatement. This of course will be realized if the local logistics industry is transformed towards greater efficiency improvement in the utilization of energy in their materials management and physical distribution activities.
34. The objective of the GLIZP Project is the **widespread application of energy efficient green logistics<sup>14</sup> techniques and practices in the logistics industry in Zhejiang Province**.
35. The following paragraphs describes the major outputs and activities to deliver the expected outcome in each project component:

The barrier removal activities in each of the project component comprise the incremental activities of the proposed project that will either be fully or partly funded by GEF resources.

<sup>14</sup> Supply chain management practices and strategies that reduce the environmental and energy footprint of logistic companies in materials handling, waste management, packaging and physical distribution (i.e., freight transport).

## COMPONENT 1: POLICY AND REGULATORY SUPPORT FOR GREEN LOGISTICS

36. This component will address the barrier related to the inadequate policies and regulatory frameworks that support the promotion and application of green logistics in the logistics industry in Zhejiang Province. The expected outcome under Component 1 is established and enforced policy and regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province (Outcome 1).

To achieve Outcome 1, the following activities will be carried out to deliver each of the following expected outputs listed below:

Outcome	Output	Activities
1: Established and enforced policy and regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province	Output 1.1: Completed analysis of: (1) the energy use trends and GHG emissions from the operation of the logistics industry (materials management and physical distribution) in Zhejiang Province as basis for formulating policies; and, (2) green logistics systems developed and implemented in other countries and the performance and results of their applications.	1.1.1: Survey and analysis of the policy status and the innovative developments in enhancing energy efficiency and environment conservation improvement in the logistics industry in China and other countries.
		1.1.2: Evaluation of existing policies on the logistics industry and determination of necessary policies and regulations applicable to materials management and physical distribution operations in the logistics industry in Zhejiang Province.
	Output 1.2: Formulated, recommended, and implemented standards, policies, incentive schemes and implementing rules and regulations on the promotion and adoption of green logistics the logistics industry in Zhejiang Province.	1.2.1: Adoption and establishment of the recommended system for the promotion and practice of green logistics in the logistics industry in Zhejiang Province.
		1.2.2: Design and implementation of a pilot financial incentives scheme for small-to-medium size to encourage them to adopt EC&EE technologies and green logistic techniques.
		1.2.3: Development and formulation of policies and implementing rules and regulations on the development and support of the logistics industry in Zhejiang Province
	Output 1.3: Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry	1.3.1: Development of guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry.
		1.3.2: Dissemination of guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry in Zhejiang Province, in particular, and in China
	Output 1.4: Approved follow-up plan for the replication of the applications of the piloted green logistics policies in Zhejiang Province in other provinces and cities	1.4.1: Design of the follow-up plan to promote and implement the replication of the successful applications of the piloted green logistics policies in Zhejiang Province to other provinces and cities.
		1.4.2: Promotion of the successful applications of the piloted green logistics (materials management and physical distribution) policies in Zhejiang Province to other major Chinese provinces and cities (e.g., Dalian, Qingdao, Tianjin, Guangzhou, and Yangshan).

37. **Output 1.1: Completed analysis of: (1) the energy use trends and GHG emissions from the operation of the logistics industry (materials management and physical distribution) in Zhejiang Province as basis for formulating policies; and, (2) green logistics systems developed and implemented in other countries and their utilization performances** – The various studies and analyses that comprise this output will be the main bases for the policies and implementing rules and regulations on the promotion and practice of green logistics in the logistics industry in Zhejiang Province that will be formulated and recommended for approval and enforcement. This output includes policy studies on schemes such as those for the provision of financial incentives for carrying out pre-investment activities that will contribute in the decision making for investments in green logistics or energy efficiency techniques. It also includes feasibility studies, energy audits, environmental impact assessments that small and medium size LSPs can avail of to enable them to implement green logistics technologies or applicable energy efficiency measures.

*Activity 1.1.1: Survey and analysis of the policy status and the innovative developments in enhancing energy efficiency and environment conservation improvement in the logistics industry in China and other countries.* This activity will involve expert consultation and comprehensive assessment of the status of existing policies and programs<sup>15</sup> in the logistics industry in China and other countries. It will also involve the design and implementation of the survey instrument including terms of reference (TOR) for conduct of survey, target respondents, questionnaires, and sampling procedures in the key areas of the logistics industry in the Zhejiang Province.

*GEF support is needed for the design, preparation and implementation of the survey and analysis.*

*Activity 1.1.2: Evaluation of existing policies on the logistics industry and determination of necessary policies and regulations applicable to materials management and physical distribution operations in the logistics industry in Zhejiang Province.* This activity will focus on the comprehensive investigation and detailed analysis of the existing policies and programs in the logistics industry in Zhejiang Province based on the findings of the survey (Activity 1.1.1). The analysis of the survey results will be correlated with other pertinent information from other studies and logistics industry analyses that were implemented in the other areas in the country to come up with a complete characterization of the local logistics industry and logistics market situation with specific focus on the materials management and physical distribution operations. A team composed of representatives from China central government and Zhejiang local government, and experts in logistics industry/market, energy efficiency, and low carbon transportation will be organized to carry out the analysis and evaluation work. A comprehensive policy review and analysis on the energy use trends and GHG emissions from the operation of the logistics industry (materials management and physical distribution) in China and in other countries will be produced. The study will also recommend appropriate policies for the logistics industry in Zhejiang Province. The results of the studies will also serve as basis for the design of incentive mechanisms based on the needs of the small to medium size LSPs.

---

<sup>15</sup> There are other relevant projects in the region that might be interesting to connect with such as the “ASEAN-German Technical Cooperation: The Regional Programme “Cities, Environment and Transport in the ASEAN Region” (<http://www.citiesenvironmenttransport.org/>) particularly experiences in sustainable ports program implementation. GLIZP will also explore with other pertinent logistics projects and learn from their successful experiences and lessons learned and benchmark relevant energy efficiency and environmental improvement through application of green logistics concept, particularly in the aspects of policy, regulatory and standards development.

*GEF support is needed for the technical assistance in the in-depth analysis and evaluation of the Zhejiang local logistics market and in the identification of needs of the LSP SMEs to go into green logistics.*

38. **Output 1.2: Formulated, recommended and implemented standards, policies, incentive schemes and implementing rules and regulations on the promotion and adoption of green logistics in Zhejiang Province** - Based on the findings and recommendations from Output 1.1, policies and implementing rules and regulations on the promotion and practice of green logistics in the logistics industry in Zhejiang Province will be formulated and recommended for approval and enforcement.

*Activity 1.2.1: Adoption and establishment of the recommended system for the promotion and practice of energy conservation and energy efficient (EC&EE) technologies and green logistic techniques and incentive schemes in Zhejiang Province.* This activity involves the process of adoption of the policies that will govern the development and implementation of the green logistics program in Zhejiang Province based on the recommendations in Activity 1.1.1 and 1.1.2. In the adoption process, ample consultation during stakeholders meetings will be done to be able to understand the green logistics concept and its application in the logistics industry in the Zhejiang Province and thereby provide basis for the establishment of the demonstration facilities for materials management and physical distribution to jump start the green logistics program. This will also involve identification of implementation, administrative and organizational requirements of the program backed by cost and benefit analysis to justify the infrastructure and manpower support needed. An incentive scheme for financing pre-investment requirements for project design and implementation, e.g., conduct of feasibility studies, energy audits, environmental impact assessments, etc. for small and medium size LSPs to encourage them to adopt green logistics techniques and energy efficiency measures in their operations.

*GEF support will be needed for the technical assistance in facilitating the adoption and establishment of the recommended system.*

*Activity 1.2.2: Design and implementation of a pilot financial incentives scheme for small-to-medium size to encourage them to adopt EC&EE technologies and green logistic techniques.* Based on the results of studies and recommendations in Output 1.1, a pilot incentive scheme will be set up for small and medium size LSPs to assist them in adopting EC&EE techniques, in general, and green logistics techniques, in particular. Apart from the need for technical capacity development on EC&EE and green logistics, these LSPs require assistance in their decision making in adopting these technologies/techniques. Financing the cost of pre-investment requirements for projects such as data gathering and analysis, feasibility studies, energy audits, environmental impact assessments, etc. is regarded as an adequate incremental assistance to them to not only motivate them but also help them decide on the adoption and implementation of feasible EC&EE and green logistics technologies. The financing scheme mechanism, and the terms and condition of the grant provision will be designed, including the fund management arrangements. A suitable set of criteria will be developed for selecting the eligible LSPs that will be included in the pilot. The amount of grant financing for each LSP will depend on the pre-investment activities that will be funded and implemented. The participating LSPs will commit to implement their EC&EE and green logistic project if this is found technically and economically feasible. Depending on the scope, planning and financing of the feasible projects of the LSPs, these can be implemented by them during or after the GLIZP Project completion. The results of the pilot will be presented to Zhejiang Provincial Government, and based on the results, the appropriate policy recommendations will be finalized.



*GEF support is for the required technical assistance in the design and evaluation of the pilot incentive scheme, and more importantly, for the funding of the pilot incentive scheme.*

*Activity 1.2.3: Development and formulation of policies and implementing rules and regulations on the development and support of the logistics industry in Zhejiang Province.* This activity involves the process of formulation and adoption of standards, policies and implementing rules that will govern the development and implementation of the green logistics program in Zhejiang Province based on the recommendations in Activity 1.1.1 and 1.1.2. This will entail the organization of technical working groups from the central government and Zhejiang local government, institutions of standardization, logistics service providers, energy efficiency agencies, and low carbon transportation and logistics companies. The ZPDRC will act as lead role in developing and promoting the green logistics program in Zhejiang Province in cooperation with Fuyang City Government and local logistics service providers. Pertinent stakeholders and government standards agency will be committed and willing to push for adoption within the timeframe of the project. The basic outputs of this activity will be incorporated in the Zhejiang Province Green Logistics Plan which will include appropriate standards, policies and implementing rules and regulations on technology adoption and the necessary incentive mechanisms such as the one piloted in Activity 1.2.2 (financing of project pre-investment requirements such as feasibility studies, energy audits, environmental impact assessments, etc.) on the promotion and practice of green logistics (including materials management, physical distribution and improved coordination of various transport modes) developed and recommended for the province.

*GEF support will be for the required technical assistance, the conduct of the consultations and stakeholder meetings, and preparation of the comprehensive Zhejiang Province Green Logistics Plan.*

39. **Output 1.3: Published and disseminated guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry** – This involves enhancing the generalized industrial EC&EE guides and reference documents by designing these into guides/references on the application of green logistics in the planning and operation of businesses in the logistic industry (covering materials management and physical distribution). This will also apply to the enhancements that will be incorporated in the Zhejiang Province Green Logistics Plan. The incorporation of incremental features on green logistics, which will be instrumental in the delivery of impactful results in the logistics industry, is clearly something that is eligible for GEF funding.

The target audience of this particular output are the logistics service providers and logistics services customers, provincial government agencies who are in-charge of the logistics industry; as well as government policy makers and regulatory enforcers. While this output is just one of the contributors to the realization of the Component 3 outcome, it also have impacts. The immediate one is the availability and accessibility of pertinent information for achieving enhanced level of knowledge of the logistics industry about the cost-effective application of EC&EE in the planning, management and operation of logistics systems. The guides and reference documents will also be incorporated in the green logistics information sharing system that will be developed and implemented under Component 3 (Output 3.6). If sustained, and together with the outputs from other Component 1 Outputs, the following potential impacts can be realized in the mid-, to long-terms: (a) Improvement of energy utilization efficiency in the provincial logistics industry, particularly in materials management and physical distribution; and, sustained energy savings and associated in the logistics industry operations; and associated GHG emission reductions.

*Activity 1.3.1: Development of guides and reference documents including incentive mechanisms for small to medium size LSPs for the application of energy conserving and energy efficient practices in the logistics industry.* In support of the development and implementation of the Zhejiang Province Green Logistics Plan, the activity will involve the preparation, adoption, publication and dissemination of guides and reference documents for the application of energy efficient and environmentally-beneficial practices in the logistics industry in Zhejiang Province. The ZPDRC will act as lead role in developing and disseminating the guides and reference documents for the green logistics program in Zhejiang Province in cooperation with Fuyang City Government and local logistics service providers. These documents will also be integrated into the green logistic information sharing system that will be developed under Component 3 (Activity 3.6.2).

*GEF support is required for technical assistance to facilitate and complete the inputs to the development of the guides and references.*

40. **Output 1.4: Approved follow-up plan for the replication of the applications of the piloted green logistics policies in Zhejiang Province in other provinces and cities.**

*Activity 1.4.1: Design of the follow-up plan to promote and implement the replication of the successful applications of the piloted green logistics policies in Zhejiang Province to other provinces and cities.* This will involve the development and adoption of a replication plan for the application of the green logistics concept to other cities and areas where the best practices and lessons learned from the pilot demonstration sites can be replicated and promoted<sup>16</sup>. This will require support from central and local government agencies, private sectors, and other academic institutions for the replication of feasible design and application green logistics application, design and operation. This will include the formulation of recommendations and feasible strategies and incentives for the providing motivation and promotion of green logistics to the industrial sector, enforcement of policies and policy support activities, and implementation of financing schemes for related projects that promote green logistics application in other Chinese cities<sup>17</sup>. Through active replication of green logistics techniques and practices, wider application and greater energy savings (and the corresponding GHG emissions reduction from the reduced electricity demand) will be very beneficial to many parts of China where there are large industrial manufacturing complexes and greater need for moving goods, materials and products.

A monitoring and evaluation system for the follow-up and replication program will also be designed and adopted by responsible agency of the Chinese government before the end of the project.

<sup>16</sup> The suitable sites in Zhejiang and in other provinces where the potential replications will be promoted and implemented will be identified, their feasibility evaluated, and investment requirements assessed. The design of such replications will be discussed and coordinated with the relevant LSPs (for privately funded replications) and the provincial governments (for public sector funded replications). Any less successful result from any of the important interventions that will be implemented will also be assessed as to the reasons behind the result, with the aim of improving the design and implementation arrangements. These can also be planned for further demo and promotion, and later on replicated where feasible. All of these have to be planned during the GLIZP project implementation.

<sup>17</sup> All the enabling conditions (e.g., policy and regulatory frameworks, continuing education program for the logistics industry) that will be established in Zhejiang Province will be enforced. The GLIZP project will facilitate such setting up of enabling environment and enforcement. The results obtained, and experiences that will be gained in the formulation, design, development, approval and enforcement of these enabling conditions will be documented and presented to the logistics industries in other provinces in China. The relevant local government agencies in these provinces that are involved in the provincial logistic industry can be assisted in pursuing the same actions that will be carried out under the GLIZP Project in Zhejiang Province. Apart from the information provided, technical assistance to such like-minded local governments can be provided to replicate the experience gained in the promotion and application of green logistics in their respective logistics industry.



*GEF support is required for the technical assistance in the facilitation and completion of the inputs to the comprehensive study and preparation of the green logistics follow-up plan and proposals to relevant policy making bodies.*

## **COMPONENT 2: GREEN LOGISTICS SYSTEMS DEMONSTRATION**

41. This component of the project is meant to address the barrier regarding the low level of capacity, knowledge and skills of, and cooperation among the relevant government entities, manufacturing and logistics industries on the application, design and operationalization of green logistics systems, as well as in the application of energy conservation and operational efficiency in the logistics industry. It is also intended to enhance the level of confidence of the logistics industry on the viability of green logistics applications and infrastructures. With the interventions that will be carried out under this component, improved energy efficiency in the materials management and physical distribution operations in the logistics industry in Zhejiang Province is expected. The activities that will be carried out under this component will be in cooperation with the logistic companies that are interested in the application of green logistics technologies in their operations. The Expected Outcome of Component 2 is:

### **Outcome 2: Improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang Province**

To realize Outcome 2, the following are the Activities that will be carried out under Component 2 to come up with each Expected Output listed below:

<b>Outcome</b>	<b>Output</b>	<b>Activities</b>
2: Improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang Province	2.1: Completed designs of energy efficient materials management demonstrations focusing on using energy efficient materials management systems in packaging, warehousing, cold storage, etc., in the logistics industry in Zhejiang Province	2.1.1: Conduct of feasibility analyses on the application and operation of energy efficient materials management systems in the logistics industry.
		2.1.2: Design of the modified materials management system (including the associated facilities and infrastructures) in the Zhejiang Province logistics system projects.
		2.1.3: Development of the implementation plans (including financing arrangements) for each demonstration energy efficient materials management systems in the logistics industry.
	2.2: Completed designs of energy efficient physical distribution demonstrations focusing on integrated multi-modal transport systems and reduction of empty load rates in the freight transport operations of the logistics in Zhejiang Province	2.2.1: Conduct of feasibility analyses on the application and operation of energy efficient physical distribution systems in the logistics industry.
		2.2.2: Design of the physical distribution system (including the associated facilities and infrastructures for energy efficient water and water/road freight planning and management schemes) in the Zhejiang Province logistics system projects.
		2.2.3: Development of the implementation plans (including financing arrangements) for each demonstration EE physical distribution systems in the logistics industry.
	2.3: Installed and fully operational green logistics-based centralized logistic platform in Fuyang City, Zhejiang Province	2.3.1: Installation of the demonstration energy efficient centralized logistic facility.
		2.3.2: Operation of the demonstration centralized logistics facility in Zhejiang Province.
	2.4: Operational green logistics-based physical	2.4.1: Installation of the demonstration energy efficient centralized freight transport facility.

Outcome	Output	Activities
	distribution system demonstration project in Zhejiang Province	2.4.2: Operation of the demonstration centralized freight transport system in Zhejiang Province.
	2.5: Documented annual evaluation reports on the energy performance and environmental impacts of each demo project in materials management and physical distribution, and documented and disseminated demo project results	2.5.1: Evaluation of the energy performance and environmental impacts of each demo EE materials management project
		2.5.2: Documentation and dissemination of the results of each demo EE materials management project
		2.5.3: Evaluation of the energy performance and environmental impacts of each demo EE physical distribution project
		2.5.4: Documentation and dissemination of the results of each demo EE physical distribution project
	2.6: Developed action plan for sustainability of the green logistics system demonstration program	2.6.1: Development of the action plan for sustainability of the green logistics system demonstration program

42. **Output 2.1: Completed designs of energy efficient materials management demonstrations focusing on using energy efficient materials management systems in packaging, warehousing, cold storage, etc., in the logistics industry in Zhejiang Province** - This output is comprised of the designs of the demonstrations of the application of energy efficiency technologies and techniques in the materials management operations in selected logistics companies in Zhejiang Province. Materials management is that aspect of the logistics industry operations that focus on the handling of goods/products for distribution (e.g., packaging, warehousing, cold storage, etc.). The demonstrations are for showcasing technologies/techniques for achieving more efficient goods/products inventory management, warehousing, materials use, including packaging and recycling. This output also includes reports that describe the implementation plan for each demonstration, as well as the engineering plans for the facilities/systems that will be designed, installed and operated for the demonstrations.

*Activity 2.1.1: Conduct of feasibility analyses on the application and operation of energy efficient materials management system in the logistics industry.* This activity involves the conduct of a feasibility study to evaluate existing facilities and equipment used, as well as practices employed, in materials management operations in logistic companies in Zhejiang Province. The study will determine the best possible options in improving energy efficiency in materials management in the logistics industry in China. It will consider the relevant application of “green” and energy efficient technologies in materials management systems under the Zhejiang Fuyang Green Logistics Platform program, viz., Transformation of Road-Port and Port Logistics Project (TRPLP) and International Ports Logistics Project (IPLP). The conclusions and recommendations of the study will be presented and discussed among the stakeholders in the industry to reach a consensus on what could be best applicable in the context of Zhejiang, in particular, and in the logistics sector in China, in general. Based on the adopted recommendations, a plan will be developed for the application of necessary features that have to be incorporated in existing logistics facilities in the province to make them more “green” and energy efficient in the area of materials management. This will be proposed to the provincial government for approval and preparation of detailed engineering designs.

*GEF support is required for providing the incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best materials management system option that employs green logistics techniques to be demonstrated.*

*Activity 2.1.2: Design of the modified materials management systems (including the associated facilities and infrastructures) in selected demo logistic companies in Zhejiang Province.* This activity involves designing of the modifications to the facilities used for materials management in the selected demo logistic companies. Such modifications are to comply with the energy efficiency and environment conservation requirements of a green logistics system. This will be based on the approved most feasible recommendations from the feasibility study (Activity 2.1.1) and from information gathered during the stakeholder consultations. The output of this activity will be a complete state-of-the-art design of energy efficient (i.e., green) materials management logistics facility/system that will be demonstrated under the GLIZP Project, and taking into consideration relevant facility and system designs in the TRPLP and IPLP projects under the Zhejiang Fuyang Green Logistics Platform program.

*Part of the required investment cost for the energy efficient materials management demos that will be designed and implemented is for accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services from qualified national and international experts. For this, GEF incremental funding support is required.*

*Activity 2.1.3: Development of the implementation plans (including financing arrangements) for each energy efficient materials management system demonstration in the logistics industry.* Experts in logistics market and finance, and “green logistics” (i.e., energy efficiency and low carbon technologies) applications in materials management will be commissioned to prepare the detailed implementation and financing plans, and engineering plans for the energy efficient materials management system demonstrations. This activity will be carried out in close coordination and cooperation with the IPLP under the Zhejiang Fuyang Green Logistics Platform program, particularly on the aspects of materials management. The IPLP involves the installation of a modern combined custom and quarantine inspection warehouse and container handling facilities. The implementation of the Fuyang Trade Logistics Plan involves actions to improve trade and logistics operations with focus on upgrading the system and infrastructure support for the city’s logistics industry. The detailed implementation and financing plan to be developed and recommended by the team of experts for the establishment of a green logistics-based centralized logistics demonstration facility in Fuyang City under the GLIZP Project will be reviewed by the stakeholders and finalized by the team to meet the requirements of the project, as well as that of the participating logistics companies.

*GEF support is required for incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the materials management demonstrations.*

43. **Output 2.2: Completed designs of energy efficient physical distribution demonstrations focusing on integrated multi-modal transport systems and reduction of empty load rates in the freight transport operations of the logistics industry in Zhejiang Province** - This is comprised of completed designs and plans of demonstrations of application of green logistics techniques in physical distribution in selected logistics companies in Zhejiang Province. Physical distribution is that aspect of the logistics industry operations that is commonly referred to as freight transport. This output also includes reports that describe the concept and design, and the implementation plan for each demo on the application of green logistics technologies for physical distribution in the provincial logistics industry. Moreover, the demonstrations are for showcasing measures to ensure that the mobility of freight related to logistics operations is performed in a sustainable and environmentally friendly manner. This

output also includes the engineering plans for the facilities/systems that will be designed, installed and operated as part of the demonstrations.

*Activity 2.2.1: Conduct of feasibility analyses on the application and operation of energy efficient physical distribution systems in the logistics industry.* This activity focuses at evaluating the existing facilities and operating systems for transport of goods and products in Zhejiang Province and recommending the best from various feasible options in modifying such systems to make them compliant with the green logistics features of freight transport systems that operate in an energy efficient and environment-friendly manner. This will include combined transport on water and road. Applicable energy efficiency and environment-benign technologies and logistics system practices in China and other countries will be considered in the study to determine possible options for more energy efficient freight transport systems in Zhejiang Province, in particular, and in China, in general. Based on the adopted recommendations, a plan will be developed for the application of necessary features that have to be incorporated in existing logistics facilities in the province to make them more “green” and energy efficient in the area of physical distribution (freight transport). This will be proposed to the provincial government for approval and preparation of detailed engineering designs.

*GEF support is required for providing incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best physical distribution system option to demonstrated, including the combined road-water transport system.*

*Activity 2.2.2: Design of the multi-modal freight transport system (including the associated facilities and infrastructures for energy efficient water and water/road freight planning and management schemes) in selected demo logistic companies in Zhejiang Province.* This activity is for designing the modification of facilities that make up physical distribution systems that will comply with the energy efficiency and environment-friendly features of an energy efficient (i.e., green) freight transport system. This will be based on the approved most feasible recommendation from the feasibility study that will be carried out in Activity 2.2.1, and from information gathered during the stakeholder consultations. The design will likewise consider the integration of the relevant features and possible improvements of the physical distribution facilities and systems that will be installed under the TRPLP, IPLP and the Energy Savings in Transportation Propulsion Engineering Project. It will also include a computerized information system to facilitate information sharing among road transport and port operators, as well as with major customers and LSPs. The output of this activity will be a complete state-of-the-art design of energy efficient (i.e., green) freight transport facilities/systems that will be demonstrated under the GLIZP Project, and taking into consideration relevant facility and system designs in the abovementioned freight transport projects, including the combined multi-modal (i.e., road, water and road-water) transport system to be demonstrated under the GLIZP in Zhejiang Province.

*GEF funding support is needed for the required investment for the energy efficient physical distribution scheme demos that will be designed and implemented. This will be for the incremental cost of accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services in physical distribution from qualified national and international experts, including those technologies and management experiences on multi-modal (e.g., combined road-water) transport systems. Related support will be provided by the co-financing government agencies and the private groups which will be selected for the demonstration activity.*

*Activity 2.2.3: Development of the implementation plans (including financing arrangements) for each EE physical distribution system demonstration in the logistics industry.* This activity will involve the preparation of the detailed implementation plans for each of the energy efficient (i.e., green) freight transport facilities and systems to be demonstrated in Zhejiang Province. This also includes the implementation plans for the energy efficiency projects that will be implemented by small to medium size LSPs that will receive grant financing from the pilot incentive scheme implemented under Component 1. Experts in logistics market and finance, and “green logistics” (i.e., energy efficiency and low carbon technologies) applications in freight transportation will be commissioned to prepare the detailed implementation and financing plans, and engineering plans for the energy efficient physical distribution system demonstrations. This will draw from current experience in China and in other countries that are advanced in energy efficient (i.e., “green”) freight transport systems. This will be done in close coordination and cooperation with the freight transport-related activities of the following baseline projects: TRPLP, IPLP and the Energy Savings in Transportation Propulsion Engineering Project. The detailed implementation plans recommended by the team of experts will be reviewed by the stakeholders and finalized by the team to meet the requirements of the project as well as the participating logistics companies.

*GEF support is required for incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the physical distribution demonstrations.*

44. **Output 2.3: Installed and fully operational green logistics-based centralized logistic platform in Fuyang City, Zhejiang Province** - The centralized logistics facility (or Logistics Park) is for demonstrating the design, engineering, implementation and operation of an energy efficient materials management system. It will be designed and operated based on the principles of “green logistics”. That means goods receipt, warehousing, storage/handling, packaging and other logistics services prior to goods delivery, all in one central facility. This is based on principles of a more environment-friendly (i.e., greener) logistics flow processing through centralized processing of goods/materials handling that improve resource utilization, reduce pollution of the environment, unified recovery and processing of packaging waste, and reduce waste contamination. Such centralized logistics facility is meant for the provision of integrated logistics services that use advanced technology planning and implementation of goods/materials warehousing, handling, packaging and packaging waste recovery, recycling and disposal. The one that will be demonstrated will be a centralized goods handling facility (intelligent green warehousing) in Fuyang City, Zhejiang Province.

The centralized logistics facility will basically involve the deployment of the appropriate combination of smart, energy conserving, energy efficient and environment friendly technologies and techniques to make a centralized logistics establishment operate in a “green” manner. Such facility will be operated with the collective application of known and commercially available technologies such as: energy efficient lighting, energy efficient appliances and devices, efficient motors for materials handling, computerized production planning and management tools, process automation systems, waste recycling systems, waste heat recovery, etc., to make the operation “green” or one that will reduce energy consumption and GHG emissions.

*Activity 2.3.1: Installation of the demonstration energy efficient centralized logistic facility.* This activity will involve the construction, commissioning and operation of an energy efficient centralized logistics facility that will be designed and financially packaged in Activities 2.1.2 and 2.1.3 to demonstrate energy efficient and environment-friendly materials management system. This facility will be in Fuyang City, Zhejiang Province. The ZPDRC will be responsible for management directions, administrative and



organizational support for the demonstrations. The Zhejiang Fuyangkouan International Logistics Co. Ltd and Fuyang Hangzhou Transfar Logistics Base Co., Ltd. will be in-charge of the installation, operation and maintenance of the demonstration facility that will showcase energy efficient materials management operations in the centralized logistics facility in Fuyang City. The establishment and operation of the demo facility will be in accordance with the approved detailed design and implementation plan for the energy efficient centralized logistics facility. The continuous operation of the demo facility by the participating logistics companies will provide very valuable information on the energy utilization and environmental performance of such kind of green logistics-based facility. The information will be documented and disseminated, and integrated into the green logistics information sharing system developed under Component 3.

*GEF support will be needed for incremental funds for the installation of the green logistics elements (i.e., energy efficiency technology software and hardware) of the demonstration centralized logistics facility.*

*Activity 2.3.2: Operation of the demonstration energy efficient centralized logistics facility.* This activity will involve the day-to-day operation and maintenance of the demo energy efficient centralized logistics facility. Based on the design and the operational experience gathered, the operating and maintenance procedures manual of the demo facility will be developed and documented. The documented information will be used in the capacity development of the facility personnel to ensure the achievement of the energy efficiency and environment conservation objectives of the facility. The documents produced and information gathered will also be integrated into the green logistics information sharing system developed under Component 3.

*GEF support will be for the incremental funds for the operation of the energy efficiency technology software and hardware that will be incorporated in the demo centralized logistic facility. This will also include funding for the capacity development of the centralized logistics facility personnel on the operation of the additional EE systems and equipment installed to make the facility operate in a green manner.*

45. **Output 2.4: Operational green logistics-based physical distribution system demonstration project in Zhejiang Province** - This is a centralized facility for physical distribution (i.e., freight transport) that is designed and operated based on the principles of "green logistics". That means goods transshipment processing, scheduling, and transport all in one central physical distribution facility. This is based on principles of a more environment-friendly (i.e., greener) logistics flow processing (from individual or central collection points, transshipment operations, and delivery to receiving points), improved resource utilization, and reduced pollution of the environment. Such centralized physical distribution facility is meant for the provision of integrated freight transport services that use advanced technology planning and implementation of goods/materials distribution processing, freight transport and other related transshipment activities. The one that will be demonstrated under the project in Zhejiang will be a regional logistics multi-modal network system that involves drop-and-pull transport scheme connecting with four modes of transportation--waterway, air, road and railway, and integrating sea port, airport, river port and dry port.

The centralized freight transport facility will basically involve the deployment of the appropriate combination of smart, energy conserving, energy efficient and environment friendly technologies/techniques to make a physical distribution (i.e., freight transport) unit of a logistics company operate in a "green" manner. Such unit will employ a combination of these known and commercially available energy efficient freight transport technologies and practices applied to logistics operations such as: energy efficient engines, conversion kits to more efficient fuels, computer-aided load matching and

dispatching, combined water and land transport, computer-aided preventive maintenance system, etc., that will make the transport operations be in line with “green logistics” principles, which will be more energy-efficient and environment-friendly than the present non-optimal freight transport management systems.

*Activity 2.4.1: Installation of the demonstration energy efficient centralized freight transport facility.* This will involve integration of related activities in improving the energy performance of the physical distribution aspects of the logistics industry in Zhejiang Province. It will also focus on the development, installation and demonstration of the energy efficient (i.e., ‘green’) freight transport system and simulation model and tools that will ensure the attainment of energy efficiency and environmental objectives of the project as designed in Activity 2.2.2 and 2.2.3. The activity will entail the installation of real-time digital networks that will: (a) gather and provide access to operational data, records of performance, energy consumption, emissions, loading rates and maintenance of transport units and logistics distribution systems; (b) facilitate coordination of supply chains and producers; (c) serve as operations center for market demand and monitoring, debottlenecking, capacity management, cost control, monitoring, transportation mode options, cargo capacity loading rate optimization; and (d) facilitate decision making for sustainable operations. The planned system will encompass the networking of logistics transport business operators and logistics service providers in close coordination with the raw material suppliers and product manufacturers and the rationalized and efficient freight loading, dispatch and flow ordering through the established center for the energy efficient physical distribution system demonstration facility.

*GEF support will be needed for incremental funds for the installation of the green logistics elements (i.e., energy efficiency technology software and hardware) of the demonstration energy efficient centralized freight transport facility.*

*Activity 2.4.2: Operation of the demonstration centralized freight transport system in Zhejiang Province.* This activity will involve the daily operation and maintenance towards sustainable operation of the demonstration energy efficient centralized freight transport facility. Based on the documented experience gained and manuals developed in Activity 2.4.1, further improvements in the operation and maintenance of the facility and capacity development of the operating and support staff will be conducted towards achieving the energy efficiency and environmental objectives of the project.

*GEF support will be for the incremental funds for the operation of the energy efficiency technology hardware that will be incorporated in the demo centralized freight transport system. This will also include funding for the capacity development of the centralized freight transport facility personnel on the operation of these additional EE equipment and systems to be installed to make the facility operate in a green manner.*

**46. Output 2.5: Documented annual evaluation reports on the energy performance and environmental impacts of each demo project in materials management and physical distribution, and documented and disseminated demo project results**

*Activity 2.5.1: Evaluation of the energy performance and environmental impacts of each demo EE materials management project.* This activity will involve the development and implementation of the system and procedure for monitoring and evaluation of the demo projects in materials management focusing on their energy consumption and environmental impacts and recommending possible improvements so as to attain the green logistics project objectives.

*GEF incremental support is for the technical assistance required in the evaluation of the performance and impacts of the implemented green logistics-based materials management demo projects.*

*Activity 2.5.2: Documentation and dissemination of the results of each demo EE materials management project.* This activity will involve the documentation of the findings of the evaluation of the energy performance and environmental impacts of each demo project. The lessons learned and recommendations for improvement of the operation and maintenance of the demo facilities will be used in updating the operating and maintenance manuals for the facility in accordance with the design expectations and actual logistics industry situation. Based on these findings, the reports on the results of the demo projects will be prepared and disseminated to stakeholders and the logistics industry participants through workshops. The information that will be gathered from the monitoring and evaluation of the demo projects will be incorporated into the green logistics information sharing system that will be developed under Component 3.

*GEF incremental support is for the technical services required for the documentation and dissemination of demonstration results of results.*

*Activity 2.5.3: Evaluation of the energy performance and environmental impacts of each demo EE physical distribution project.* This activity will involve the development and implementation of the system and procedure for monitoring and evaluation of the demo projects in physical distribution focusing on their energy consumption and environmental impacts and recommending possible improvements so as to attain the green logistics project objectives.

*GEF incremental support is for the technical assistance required in the evaluation of the performance and impacts of the implemented physical distribution demo projects.*

*Activity 2.5.4: Documentation and dissemination of the results of each demo EE physical distribution project.* This activity will involve the documentation of the findings of the evaluation of the energy performance and environmental impacts of each demo project. The lessons learned and recommendations for improvement of the operation and maintenance of the demo facilities will be used in updating the operating and maintenance manuals for the facility in accordance with the design expectations and actual logistics industry situation. Based on these findings, the reports on the results of the demo projects will be prepared and disseminated to stakeholders and the logistics industry participants through workshops. The information that will be gathered from the monitoring and evaluation of the demo projects will be incorporated into the green logistics information sharing system that will be developed under Component 3.

*GEF incremental support is for the technical services required for the documentation and dissemination of demonstration results.*

**47. Output 2.6: Developed action plan for scaling-up and sustainability of the green logistics system demonstration program**

*Activity 2.6.1: Development of the action plan for sustainability of the green logistics system demonstration program.* This activity will focus on planning for ensuring the sustainability of the green logistics demonstration program for materials management and physical distribution. This will also include recommendations and possible strategies for the motivation and promotion of green logistics in the industrial sector, enforcement of policies and policy support activities, and implementation of financing schemes for related projects that promote green logistics application. The action plan should include monitoring and evaluating the impacts of the project in terms of the energy efficiency and



environmental outcomes of the project including its sustainable human development benefits such as job creation, and that all of these will be based on the experience with the application of green logistics techniques in the demonstration program in Zhejiang Province using reports, surveys, interviews and other methodologies used by the project. ZPDRC will take the lead role in continuing the monitoring and evaluating the demo projects for its sustainability during and beyond the four-year project duration leading to more sustainable investments by the government and private enterprises in the green logistics program for the province. A follow-up plan for the replication of the application of the piloted green logistics policies in Zhejiang Province in other nearby provinces and cities will be developed and approved within the activities of the proposed project.

The scaling-up strategy will start with the promotion to the Chinese logistics industry the benefits of energy savings and energy productivity that result from the appropriate policies, standards, and support programs that were developed, piloted/demonstrated and implemented through the GLIZP Project. Among these are the successful results and impacts of the demonstration of the application of green logistics and EC&EE technologies/techniques in the logistics industry in Zhejiang Province. The strategy includes the systemizing green logistics program support and investment promotions to leverage existing resources to generate broader and deeper impacts while generating momentum for further green logistics market development. The development and enforcement of green logistics codes and minimum energy standards for various logistics operation phase are expected to encourage LSPs to make changes and seize the opportunities for improved productivity, operational efficiency, and financial benefits. The ZPDRC will lead to counter the policy and operational challenges and shall consider ways to incentivize adoptions and innovations among LSPs who are willing to follow or even exceed the minimum standards set by green logistics models. In the process, the local capacity in the logistics industry in other provinces, particularly in locations with thriving logistics centers to measure and monitor energy efficiency performance levels and likewise facilitate the phase out of older, less productive and energy inefficient techniques and practices in logistics operations.

*GEF incremental support is for the technical assistance required in the development of sustainable follow-up and scaling-up plan related to this activity.*

48. To summarize, the incremental GEF funds allocated for the delivery of Outputs 2.1, 2.2, 2.3 and 2.4 are for supporting the investments for the incremental features of the energy efficient materials management and physical distribution schemes that will be demonstrated. Such funds will cover costs for the pre-demo project development activities, detailed engineering designs of the added incremental features, and the incremental hardware that will be incorporated in the subsumed baseline demo projects. The incremental GEF funds for delivering Outputs 2.5 and 2.6 are for technical assistance in the evaluation of the green logistics demo program, and in the development of the follow-up plan for sustaining program. The table in Annex IV summarizes what the incremental GEF funds allocated for Component 2 will be used for.

### **COMPONENT 3: CAPACITY BUILDING AND PROMOTION OF GREEN LOGISTICS SYSTEMS**

49. Component 3 will address the removal of barriers related to the low level of capacity, knowledge and skills of and cooperation among the relevant government entities, manufacturing and logistics industries on the application, design and operationalization of green logistics systems, as well as in the application of energy conservation and operational efficiency in the logistics industry and the lack of an effective information platform to share the successful experiences in the design, development and operation of green logistics system. The expected outcome from the delivery of the expected

outputs under this component is increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province (Outcome 3).

To realize the expected outputs, the following are the activities that will be carried out under Component 3:

Outcome	Output	Activities
3: Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province	3.1: Completed assessment report on capacity development needs in the area of green logistics and developed green logistics capacity building program <sup>18</sup>	3.1.1: Assessment of the capacity development needs in the area of green logistics
		3.1.2: Development and adoption of green logistics capacity building program in Zhejiang
	3.2 Completed green logistics training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang Province (e.g., concepts, practices, methodologies)	3.2.1: Development of materials and scheduling of the green logistics training courses
		3.2.2 Conduct of training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang
	3.3: Completed technical assistance program for assisting small-to-medium size LSPs on the application of green logistics systems	3.3.1: Publication of the technical guidance documents
		3.3.2 Dissemination of technical guidance documents
	3.4: Completed promotional workshops and/or activities to enhance awareness and knowledge in green logistics systems.	3.4.1: Conduct of promotional workshops and related promotional activities for the dissemination of reference documents and knowledge products on the green logistics demonstration
	3.5: Completed and fully evaluated program for the promotion and capacity building of green logistics systems	3.5.1: Development of the evaluation standard and tool
		3.5.2: Monitoring and evaluation of the capacity building and promotion of green logistics systems
	3.6: Designed, endorsed and implemented an energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province	3.6.1: Design of an energy performance rating program for LSPs in Zhejiang Province
		3.6.2. Design of a provincial green logistics information sharing system for LSPs
		3.6.3 Endorsement and implementation of an energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province

50. Component 3 is based on the fact that the private sector (i.e., the logistics industry) has in general, low level of knowledge and awareness about smart, sustainable, energy conserving, energy efficient and environment friendly technologies, techniques and practices, which by and large comprise “green logistics”<sup>19</sup>. The whole essence of

<sup>18</sup> Potentially covering materials and facilities management and physical distribution for the government and logistics industry

<sup>19</sup> This situation is particularly true with small-to-medium size logistics companies. Private sector entities, particularly logistic services providers (LSPs) in Zhejiang that have “vested interests” in improvement of energy efficiency and mitigation of carbon emissions are among those in the logistics industry that know and are aware of the need for, and benefits of, carrying out actions/measures that will enhance the efficiency of how they use

Component 3 is to enhance the knowledge and awareness of the LSPs about the green logistics approach. It does not just focus on the adoption of these known technologies, which when adopted altogether will constitute the “green logistics” approach in the logistics business. In reality, most of the LSPs are not aware of “green logistics”. They are not aware of the various technologies/techniques that are available for them to implement with the aim of making their logistics operations green. That is why the proposed activities under Component 3 focus on stronger capacity development, promotion and outreach to all LSPs in adopting green logistics approaches. This, after all should be in line with the Zhejiang Province Green Logistics Plan. To supplement the capacity development program, a green logistics information sharing system will also be developed for the exchange of information among the players in the province’s logistics industry, as well as for disseminating technical information and guidance such as those produced under Component 1 of the GLIZP Project. The capacity development program builds on existing and planned EC&EE initiatives of the provincial government for the industry sector in the province. The information sharing system will also build on the Zhejiang Province Initiatives in Information Exchange Center for Purchasing and Inventory Management of Logistics Resources.

51. **Output 3.1: Completed assessment report on capacity development needs in the area of green logistics and developed green logistics capacity building program-**

This refers to the results and recommendations of the capacity needs assessment that is used for formulating the capacity development program. The identified capacity needs will be addressed in the design of the capacity development program (Output 3.2), and reassessed in the evaluation of the implementation of the capacity development program (Output 3.5).

*Activity 3.1.1: Assessment of the capacity development needs in the area of green logistics.* This activity will involve at the outset an expert consultation for a comprehensive assessment of the training and capacity building needs of stakeholders and key players in the logistics industry in Zhejiang Province. This will consist of the conduct of surveys and interviews among the logistics institutions and companies and drawing conclusions and recommendations for the necessary for addressing the barriers on low level knowledge, capacity and skills of relevant government entities, manufacturing and logistics industries on the application, design and operationalization of green logistics systems.

*GEF support is for the technical assistance required for the design and conduct of surveys and interviews and the analysis of findings.*

*Activity 3.1.2: Development and adoption of green logistics capacity building program in Zhejiang.* Based on the conclusions and recommendations of the capacity building assessment, a green logistics capacity building program will be developed and adopted by ZPDRC. ZPDRC will lead the identification of participants to the training program and the curriculum of the courses.

*GEF support is required for technical support in the preparation of the green logistics capacity building program.*

---

energy in their business activities and operations. Only those who know, and with resources to use, would have “vested interests” in energy efficiency improvements. Such LSPs are aware that in doing so they not only improve their business performance but are also contributing to the mitigation of GHG emission reductions through their optimal use of energy. They may refer such actions as simply applying energy efficiency or low carbon technologies, and may not be aware that what they are doing is part and parcel of “green logistics”. Some of them may just be aware of such technologies, but the reality is that they do not know how to apply them in their businesses, let alone finance such actions.

52. **Output 3.2: Completed green logistics training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang Province (e.g., concepts, practices, methodologies)** – This will involve enhancing the stand-alone corporate training programs of partner logistic companies into a major capacity development program to include green logistics principles (planning and applications) practices, techniques and methodologies, and include among the trainees relevant provincial government officials that are involved in the logistics industry. Moreover, selected operations personnel from a number of small-to-medium size LSPs will also be included in this more impactful alternative program, which clearly includes significant incremental features that are eligible for GEF funding.

*Activity 3.2.1: Development of materials and scheduling of the green logistics training courses.* This activity will involve the preparation of training materials and the detailed planning (including topic coverage, budgeting, scheduling, participants list, venues, training evaluation forms and trainers) for the green logistics capacity building program for Zhejiang Province. Invitations to relevant participants will be prepared to include training information note and criteria for selection of participants to ensure that the training will render capacity building benefits to the institutions or companies participating in the program.

*GEF support is required for the technical assistance for the design and development of the training course materials.*

*Activity 3.2.2: Conduct of training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang.* This activity will involve the conduct of the training courses<sup>20</sup> that were designed and scheduled in Activity 3.2.1. After the last activity of each course, a training evaluation form will be accomplished by the participants using the prescribed format. A follow-up arrangement will be included in the format to indicate a post-training evaluation regarding the application of knowledge and skills gained from the training in their green logistics-related work after a year. This will be assessed towards the end of the project in connection with Activity 3.5.1 and 3.5.2.

*GEF support is required for the technical assistance in the organization and conduct of the training courses.*

53. **Output 3.3: Completed technical assistance program for assisting small-to-medium size LSPs on the application of green logistics systems** – This is a technical assistance program in the logistics industry building on the EC&EE programs of the big LSPs that will involve in the design, development and dissemination of web-based tools for the application of green logistics techniques and technologies. In addition, the program will also include the provision of actual technical assistance in the application of green logistics technologies/techniques in the partner LSPs and selected small-to-medium LSPs. This features incremental services in the form of actual technical assistance in the application of green logistics. It will bring about the necessary impactful results in the logistics industry that are clearly something eligible for GEF funding.

*Activity 3.3.1: Publication of the technical guidance documents.* The activity will involve the publication of the technical guidance documents developed and adopted in Activity 1.3.1 in the context and form that will be useful and understood by the target participants.

---

<sup>20</sup> The training courses are for selected industry personnel on specific green logistics subjects (e.g., energy efficient cold storage, operation and maintenance of energy efficient freight trucks).

*GEF support is required for the technical assistance and resources for the publication of the technical guidance documents in close coordination with ZPDRC and Fuyang City government.*

*Activity 3.3.2: Dissemination of technical guidance documents.* This activity will involve the planning and actual dissemination of published technical documents and other relevant materials on green logistics including workshops, web-based tools, etc. for information dissemination and promotion on green logistics.

*GEF support is required for the technical assistance and resources for the dissemination of the technical guidance documents in close coordination with ZPDRC and Fuyang City government.*

**54. Output 3.4: Completed promotional workshops and activities for enhancing awareness and knowledge in green logistics systems**

*Activity 3.4.1: Conduct of promotional workshops and related promotional activities for the dissemination of reference documents and knowledge products on the green logistics demonstration* - This activity involves the conduct of promotional activities about lessons learned, benefits derived and overall support for the enhancement of knowledge and awareness on green logistics in different sectors of the economy. The workshops are for a more general audience, and will be on broader or common topics (e.g., promoting reduction of packaging materials wastage, promoting packaging waste recycling, and, requirements for certified distribution facilities). The target participants in the promotional workshops are different from those in the training courses (Output 3.2). Thus the materials and documents for the training courses are prepared differently because those involved in the promotional workshops include the general public and members of the logistics industry associations.

*GEF support is for the technical and logistical services required in the design and implementation of the promotional workshops and related activities.*

**55. Output 3.5: Completed and fully evaluated program for the promotion and capacity building of green logistics systems**- This refers to the results of the assessment of the capacity development program implementation. This is necessary for the improvement and the sustenance of the capacity development program. As in all capacity development programs, all training or capacity building interventions are evaluated in terms of their impacts and relevance, and whether these address the identified capacity development needs (Output 3.1). The results of the evaluation are then used as guide in the redesign or modification of the capacity development program to make it more in line with the capacity development needs.

*Activity 3.5.1: Development of the evaluation standard and tool.* This activity will involve the design and development of standards and tools for monitoring and evaluating the impacts of the promotion and capacity building activities and outputs of the project.

*GEF support is required for the technical assistance and materials for the development and adoption of the evaluation standards and tools.*

*Activity 3.5.2: Monitoring and evaluation of the capacity building and promotion of green logistics systems.* This activity will involve the conduct of the evaluation of the progress and impacts of the promotion and capacity building activities and the outputs of the project and the preparation and submission of necessary evaluation report to the GLIZP project management.



*GEF support is for the technical assistance required in conducting the evaluation and preparation of reports.*

**56. Output 3.6: Designed, endorsed and implemented an energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province**

*Activity 3.6.1: Design of an energy performance rating program for LSPs in Zhejiang Province.* This activity will involve the design of the energy performance rating scheme and program for logistics service providers (LSPs) in Zhejiang Province to provide basis and benchmarks among LSPs for measuring the effectiveness of the green logistics program for the province. The proposed design will be reviewed and adopted through the facilitation of ZPDRC in coordination with appropriate regulatory agencies. A system of monitoring and evaluation and energy performance database will be developed for use in the performance rating system.

*GEF support is required for the technical assistance in the design and development of the energy performance rating scheme, and the energy performance database.*

*Activity 3.6.2. Design of a provincial green logistics information sharing system for LSPs* – This will entail the development of a system or platform for sharing and disseminating information about green logistics technologies (techniques and practices) and related energy conservation and energy efficiency technologies, and their applications in the logistics industry. It will build on the ongoing project Zhejiang Province Initiatives in Information Exchange Center for Purchasing and Inventory Management of Logistics Resources. A standard data format and communication interface protocol for the sharing of information will be developed. This will be open for use by the LSPs and e-commerce companies, as well as freight transport service operators in Zhejiang Province.

*GEF support is required for the technical assistance in the design and development of the information sharing system.*

*Activity 3.6.3: Endorsement and implementation of an energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province.* This activity will involve the endorsement by the project to the appropriate regulatory body of the energy performance rating scheme and program for logistics service providers (LSPs) in Zhejiang Province. The approved design will be adopted and implemented through the facilitation of ZPDRC in coordination with appropriate regulatory agencies. The designed and developed system for monitoring and evaluation, energy performance database and information sharing mechanisms will also be implemented by an authorized agency.

*GEF support is required for the technical assistance the initial implementation of the rating program, and the green logistics information sharing system, in close cooperation and resource inputs from ZPDRC.*

The detailed summary of the Component 3 outputs is presented in Annex V.

## **2.7. Key Indicators and Risks**

57. The following are the key outcome success indicators and targets of GLIZP by the end of this 4-year project or as indicated if earlier:

- Cumulative CO<sub>2</sub> emissions reduction in the application of green logistics in Zhejiang Province attributable to GLIZP by end-of-project (EOP) of 1,749.27 kilotons (kt)

- Reduction in the annual growth rate of GHG emissions by EOP compared to that in Year 1 at 3.0 %
- Cumulative fuel savings due to project intervention by EOP of 296.24 ktOE
- % empty load rate of freight transport in Zhejiang Province by EOP at 10%
- No. of logistics companies (in road-port platform service) actively employing green logistics technologies and techniques in their operations by EOP at 100
- No. of new jobs created with the application of green logistics techniques in the logistics industry in Zhejiang Province by EOP by at least 1,000.

58. The achievement of the envisioned alternative scenario is very dependent in the market development and user response in the application of green logistics in materials handling and road and marine transport. The project can potentially encounter some of the critical (mostly market-related) risks listed below, and shall implement mitigation action to address them so that the above outcomes will be realized:

- a. Low level of commitment of stakeholders (including government agencies and LSPs) in the implementation of project activities.
- b. Difficulties in the replication of successful results of the project.
- c. Availability of co-financing is delayed and negatively affects the implementation of the project activities.
- d. Varying vested interests and objectives of logistics service providers as well as other stakeholders in the local and central governments may prevent the effective organization and coordination of their participation and support of the project.

59. These risks should be managed in order to foster commitment and support by relevant government agencies and private companies involved in the logistics business in encouraging that the policy adoption, approval and implementation will happen within the project duration.

## 2.8. Cost Effectiveness

60. The GLIZP project will facilitate the realization of the expected outcomes through barrier removal and other capacity development and technical assistance activities. With the target realized, about 471.36 ktons CO<sub>2</sub>/year are expected to be attributed to GLIZP from the green logistics application in materials handling and road and marine transport equivalent to the energy savings of 80.06 ktOE/yr. For this project, the direct CO<sub>2</sub> emission reduction is about 1,749.27 ktons CO<sub>2</sub> by EOP. This translates to a unit abatement cost (UAC) of about US\$ 1.67/ton CO<sub>2</sub>, which is lower than the current average carbon price in the existing carbon exchanges in China (RMB 15.85/ton CO<sub>2</sub> or US\$ 2.40 /ton CO<sub>2</sub> as of September 2016)<sup>21</sup>.

61. The anticipated national benefits accruing at the end of the 4-year project through the implementation of this project include the following:

- a) Reduction of Zhejiang Province's freight truck empty load rates from 50% to 10%, which, together with other efficiency improvement strategies, contribute to an approximately 296.24 ktOE of energy savings from materials management and road and marine transport in Zhejiang Province<sup>22</sup>;

<sup>21</sup> Hubei Carbon Exchange current price (FactorCO2, 23 Sep 2016).

<sup>22</sup> This economic benefits will consequently lead to environmental benefits in terms of reduced CO<sub>2</sub> emissions



- b) Increased utilization of more cost-effective and energy efficient water transport systems;
- c) Direct energy savings from the application of energy efficiency technologies and practices in the materials handling/management activities of LSPs; and,
- d) Reduction of logistics costs (half of which is on energy costs) for provincial manufacturing industries by about 40% from the freight consolidation features of the new green logistics system.

62. Table 5 summarizes the global environmental impacts from the GLIZP in terms of CO<sub>2</sub> emission reductions from the logistics industry in Zhejiang Province that are attributable to the GLIZP Project.

**Table 5: Global Environmental Benefits Attributable to GLIZP**

<b>I – Direct</b>	
Cumulative direct emission reductions (kt CO <sub>2</sub> ) during project duration	1,749.27
Lifetime direct CO <sub>2</sub> emission reduction (kt CO <sub>2</sub> )	11,480.49
<b>II - Direct post project</b>	
Direct post project CO <sub>2</sub> emission reductions (kt CO <sub>2</sub> ) <sup>23</sup>	0.039
<b>III – Indirect</b>	
Indirect CO <sub>2</sub> emissions - bottom-up (ktCO <sub>2</sub> )	34,441.56
Indirect CO <sub>2</sub> emissions - top-down (ktCO <sub>2</sub> )	6,626.80

63. As an activity of the project, a logistics system operations monitoring system will be established and sustained even after the project as the means to keep track on the realization of such benefits and how information (including relevant disaggregated data) will be collected, processed, evaluated and reported during the project implementation. This system will be designed in detail after the project inception as well as devise mechanisms for continuous improvement.

### 3. SUSTAINABILITY AND REPLICABILITY

64. *Innovativeness and Sustainability:* In its desire to reduce operational costs in its logistics industry in an environment friendly manner, Zhejiang Province (and particularly Fuyang City) has embarked on a plan to apply green logistics in the operations of its logistics industry. However, the province is confronted with barriers that hinder them in applying such techniques and practices and in realizing their expectations of cost savings and low carbon footprint operations. Such barriers need to be addressed in an integrated manner to help pave the way for a rather very promising development in the province's logistic

---

from the freight transport activities. The approximate breakdown of CO<sub>2</sub> emissions from freight transport in the province is as follows: (a) 42.6% from large-sized trucks @ 31.9 lits/100 kms (average 63,451 kms/truck/yr); (b) 10.9% from medium-sized trucks @ 25.5 lits/100 kms (average 64,953 kms/truck/yr); and, (c) 46.5% from small-sized trucks @ 13.5 lits/100 kms (average 40,947 kms/truck/yr). Fuel is automotive diesel oil (2.67 kgs CO<sub>2</sub>/lit). Total truck population in Zhejiang Province as of 2012 is 794,381 comprising of 149,522 large-sized trucks; 46,836 medium-sized trucks; and, 598,023 small-sized trucks.

<sup>23</sup> Estimated from anticipated EC&EE and green logistics projects to be implemented by small to medium size LSPs (max 20) that are selected for the pilot financial incentive scheme for the provision of grant funding for the cost of pre-investment requirements of the projects.

industry. The potential for a wider application of green logistics is quite high, considering what seems to be an ever growing domestic and foreign trade.

65. The activities that will be carried out under the GLIZP project are barrier removal in nature. To ensure avoidance of the recurrence of the barriers and the continuance of the enabling environments that will be created and/or facilitated by the project, appropriate sustainable follow-up actions will be planned as part of the project activities. Such action plan will be implemented after the project as per the institutional arrangements that will be developed for such purpose. In addition, the removal of barriers and the effective and seamless implementation of the procedures and regulatory/policy and institutional frameworks that will be established will surely influence the scaling-up of the project, e.g., to carry out the same interventions in other provinces particularly those with a large logistics industry. The “soft” technical assistance measures (i.e., policy/regulations, capacity building and promotions) and the equipment investment in the demonstration of green logistics techniques that will be implemented under the GLIZP project are considered by the project proponents and partner logistics service providers (LSPs) as the necessary incremental elements needed by the Zhejiang logistics industry to supplement their baseline activities in improving the operation and management of the industry. These incremental activities are intended to mainstream energy efficiency in the materials management and physical distribution operations in the province’s logistics industry; and are on top of other related logistics operations that will ultimately result to better efficiency, reduced operating costs, and optimal logistics costs. The major LSPs that will participate in the project have made their decisions to upgrade their outdated facilities and freight transport systems to enable them to operate in a more energy-efficient and environment friendly manner. Their participation in the project is in terms of their own share in investments and technical support in improving their facilities and freight transport systems. The Zhejiang Provincial and Fuyang City governments are putting up their counterpart financial support to the project.
66. GLIZP has been designed with in a way that replicability of interventions initiated, established and demonstrated is possible and feasible. Such replications will ensure that the impacts of the project over the long term in terms of direct and indirect benefits to China are realized. Within the project duration, the activities and outputs will be closely monitored and evaluated for best practices and lessons learned so that certain desirable and replicable modes and technical standards and policy guidelines can be repeated across the logistics industry of the province and across other provinces and cities. The Zhejiang Provincial Government as the lead IP will maintain close contact with key central and provincial government agencies for the dissemination of the demonstration results and closely coordinate and guide the replication of the demonstrations. The strategy of assigning and monitoring closely the execution of key implementation roles to the relevant departments of the central and provincial governments (including the Ministry of Transport) will be employed. A follow-up plan for the replication of the application of the piloted green logistics policies in Zhejiang Province in other provinces and cities will be developed and approved within the activities of the GLIZP Project.
67. The design, development and implementation of the demos on energy efficient physical distribution (freight transport) systems in the logistics industry shall take into account the current development plans, policies and standards for freight transportation of China’s Ministry of Transport (MoT). The developed schemes shall be in line with the MOT’s next Five Year Plan (13<sup>th</sup> FYP), which, among others, considers the effective results of the application of the business models that were applied in previous sustainable transport projects in country such as the now completed WB/GEF Guangdong Green Freight Project (GGFP). In addition, the EE freight transport schemes that will be showcased shall be based on the objectives of the 13<sup>th</sup> FYP on “green development” (*support low carbon transportation system*), and “innovative development” (*establish economic belts*

*along the coastline, rivers and major transportation lines*); including the application of verified EE technologies on freight vehicles, integrated transport system; and optimization of transportation infrastructure planning and design. The last 3 are also among the interventions that were included in the WB/GEF GGFP. These are also considered in the GLIZP Project applying the experience and best practices from other sustainable transport initiatives, as well as showcasing the cost-effective application of energy efficient water and water/road freight planning and management schemes; and, consolidated road freight transport system operated and managed using advanced logistics tracking and monitoring technologies. While the business model that the GGFP has promoted may have worked effectively in road-based freight transport systems in places like Guangdong, the GLIZP project will also make use of specific and feasible aspects of such model in Zhejiang Province in both road and combination road-water freight transport systems. Considering that the GEF funding for GLIZP is relatively lower than that for the GGFP, the project has been designed to focus on cost-effectively removing the identified barriers that are hindering the logistics industry of Zhejiang Province to sustainably implement business models that will make the operations (both materials management and physical distribution) of the various LSPs more energy efficient, environment friendly (i.e., green), and competitive.

68. The GLIZP project team will interact and consult with the implementers of both completed and ongoing GEF-funded freight transport projects in the implementation of the technical and information barrier removal activities of the project. It will also continue to work in cooperation with the MOT and the transport department in the Zhejiang Provincial Government to ensure that best practices from projects such as the completed GGFP and other ongoing freight transport projects in the country are cost-effectively applied. This is also to ensure that design, development and implementation of the demos on energy efficient physical distribution (freight transport) schemes in the logistics industry takes into account MOT's current development plans, policies and standards for road and water transport. The schemes shall be made in line with the MOT's integrated transport system; promotion of various modes of transportation; and optimization of transportation infrastructure planning and design.

#### 4. PROJECT RESULTS FRAMEWORK:

<b>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:</b> <i>Low carbon and other environmentally sustainable strategies and technologies are adapted widely to meet China's commitments and compliance with Multilateral Environmental Agreements</i>
<b>Country Programme Outcome Indicators:</b> <i>Cumulative CO<sub>2</sub> emissions reductions from 2011-2015; Baseline: 2011 Zero; Target: 2015 under UNDP supported project at 70 million tons CO<sub>2</sub> reduction</i>
<b>Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one):</b> <i>Mainstreaming environment and energy</i>
<b>Applicable GEF Strategic Objective and Program:</b> <i>Promote market transformation for energy efficiency in industry and the building sector</i>
<b>Applicable GEF Expected Outcomes:</b> <i>Reduction of GHG emissions from the widespread application of Green logistics in the Zhejiang Province</i>
<b>Applicable GEF Outcome Indicators:</b> <i>Cumulative CO<sub>2</sub> emissions reduction by end-of-project (EOP), kt</i>

Project Strategy	Objectively Verifiable Indicators			Means of Gauging Success	Critical Assumptions
	Indicator	Baseline	Target		
<b>GOAL: Reduction of greenhouse gas (GHG) emissions through the widespread application of Green Logistics in the Zhejiang Province</b>	• Cumulative CO <sub>2</sub> emissions reduction by end-of-project (EOP), <i>ktons</i>	• 0	• 1,749.27	• M&E reports produced by the project management office based on activity and outputs reports submitted by relevant provincial government agencies on the energy consumption, savings and equivalent CO <sub>2</sub> emissions reduction in the Zhejiang province's logistics industry	• Continued commitment, support and active participation of Government of China through Zhejiang Provincial Development and Reform Commission (ZPRDC), enterprises and the public
	• Reduction in the annual growth rate of GHG emissions by EOP, %	• 0	• 3.0 %		
<b>OBJECTIVE: Widespread application of energy efficient green logistics<sup>24</sup> techniques and practices</b>	• Cumulative fuel savings due to project intervention by EOP, <i>ktoe</i>	• 0	• 296.24	• Reports on energy used and saved	• High level of commitment of stakeholders (including the necessary co-financing from government agencies)
	• No. of new jobs created with	• 0	• At least	• Consolidated report from	

<sup>24</sup> Supply chain management practices and strategies that reduce the environmental and energy footprint of freight distribution, and focuses on material handling, waste management, packaging and physical distribution (i.e., freight transport).

Project Strategy	Objectively Verifiable Indicators			Means of Gauging Success	Critical Assumptions
	Indicator	Baseline	Target		
in the logistics industry in Zhejiang Province	the application of green logistics techniques in the logistics industry in Zhejiang Province by EOP		1,000.	annual reports of ZPDRC, the Zhejiang Provincial Government and local logistics industry association,	and LSPs) in the implementation of project activities and monitoring systems
<b>COMPONENT 1: POLICY AND REGULATORY SUPPORT FOR GREEN LOGISTICS</b>					
Outcome 1: Established and enforced policy and regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province	<ul style="list-style-type: none"> <li>No. of new provincial government legislation and policies that provide an enabling environment to support green logistics by EOP</li> </ul>	<ul style="list-style-type: none"> <li>0</li> </ul>	<ul style="list-style-type: none"> <li>At least 3</li> </ul>	<ul style="list-style-type: none"> <li>Documentation of policies and regulations</li> <li>Approved and enforced policies and regulations in Zhejiang Province</li> </ul>	<ul style="list-style-type: none"> <li>Local Government and private logistics industry sector fully support and commit to the program and passage of relevant regulations and their implementation.</li> </ul>
<b>COMPONENT 2: GREEN LOGISTICS SYSTEMS DEMONSTRATION</b>					
Outcome 2: Improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang Province	<ul style="list-style-type: none"> <li>% empty load rate of freight transport in Zhejiang Province by EOP</li> <li>Annual fuel savings due to project intervention by EOP, <i>ktoe/yr</i> <ul style="list-style-type: none"> <li>Materials management, <i>ktoe/yr</i></li> <li>Physical distribution, <i>ktoe/yr</i></li> </ul> </li> <li>Annual GHG emission reduction by EOP, <i>ktons CO<sub>2</sub></i> <ul style="list-style-type: none"> <li>Materials management, <i>ktons CO<sub>2</sub></i></li> <li>Physical distribution, <i>ktons CO<sub>2</sub></i></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>50%</li> <li>0</li> <li>0</li> <li>0</li> <li>0</li> <li>0</li> <li>0</li> </ul>	<ul style="list-style-type: none"> <li>10%</li> <li>80.06</li> <li>30.06</li> <li>50.00</li> <li>471.36</li> <li>317.15</li> <li>154.21</li> </ul>	<ul style="list-style-type: none"> <li>Report on approved impact measurement methodology</li> <li>Statistics on empty load rate, energy consumption, logistics value, GHG emission to be monitored by the project</li> <li>Evaluation reports on energy efficiency performance in materials management and physical distribution</li> </ul>	<ul style="list-style-type: none"> <li>Government and provincial logistics industry provide support in gathering and providing necessary data on measuring and monitoring energy and environmental impacts</li> <li>Local Government and private logistics industry sector fully support and commit to the replication of successful results of the project</li> </ul>
<b>COMPONENT 3: CAPACITY BUILDING AND PROMOTION OF GREEN LOGISTICS SYSTEMS</b>					
Outcome 3: Increased application and utilization of energy efficient materials	<ul style="list-style-type: none"> <li>No. of logistics companies actively employing green logistics technologies and</li> </ul>	<ul style="list-style-type: none"> <li>0</li> </ul>	<ul style="list-style-type: none"> <li>100</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring reports by the project management office in cooperation with</li> </ul>	<ul style="list-style-type: none"> <li>Government and provincial logistics industry appreciate the value of green logistics</li> </ul>

Project Strategy	Objectively Verifiable Indicators			Means of Gauging Success	Critical Assumptions
	Indicator	Baseline	Target		
management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province <sup>25</sup>	techniques in their materials management operations by EOP • No. of logistics companies actively employing green logistic technologies and techniques in their physical distribution operations by EOP	• 0	• At least 50	relevant provincial government agencies and logistics companies	concept and are willing to gain knowledge and skills in establishing and operating green logistics systems thereby promoting unified interests and effective organization and coordination in stakeholder participation

<sup>25</sup> GLIZP will focus on Zhejiang Province. But the green logistic system in Zhejiang will certainly link with the logistic systems in other adjacent provinces and cities. One of the most important outcomes of this project is providing demonstrations in Component 2 which could be applied in other provinces later as part of the Sustainability Plan in Component 3.

## TOTAL BUDGET AND WORK PLAN

<b>Award ID:</b>	00087745	<b>Project ID(s):</b>	00094666
<b>Award Title:</b>	Greening the Logistics Industry in Zhejiang Province (GLIZP) Project		
<b>Business Unit:</b>	CHN10		
<b>Project Title:</b>	Greening the Logistics Industry in Zhejiang Province (GLIZP) Project		
<b>PIMS no.</b>	5238		
<b>Implementing Partner (Executing Agency)</b>	Zhejiang Provincial Development and Reform Commission		

GEF Outcome / Atlas Activity	Responsible Party / Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
<b>Component 1: Policy and Regulatory Support for Green Logistics</b>											
<b>Outcome 1: Established and enforced policy and regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province</b>					<b>Sub-total Outcome 1</b>	<b>130,000</b>	<b>140,000</b>	<b>250,000</b>	<b>110,000</b>	<b>590,000</b>	
Output 1.1: Completed analysis on: (1) the energy use trends and GHG emissions from the operation of the logistics industry (materials management and physical distribution) in Zhejiang Province as basis for formulating policies and (2) green logistics systems developed and implemented in other countries and their utilization performances	ZPDRC	62000	GEF	71200	International Consultants	20,000	0	10,000	0	30,000	1
				71300	Local Consultants	20,000	0	10,000	0	30,000	2
				72100	Contractual Services - Companies	20,000	0	0	0	20,000	3
				74200	Audio Visual & Print Prod Costs	10,000	0	0	0	10,000	4
					<b>Sub-total 1.1</b>	<b>70,000</b>	<b>0</b>	<b>20,000</b>	<b>0</b>	<b>90,000</b>	
Output 1.2: Formulated, recommended and implemented standards, policies, incentive schemes and implementing rules and regulations on the promotion and adoption of green logistics in Zhejiang Province	ZPDRC	62000	GEF	71200	International Consultants	0	30,000	30,000	0	60,000	5
				71300	Local Consultants	0	20,000	20,000	0	40,000	6
				71400	Contractual Services - Individual	0	20,000	20,000	0	40,000	7
				72100	Contractual Services - Companies		130,000	0	0	130,000	8
				74200	Audio Visual & Print Prod Costs	0	5,000	5,000	0	10,000	9
					<b>Sub-total 1.2</b>		<b>205,000</b>	<b>75,000</b>	<b>0</b>	<b>280,000</b>	
Output 1.3: Approved guides and reference documents for the application of energy conserving and energy efficient practices in the logistics industry	ZPDRC	62000	GEF	71300	Local Consultants	0	0	20,000	0	20,000	10
				71400	Contractual Services - Individual	0	0	20,000	0	20,000	11
				74200	Audio Visual & Print Prod Costs	0	0	20,000	0	20,000	12



GEF Outcome / Atlas Activity	Responsible Party / Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
				75700	Training, Workshops and Conference	0	0	50,000	0	50,000	13
					Sub-total 1.3	0	0	110,000	0	110,000	
Output 1.4: Approved follow-up plan to promote and implement the replication of the successful applications of the piloted green logistics policies in Zhejiang Province to other provinces and cities	ZPDRC	62000	GEF	71400	Contractual Services - Individual	0	0	0	20,000	20,000	14
				75700	Training, Workshops and Conference	0	0	0	50,000	50,000	15
				74200	Audio Visual & Print Prod Costs	0	0	0	40,000	40,000	16
					Sub-total 1.4	0	0	0	110,000	110,000	
Component 2: Green Logistics Systems Demonstration											
Outcome 2: Improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang Province					Sub-total Outcome 2	545,000	693,000	333,500	373,500	1,945,000	
Output 2.1: Completed and approved designs and plans of demonstrations of green logistics techniques in materials management in the logistics industry in Zhejiang Province	ZPDRC	62000	GEF	71200	International Consultants	25,000	35,000	0	0	60,000	17
				71300	Local Consultants	35,000	45,000	30,000	30,000	140,000	18
				75700	Training, Workshops and Conference	30,000	14,000	9,000	9,000	62,000	19
					Sub-total 2.1	90,000	94,000	39,000	39,000	262,000	
Output 2.2: Completed and approved designs and plans of demonstrations of green logistics techniques in physical distribution in the logistics industry in Zhejiang Province	ZPDRC	62000	GEF	71200	International Consultants	20,000	30,000	0	0	50,000	20
				71300	Local Consultants	50,000	40,000	25,000	25,000	140,000	21
				75700	Training, Workshops and Conference	60,000	24,000	13,000	13,000	110,000	22
					Sub-total 2.2	130,000	94,000	38,000	38,000	300,000	
Output 2.3: Installed and fully operational green logistics-based centralized logistic facility in Zhejiang Province	ZPDRC	62000	GEF	71200	International Consultants	30,000	25,000	0	0	55,000	23
				71300	Local Consultants	25,000	25,000	0	0	50,000	24
				72200	Equipment & Furniture	100,000	200,000	50,000	50,000	400,000	25
					Sub-total 2.3	155,000	250,000	50,000	50,000	505,000	
Output 2.4: Installed and fully operational green logistics-based physical distribution system demonstration project in Zhejiang Province	ZPDRC	62000	GEF	71200	International Consultants	30,000	35,000	0	0	65,000	26
				71300	Local Consultants	40,000	20,000	0	0	60,000	27

GEF Outcome / Atlas Activity	Responsible Party / Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
				72200	Equipment & Furniture	100,000	200,000	50,000	50,000	400,000	28
					Sub-total 2.4	170,000	255,000	50,000	50,000	525,000	
Output 2.5: Evaluated and documented the energy performance and environmental impacts of each demo project in materials management and physical distribution	ZPDRC	62000	GEF	71300	Local Consultants	0	0	40,000	40,000	80,000	29
				75700	Training, Workshops and Conference	0	0	37,250	48,250	85,500	30
					Sub-total 2.5	0	0	77,250	88,250	165,500	
Output 2.6: Developed action plan for sustainability of the green logistics system demonstration program	ZPDRC	62000	GEF	71300	Local Consultants	0	0	50,000	40,000	90,000	31
				75700	Training, Workshops and Conference	0	0	29,250	68,250	97,500	32
					Sub-total 2.6	0	0	79,250	108,250	187,500	
Component 3: Capacity Building and Promotion of Green Logistics Systems											
Outcome 3. Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province					Sub-total Outcome 3	26,000	34,000	105,000	74,950	239,950	
Output 3.1: Completed capacity development and promotional program in the area of green logistics in Zhejiang Province	ZPDRC	62000	GEF	71200	International Consultants	15,000	13,000	0	0	28,000	33
				71300	Local Consultants	10,000	5,000	5,000		20,000	34
				75700	Training, Workshops and Conference	0	0	10,000	5,000	15,000	35
				72400	Communication& Audio Visual Equipment	1,000	1,000	1,000	1,000	4,000	36
				74200	Audio Visual & Print Prod Costs	0	1,000	500	500	2,000	37
					Sub-total 3.1	26,000	20,000	16,500	6,500	69,000	
Output 3.2: Completed green logistics training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang Province (e.g., concepts, practices, methodologies)	ZPDRC	62000	GEF	71300	Local Consultants	0	5,000	10,000	5,000	20,000	38
				75700	Training, Workshops and Conference	0	0	10,000	10,000	20,000	39
				72400	Communication& Audio Visual Equipment	0	1,000	1,000	1,000	3,000	40
				74200	Audio Visual & Print Prod Costs	0	1,000	5,000	1,000	7,000	41
					Sub-total 3.2	0	7,000	26,000	17,000	50,000	

GEF Outcome / Atlas Activity	Responsible Party / Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
Output 3.3 Published and disseminated technical guidance documents (developed in Output 1.3 ) including web-based tools on green logistics system	ZPDRC	62000	GEF	71300	Local Consult.-Short Term-Technical	0	0	5,000	3,000	8,000	42
				75700	Training, Workshops and Conference	0	0	5,000	5,000	10,000	43
				72400	Communication& Audio Visual Equipment	0	0	500	500	1,000	44
				74200	Audio Visual & Print Prod Costs	0	0	5,000	1,000	6,000	45
					<i>Sub-total 3.3</i>	0	0	15,500	9,500	25,000	
Output 3.4: Conducted promotional workshops, exhibits and/or activities to disseminate documents (from Output 2.3) towards widespread awareness and knowledge in green logistics systems and their benefits in Zhejiang Province and sharing information to other provinces and cities	ZPDRC	62000	GEF	71300	Local Consultants	0	5,000	5,000	-	10,000	46
				75700	Training, Workshops and Conference	0	0	5,000	5,000	10,000	47
				71400	Contractual Services - Individual	0	0	5,000	5,950	10,950	48
				71600	Travel	0	0	5,000	5,000	10,000	49
				72400	Communication& Audio Visual Equipment	0	1,000	1,000	1,000	3,000	50
				74200	Audio Visual & Print Prod Costs	0	1,000	1,000	1,000	3,000	51
					<i>Sub-total 3.4</i>	0	7,000	22,000	17,950	46,950	
Output 3.5: Monitored and evaluated capacity building and promotion of green logistics systems and ensured that technical assistance provided to logistics companies for the capacity building and promotion of green logistics systems	ZPDRC	62000	GEF	71300	Local Consultants	0	0	8,000	8,000	16,000	52
				75700	Training, Workshops and Conference	0	0	5,000	5,000	10,000	53
				74500	Miscellaneous Expenses	0	0	1,000	1,000	2,000	54
					<i>Sub-total 3.5</i>	0	0	14,000	14,000	28,000	
Output 3.6: Designed, endorsed and implemented energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province	ZPDRC	62000	GEF	71300	Local Consultants	0	0	6,000	5,000	11,000	55
				75700	Training, Workshops and Conference	0	0	4,000	4,000	8,000	56
				72400	Communication& Audio Visual Equipment	0	0	1,000	1,000	2,000	57
					<i>Sub-total 3.6</i>	0	0	11,000	10,000	21,000	
<b>Sub-total all Components</b>						<b>701,000</b>	<b>867,000</b>	<b>648,500</b>	<b>558,450</b>	<b>2,774,950</b>	

GEF Outcome / Atlas Activity	Responsible Party / Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
Project Management Cost	ZPDRC	62000	GEF		Sub-total Project Management Cost	19,483	48,000	18,000	53,267	138,750	
				71200	International Consultants	0	30,000	0	30,000	60,000	58
				71300	Local Consultants	10,000	10,000	10,000	10,000	40,000	59
				71600	Travel	2,500	2,500	2,500	2,500	10,000	60
				74100	Professional Services	3,000	3,000	3,000	3,000	12,000	61
				74500	Miscellaneous	1,000	1,000	1,000	1,000	4,000	62
				75700	Meetings	1,000	1,000	1,000	1,000	4,000	63
				74200	Audio Visual & Print Prod Costs	1,983	500	500	500	3,483	64
				74500	UNDP Cost Recovery charges - DPC	0	0	0	5,267	5,267	65
TOTAL PROJECT COST						720,483	915,000	666,500	611,717	2,913,700	

## Budget Notes

Outcome 1	Explanations
1	IC Rate = US\$ 600/day; 36 days (total); Fare = US\$ 400/IC; DSA = US\$ 300 for 15 days (total); contingency of US\$ 3,500 – for analysis of policy status and innovative development in enhancing energy efficiency and environmental improvement in the logistics industry in China and other countries and recommendations on policies and regulations relevant to the Zhejiang situation.
2	LC Rate = US\$ 200/day; 42 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 15 days; contingency of US\$ 3,600 – for local consultant counterparts for national and Zhejiang Province survey on existing policies and guidelines and necessary data and information requirements for the policy studies, analysis and recommendations.
3	Contractual Services for individual technical assistance for data gathering, policy studies and surveys in coordination with the International and local consultants.
4	US \$ 10,000 lump sum for 4 months duration for audio visual productions for related project outputs and promotional activities resulting from the policy review in the logistics industry in China in general and Zhejiang Province in particular
5	IC Rate = US\$ 600/day; 36 days/IC for 2 ICs; Fare = US\$ 400/IC; DSA = US\$ 300 for 20 days/IC; contingency of US\$ 4,000 for 2 ICs - for the formulation and recommendation of standards and implementing rules and regulations based on the endorsed policies on the promotion and practice of green logistics in Zhejiang Province.
6	LC Rate = US\$ 200/day; 55 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 25 days/LC; and contingency of US\$ 2,400 for 2 LCs – for local consultant counterpart for analysis and recommendation regarding local and national standards, policies and regulations in logistics industry development in transforming LSPs into green logistics techniques in Zhejiang Province, one (1) each for Materials management, Road Transport and Combined Road-Waterway.
7	Estimated contract amount of US\$40,000 for 2 months total - for the necessary data and information gathering as required by the local and international consultants regarding national standards policies and regulations on logistics industry in China and the Zhejiang Province.
8	US\$ 130,000 seed fund the pilot financial incentives scheme for funding the cost of pre-investment requirements for the design and development of green logistics projects of small to medium size LSPs. The pilot scheme is for selected 20 LSPs @ US\$ 6,000/LSP. This amount includes US\$ 10,000 for the design of the pilot scheme and other related costs for the administration of the fund.
9	Estimated US\$ 10,000 – for audio visual production for related project outputs and promotional activities regarding standards and regulations recommended.
10	LC Rate = US\$ 200/day; 18 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 8 days/LC; and contingency of US\$ 1,100 for 3 LCs – for leading the adoption and approval of the guides and reference documents resulting from Outputs 1.1 and 1.2 recommendations by the relevant government authorities in consultation with the private sector and government enterprises, one (1) each for Materials management, Road Transport and Combined Road-Waterway.
11	Estimated US\$ 20,000 - for contractual services for the specific tasks as maybe required in formulating the guides and reference documents to support the requirements of the local consultant in Note 9.
12	Estimated US\$ 20,000 – for audio-visual and printing requirements for the dissemination of the approved guides and reference documents for green logistics promotion in the Zhejiang Province.
13	Estimated US\$ 50,000 for training, workshops and conference necessary for capacity building of key participants for the activities in producing Output 1.2 and dissemination of results including cost of 12 preparatory and coordination meetings at 10 persons/meeting, 3 training of key participants at 25 persons/training in formulating standards, policies and rules for the three logistics areas: (a) materials management, (b) road transport and (c) combined road and waterways transport and the cost of 3 workshops/conferences at 75 participants/conference in disseminating and getting feedback and endorsements of key outputs and recommendations for the three logistics areas.
14	Estimated US\$ 20,000 for 2 months contractual services (Individual) to formulate the follow-up plan and guiding the kick-off activities with relevant government authorities in promoting and implementing the replication program of green logistics of successful green logistics application in other cities.
15	Estimated US\$ 50,000 - for training and expert consultation regarding the development of a follow-up plan for green logistics replication and launching of results in a conference –workshop including cost of IC team leader and LC counterpart engagement, preparatory and stakeholder consultation meetings and launching conference-workshop
16	Estimated US\$ 40,000 for audio-visual and printing requirements for the dissemination of the approved follow-up plan and initiating activities in other cities in the Zhejiang Province.
Outcome 2	Explanations
17	IC Rate = US\$ 600/day; 36 days/IC for 2 ICs; Fare = US\$ 400/IC; DSA = US\$ 300 for 20 days/IC; contingency of US\$ 4,000 for 2 ICs - for providing expert advice in the finalization of the designs and in initiating the required demonstration of the green logistics techniques in materials management
18	LC Rate = US\$ 200/day; 54 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 21 days/LC; and

	contingency of US\$ 800 for 8 LCs – for local consultant support in the provision of local data and information in materials management practices
19	Estimated US\$ 62,000 – for training and capacity building for the agencies and relevant employees involved in materials management in green logistics demonstration which will involve preparatory meetings at US\$ 8,600, stakeholder consultations at US\$ 12,600, training of key project participants at US\$ 20,100 and conference and exhibition at US\$ 20,700.
20	IC Rate = US\$ 600/day; 30 days/IC for 2 ICs; Fare = US\$ 400/IC; DSA = US\$ 300 for 20 days/IC; contingency of US\$ 1,200 for 2 ICs - for providing expert advice in the finalization of the designs and in initiating the required demonstration of the green logistics techniques in physical distribution
21	LC Rate = US\$ 200/day; 58 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 24 days/LC; and contingency of US\$ 2,200 for 8 LCs – for local consultant support in the provision of local data and information in physical distribution practices
22	Estimated US\$ 110,000 total – for training and capacity building for the agencies and relevant employees involved in physical distribution green logistics demonstration which will involve preparatory meetings at US\$ 10,000, stakeholder consultations at US\$ 22,400, training of key project participants at US\$ 50,600 and conference and exhibition at US\$ 27,300.
23	IC Rate = US\$ 600/day; 32 days/IC for 2 ICs; Fare = US\$ 400/IC; DSA = US\$ 300 for 20 days/IC; contingency of US\$ 3,800 for 2 ICs - for providing expert advice in the installation and operationalization of the green logistics based centralized logistics facility
24	LC Rate = US\$ 200/day; 38 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 26 days/LC; and contingency of US\$ 2,900 for 3 LCs – for local consultant support and necessary studies in the coordination with government authorities and participating companies for the installation and operationalization of the green logistics based centralized logistics facility
25	Total of US\$ 400,000 for purchasing of necessary software and hardware which are key to establish a green logistics-based centralized logistic facility in Zhejiang Province including cost of installing and operating the system
26	IC Rate = US\$ 600/day; 40 days/IC for 2 ICs; Fare = US\$ 400/IC; DSA = US\$ 300 for 25 days/IC; contingency of US\$ 1,200 for 2 ICs - for providing expert advice in the installation and operationalization of the green logistics based physical distribution system demo project
27	LC Rate = US\$ 200/day; 50 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 30 days/LC; and contingency of US\$ 2,100 for 3 LCs – for local consultant support and necessary studies in the coordination with government authorities and participating companies for the installation and operationalization of the green logistics based physical distribution system demo project
28	Total of US\$ 400,000 – for purchasing necessary software and hardware which are key to establish green logistics-based physical distribution system demonstration project in Zhejiang Province including cost of installing and operating the system
29	LC Rate = US\$ 200/day; 50 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 30 days/LC; and contingency of US\$ 2,800 for 4 LCs – for local consultants to conduct evaluation and documentation of the performance of the demonstration facilities in materials management and physical demonstration facilities regarding their energy efficiency and environmental impacts
30	Total of US\$ 85,500 – for development of requisite training manuals and materials and conduct of training workshops and conferences to disseminate the results of the performance evaluation of the materials management and physical distribution demonstration and document the lessons learned and best practices which will involve preparatory meetings at US\$ 8,100, stakeholder consultations at US\$ 16,200, training of key project participants at US\$ 33,800 and conference and exhibition at US\$ 27,400.
31	LC Rate = US\$ 200/day; 60 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 30 days/LC; and contingency of US\$ 4,800 for 4 LCs – for local consultant for providing technical assistance to the ZPDRG in developing the action plan for sustainability of the green logistics system demonstration programs and initiating with the relevant authorities and companies the necessary coordination mechanisms and institutional requirements
32	Total of US\$ 97,500 – for conduct of training workshops and conferences to facilitate stakeholder consultations and dissemination of relevant project outputs in coordination with relevant government and private companies and enterprises which will involve preparatory meetings at US\$ 7,000, stakeholder consultations at US\$ 19,900, training of key project participants at US\$ 39,000 and conference and exhibition at US\$ 31,600.
<b>Component 3</b>	<b>Explanations</b>
33	IC Rate = US\$ 600/day; 18 days/IC for 2 ICs; Fare = US\$ 400/IC; DSA = US\$ 300 for 8 days/IC; contingency of US\$ 800 for 2 ICs - for providing technical assistance and expert advice in conducting capacity building needs analysis and developing and facilitating the approval of the capacity building plan and communication/promotion strategy for green logistics development in Zhejiang Province
34	LC Rate = US\$ 200/day; 15 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 5 days/LC; and contingency of US\$ 800 for 4 LCs – for local consultant support for conducting capacity building needs analysis and developing and facilitating the approval of the capacity building program and communication/promotion strategy
35	Total of US\$ 15,000 – for development of requisite training manuals and materials and conduct of



	trainers training workshops and stakeholder consultation conferences for validating capacity building program for relevant government agencies and private companies in green logistics in Zhejiang Province which will involve training of key project participants at US\$ 4,400 and conference and exhibition at US\$ 10,600.
36	Estimated US\$ 4,000 – for communication and audio equipment for development of capacity building program and promotion of green logistics in Zhejiang province
37	Estimated US\$ 2,000 – for audio visual and printing costs for capacity building program development and promotion of green logistics in Zhejiang Province
38	LC Rate = US\$ 200/day; 26 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 10 days/LC; and contingency of US\$ 3,000 for 2 LCs – for local consultant support and technical assistance for developing the requisite training manuals and materials and for implementing the approved capacity building program and communication/promotion plan for Zhejiang Province green logistics program
39	Total of US\$ 20,000 – for conduct of training workshops and facilitating stakeholder consultation conferences for capacity building of relevant government agencies and private companies and their responsible personnel under the capacity building and communication plan for green logistics in Zhejiang Province which will involve preparatory meetings at US\$ 7,000, and training of key project participants at US\$ 13,000.
40	Estimated US\$ 3,000 – for communication and audio equipment for the implementation of the capacity building program and promotion plan for green logistics in Zhejiang province
41	Estimated US\$ 7,000 – for audio visual and printing costs for implementing the capacity building program and promotion of green logistics in Zhejiang Province.
42	LC Rate = US\$ 200/day; 18 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 10 days/LC; and contingency of US\$ 1,100 for 1 LC – for providing technical assistance in documenting, publishing and disseminating technical guidance documents including web-based tools on green logistics system and developing the requisite training manuals and materials
43	Total of US\$ 10,000 – for conduct of training workshops and facilitating stakeholder consultation conferences on technical guidance documents including web-based tools on green logistics system
44	Estimated US\$ 1,000 – for communication and audio equipment for the implementation of the capacity building in technical guidance documents including web-based tools on green logistics system
45	Estimated US\$ 6,000 – for audio visual and printing costs for implementing the technical guidance documents including web-based tools on green logistics system
46	LC Rate = US\$ 200/day; 14 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 6 days/LC; and contingency of US\$ 200 for 2 LCs – for providing technical advice and supervision in the developing the program and requisite training manuals and materials for and conduct of promotional workshops, exhibits and/or activities to disseminate green logistics demonstration program results and documents (from Output 2.3) in Zhejiang Province and sharing information to other provinces and cities
47	Total of US\$ 10,000 – for conduct of training workshops and facilitating stakeholder consultation conferences on demonstration program results which will involve preparatory meetings at US\$ 4,000, and conference/workshops and exhibits at US\$ 6,000
48	Estimated US\$ 10,950 – for contractual services in synthesis and documentation of lessons learned and best practices from proceedings of training, promotional workshops and exhibits and demonstration projects in combination with the sustainability plan for the promotion of green logistics.
49	Total of US\$ 10,000 – for travel expenses for the related activities, workshops and exhibits which will involve 10 person-trips, US\$ 200 person, 3 days/person and fare of US\$50/person and contingency of US\$ 2,500.
50	Estimated US\$ 3,000 – for communication and audio-visual equipment for enhancing promotional activities
51	Estimated US\$ 9,000 – for audio visual and printing production cost for the green logistics promotional materials
52	LC Rate = US\$ 200/day; 20 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 10 days/LC; and contingency of US\$ 1,400 for 2 LCs – for technical assistance in monitoring and evaluation of the capacity building and promotional activities and outputs in relation to expected outcomes and benefits to the green logistics program participating companies and other beneficiaries
53	Total of US\$ 10,000 – for seminar Workshops in the conduct of the monitoring and evaluation process and dissemination of results
54	Estimated total of US\$ 2,000 – for miscellaneous expenses for data collection supplies and preparation of proceedings
55	LC Rate = US\$ 200/day; 16 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 6 days/LC; and contingency of US\$ 400 for 2 LCs – for the design and implementation plan for the energy performance standards and rating system for LSPs
56	Total of US\$ 8,000 – for training and seminar workshops for the development and dissemination of energy performance standards and rating system in consultation with participating companies and government authorities
57	Estimated US\$ 2,000 – for communication and audio visual equipment supplies and maintenance



PMC	Project Management Cost - <b>The total of US\$ 138,750 is budgeted for management support services or equivalent to 5% of the total cost of all the three components</b>
58	IC Rate = US\$ 600/day; 18 days/IC for 2 ICs; Fare = US\$ 400/IC; DSA = US\$ 300 for 8 days/IC; contingency of US\$ 800 for 2 ICs - for project mid-term review and final review
59	LC Rate = US\$ 200/day; 34 days/LC; Fare = US\$ 300/LC; DSA = US\$ 300 for 18 days/LC; and contingency of US\$ 2,500 for 3 LCs – Local consultants for national counterpart support to the project mid-term review and final review
60	Total of US\$ 10,000 – for cost of local travel for related project management activities
61	Total of US\$ 12,000 –for professional services in project financial auditing at US\$ 3,000 per year.
62	Estimated US\$ 4,000 – for miscellaneous expenses for sundries and extraordinary costs in project management
63	Estimated total US\$ 4,000 – for allocations of US\$ 1,000 per year for meetings and workshops, e.g. PSC meetings
64	Estimated total US\$ 3,483 – for audio visual and printing production cost e.g. laptop, printer and document printing
65	Total of US\$ 5,267 – for agreed UNDP cost recovery charges for DPC

**Table 6: GLIZP Cost Sharing Matrix (US\$)**

Project Components	GEF Funding (US\$)	Co-financing (US\$)			Total Project Cost
		Industry	Government	Total Co-financing	
1: Policy and Regulatory Support for Green Logistics	590,000		860,000	860,000	1,450,000
2: Green Logistics Systems Demonstration	1,945,500	8,400,000	2,180,000	10,580,000	12,525,000
3: Capacity Building and Promotion of Green Logistics Systems	239,950		266,000	266,000	505,950
<i>Total All Components</i>	2,774,950	8,400,000	3,306,000	11,706,000	14,480,000
Project Management	138,750		174,000	174,000	312,750
<i>Grand Totals</i>	2,913,700	8,400,000	3,480,000	11,880,000	14,793,700
<i>UNDP</i>				250,000	250,000
<i>TOTALS</i>	2,913,700	8,400,000	3,480,000	12,130,000	15,043,700
<i>Percent Share in Total Project Cost, %</i>	19%	56%	23%	81%	100%

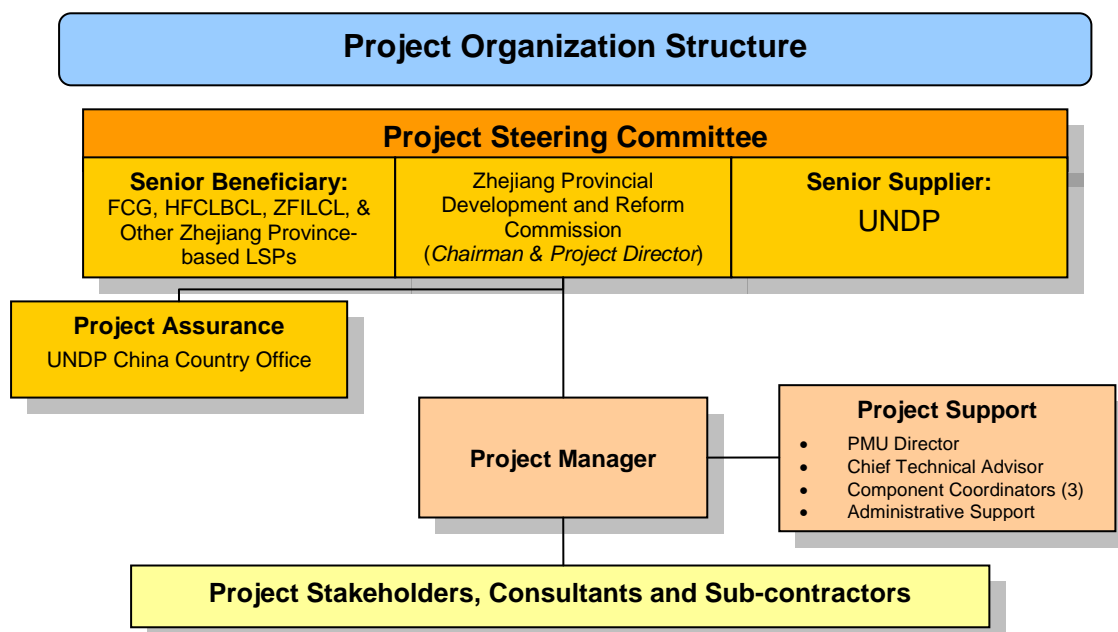
**Table 7: Sources of Co-Financing**

Source	Name of Source	Type of Support	Amount (US\$)
Local Government	Zhejiang Provincial Government	Cash	1,000,000
Local Government	Zhejiang Provincial Government	In-kind	300,000
Local Government	Fuyang City Government	Cash	2,000,000
Local Government	Fuyang City Government	In-kind	180,000
Sub-Total Government			3,480,000
Private Sector	Fuyang Hangzhou Transfar Logistics Base Co., Ltd.	Cash/Grant	210,000
		In-kind	3,640,000
Private Sector	Zhejiang Fuyang Port International Co. Ltd.	Cash/Grant	2,730,000
		In-kind	1,820,000
Sub-Total Private			8,400,000
GEF Implementing Agency	UNDP	Grant	250,000
Total Co-financing			12,130,000

## 5. MANAGEMENT ARRANGEMENTS

65. As practiced in all UNDP/GEF-supported projects, UNDP always endeavors to seek adaptive management approach in the implementation of projects. Based on the partnerships defined and firmed up during the project development, the management arrangements have always been anchored on co-operation and mutual sharing of benefits where accountability and responsibility for implementing the project and achieving the project outputs.

The GLIZP Project Organizational Structure is seen in **Figure 5** below:



**Figure 5: GLIZP Project Organizational Structure**

66. A Project Steering Committee (PSC) will be established and will be composed of the representatives of the UNDP-China, and the representatives of the participating government agencies: Zhejiang Provincial Development and Reform Commission (ZPDRC) as Implementing Partner, Fuyang City Government (FCG), Fuyang Hangzhou Transfar Road-Port Logistics Base Co., Ltd. (FHTLBCL), Zhejiang Fuyang Port International Co. Ltd. (ZFPICL) and the Director of the Project Management Unit (PMU). The National Project Director (NPD) and the National Project Manager (NPM) will come from the Executing Agency which is the ZPDRC.
67. The PSC will play the role of policy and decision making body for the project implementation. The PSC members will also be invited to participate in the annual project review meetings. The Chairperson of the PSC is the designated NPD. The NPM provides the management oversight to the whole project and assists the NPD in the operational and industry sectoral aspects of the project implementation. The PMU will be established to be responsible for day-to-day coordinating and implementing the activities of the project and carrying out the prescribed monitoring system. The PMU Director will serve as the Secretary of the PSC.
68. GLIZP will be implemented through a National Implementation Modality (NIM) on behalf of the Government of China through ZPDRC as the UNDP's Implementing Partner. The Implementing Partner will assume the overall responsibility of ensuring that all activities

are executed accordingly and as per the approved Project Document. The NPD will be responsible for the achievement of the project objectives through institutional coordination with the key stakeholder members of the PSC and overall alignment of the GLIZP Project with the relevant national EE programs of China. He/She takes overall responsibility for all projects' timely reporting, including the submission of Annual Work Plans (AWP), Annual Project Report/Project Implementation Review (APR/PIR) and financial reports to be prepared with the support of the PMU. He/She will ensure the delivery of the project outputs and the judicious use of the project resources. This will ensure that expected outputs are delivered using the most efficient and cost-effective implementation strategies and procedures. The NPM shall also see to it that the Executing Agency (ZPDRC) supports the project in the planning, coordination, secretariat, administration and financial management of the project in coordination with UNDP China Country Office.

69. The PSC will be responsible for the following: (a). Reviewing of annual progress reports for necessary guidance; (b) Reviewing and approving the annual work plans and budgets; (c) Providing guidance on the effectiveness of GLIZP project implementation, and its linkages to corporate UNDP policy decisions, and other UNDP initiatives; and, (d) Monitoring and evaluating the implementation of GLIZP towards the intended outputs, after two (2) years of project execution. As a minimum, the PSC will meet at least once a year, allowing for the stakeholders to review the progress with the project implementation and to agree on a coordinated annual project implementation strategy and plan. The first PSC meeting should be held within the first 12 months following the inception workshop.
70. UNDP-China, in close coordination with the UNDP-GEF Regional Technical Advisor for Climate Change in the Asia-Pacific Region will carry out the GEF oversight and ensure that expected project performance standards are met. It will be also responsible for monitoring and evaluation (M&E), including organizing project reviews, approving annual implementation work plans and budget revisions, monitoring progress, identifying problems, suggesting actions to improve project performance, facilitating timely delivery of project inputs, and provide linkages to other sub-regional, Asia-Pacific regional and global initiatives. All M&E functions will be carried out in line with standard UNDP and UNDP-GEF procedures. UNDP China will also provide country office support for all the activities of the project as coordinated with the Executing Agency.
71. A Project Management Unit (PMU) will be established and is responsible for the day-to-day management of all the project activities including those on capacity building, demonstration sub-projects and dissemination activities at the national level. The PMU will be managed by a Project Manager (NPM), who will be supported by the Chief Technical Advisor (CTA), administrative staff and at least three Coordinators for the three (3) Components. The CTA provides strategic technical support and advice to ensure that the project is implemented according to the agreements in the Project Document and the standards of UNDP and GEF in project implementation.
72. A Technical Advisory Committee (TAC) will be established with the main responsibility of providing the necessary expert advice in the implementation of technical aspects of the implementation of the various project components.
73. The GLIZP Project will be implemented for four (4) years. It is anticipated that the project will start within the second half of 2015 and will be completed by the second half of 2019.
74. The GLIZP Management Team will prepare its overall country 4-year work plan at the inception stage of the project based on the project activities that are described in this Project Document., specifying the level of activities that will be carried out for the year, the targets to be achieved, and the corresponding inputs (in terms of manpower and

budget). During the inception stage, the Executing Agency with assistance of the PMU will prepare its first year work plan and submit this to the UNDP China to be approved for the allocation of funds for the implementation initial year activities. Succeeding annual work plans, based on the results of the previous year and the planned activities for the current year, will be prepared and submitted for approval and budget allocations at the start of each year.

75. Also during the inception stage, the GLIZP Management Team will prepare its overall 4–year M&E plan based on the overall country work plan, and also based on the GLIZP Project Planning Matrix, GLIZP Annual Targets and GLIZP Project Monitoring Plan. The M&E plan will consist of success indicators (output and impact) with realistic targets and time lines, and backed up with clear means of verification, and assumptions. Each activity/task will be carried out and monitored in terms of the appropriate output indicators (for the activity deliverables) and the impact indicators (for the impacts). The targets will be reviewed each year and any necessary revision or adjustment of these, as well as the assumptions will be done on a continuous basis during the life of the project as part of adaptive management.
76. To accord proper acknowledgement to GEF for providing funding, a GEF logo will appear on all relevant publications and documents produced by the project, including among others, project hardware purchased with GEF funds. Any citation from any of the GLIZP Project publications and documents will also accord proper acknowledgment to GEF. The UNDP logo should be more prominent and separated from the GEF logo if possible, as UN visibility is important for security purposes.
77. Audit Clause - Audit will be conducted according to UNDP Financial Regulations and Rules and applicable Audit policies. The Government of China will provide the UNDP Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds expended on the project according to the established procedures set out in the appropriate UNDP programming and finance manuals. The audit will be conducted by the legally recognized auditor of the Government of China, or by a commercial auditor engaged by the Government.

## **6. MONITORING FRAMEWORK AND EVALUATION**

78. The project will be monitored through the following M& E activities. The M& E budget is provided in the table below.

### **Project start:**

79. A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and program advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.
80. The Inception Workshop should address a number of key issues including:
  - a) Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and

communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.

- b) Based on the project results framework and the relevant GEF Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- c) Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- e) Plan and schedule Project Board meetings. Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

81. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

#### **Quarterly:**

82. The following are monitoring and reporting activities that have to be carried out every quarter:

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc... The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

#### **Annually:**

83. Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

84. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR

- Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

#### **Periodic Monitoring through site visits:**

85. UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

#### **Mid-term of project cycle:**

86. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (insert date). The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

#### **End of Project:**

87. An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

88. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

89. During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

#### **Learning and knowledge sharing:**

90. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.



91. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.
92. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

### Communications and visibility requirements:

93. Full compliance is required with UNDP's Branding Guidelines. These can be accessed at <http://intra.undp.org/coa/branding.shtml>, and specific guidelines on UNDP logo use can be accessed at: <http://intra.undp.org/branding/useOfLogo.html>. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: [http://www.thegef.org/gef/GEF logo](http://www.thegef.org/gef/GEF%20logo). The UNDP logo can be accessed at <http://intra.undp.org/coa/branding.shtml>.
94. Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: [http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08 Branding the GEF%20final 0.pdf](http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08%20Branding%20the%20GEF%20final%200.pdf). Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.
95. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

### M& E Work Plan and Budget

**Table 8: Project M&E Plan and Budget**

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	<ul style="list-style-type: none"> <li>Project Manager</li> <li>UNDP CO, UNDP GEF</li> </ul>	Indicative cost: 10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	<ul style="list-style-type: none"> <li>UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.</li> </ul>	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on <i>output and implementation</i>	<ul style="list-style-type: none"> <li>Oversight by Project Manager</li> <li>Project team</li> </ul>	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	<ul style="list-style-type: none"> <li>Project manager and team</li> <li>UNDPCO</li> <li>UNDP RTA</li> <li>UNDP EEG</li> </ul>	None	Annually
Periodic status/	<ul style="list-style-type: none"> <li>Project manager and team</li> </ul>	None	Quarterly

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
progress reports			
Mid-term Evaluation	<ul style="list-style-type: none"> <li>Project manager and team</li> <li>UNDP CO</li> <li>UNDP RCU</li> <li>External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: 40,000	At the mid-point of project implementation.
Final Evaluation	<ul style="list-style-type: none"> <li>Project manager and team,</li> <li>UNDP CO</li> <li>UNDP RCU</li> <li>External Consultants (i.e. evaluation team)</li> </ul>	Indicative cost: 40,000	At least three months before the end of project implementation
Project Terminal Report	<ul style="list-style-type: none"> <li>Project manager and team</li> <li>UNDP CO</li> <li>local consultant</li> </ul>	0	At least three months before the end of the project
Audit	<ul style="list-style-type: none"> <li>UNDP CO</li> <li>Project manager and team</li> </ul>	Indicative cost per year: 3,000	Yearly
Visits to field sites	<ul style="list-style-type: none"> <li>UNDP CO</li> <li>UNDP RCU (as appropriate)</li> <li>Government representatives</li> </ul>	For GEF supported projects, paid from IA fees and operational budget	Yearly
<b>TOTAL Indicative COST</b> Excluding project team staff time and UNDP staff and travel expenses		US\$ 102,000	

## LEGAL CONTEXT

96. This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA [or other appropriate governing agreement] and all CPAP provisions apply to this document.
97. Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.
98. The Implementing Partner shall:
- Put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried; and,
  - Assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.
99. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.
100. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

## **7. ANNEXES**

**ANNEX I: RISK ANALYSIS**

**ANNEX II: AGREEMENTS**

**ANNEX III: DETAILS OF PROJECT DEMONSTRATIONS**

**ANNEX IV: GHG EMISSION REDUCTION ESTIMATES**

**ANNEX V: ANNUAL TARGETS**

**ANNEX VI: TERMS OF REFERENCE**

**ANNEX VII: SERVICE AGREEMENT BETWEEN UNDP AND IP**

**ANNEX VIII: UNDP-GEF SOCIAL & ENVIRONMENTAL SCREENING**

**SIGNATURE PAGE**

## Annex I: Risk Analysis.

### OFFLINE RISK LOG

<b>Project Title:</b> Greening the Logistics Industry in Zhejiang Province (GLIZP) Project	<b>Project ID:</b> <u>00094666</u>	<b>Date:</b>
---	------------------------------------	--------------

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
1	Low level of commitment of stakeholders (including government agencies and LSPs) in the implementation of project activities	2013-03-31	Political	P = 1 I = 4	Lead implementing partner (IP), the People's Government of Zhejiang Province, will make use of its existing working relationship with most of the provincial government and private sector enterprises in ensuring high level of interest and active participation in the project. With its influence and the strong support of the provincial government departments as well as with its previous international project implementation experience a variety of institutions, the provincial government is expected come up with an efficient coordination mechanism to ensure the				

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
					high quality of the project implementation.				
2	Difficulties in the replication of successful results of the project	2013-03-31	Technical & Financial	P = 1 I = 5	The lead IP will maintain close contact with key central and provincial government agencies for the dissemination of the demonstration results and closely coordinate and guide the replication of the demonstrations. The strategy of assigning and close monitoring of the execution of key implementation roles to the relevant departments of the central and provincial governments (including the Ministry of Transport) will be employed.				
3	Availability of co-financing is delayed and negatively affects the implementation of the project activities	2013-03-31	Financial	P = 1 I = 5	The IP will make sure that written commitments of the key co-financers of the project becomes available to ensure the financial plan of the project. Moreover, in-depth involvement of the co-financers (particularly those, whose projects, or components therein, will be subsumed into the				

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
					proposed project) in the design of the components of the project will ensure clearer understanding of the project and the necessity of their co-financing. The actual delivery of the committed co-financing will be regularly monitored by the IP				
4	Varying vested interests and objectives of logistics service providers as well as other stakeholders in the local and central governments may prevent the effective organization and coordination of their participation and support of the project	2013-03-31	Social	P = 1 I = 3	The lead IP will closely coordinate the project implementation with the project partners utilizing its rich experience implementing energy management projects with government offices such as NDRC and MOT. In addition, apart from establishing competent project team that will comprise of competent local and international experts in the field of green logistics, the IP will also make use of its current good working relationship with the local logistics industry.				

## **Annex II: Agreements.**

*Any additional agreements, such as cost sharing agreements, project cooperation agreements signed with NGOs<sup>26</sup> (where the NGO is designated as the “executing entity”, letters of financial commitments, GEF OFP letter, GEF PIFs and other templates for all project types) should be attached.*

*NOTE: The co-financing letter from the Finance Department of Zhejiang Province includes the co-financing provided by the Zhejiang Provincial Government and Fuyang City Government, as well as that from the two logistics companies (Fuyang Hangzhou Transfar Logistics Base Co., Ltd., and Zhejiang Fuyang Port International Co., Ltd.).*

---

<sup>26</sup> For GEF projects, the agreement with any NGO pre-selected to be the main contractor should include the rationale for having pre-selected that NGO.



# 浙江省财政厅

---

Aug 31, 2015

## Co-Financing Letter

Dear Mr. Alain Noudehou

Resident Representative of UNDP China

This is to confirm that the China Government is committing co-financing support amounting to US\$11,880,000 to the implementation of the *Greening the Logistics Industry in Zhejiang Province* project in China. China Government is committing funds in Cash amounting to US\$ 5,940,000 for the implementation of setting up policies and regulations on green logistics, capacity building and promotion activities on establishment of green logistics systems. The in-kind portion of these co-financing amounts to US\$ 5,940,000 will be used for construction of pilot green logistics companies and relevant activities. The China Government is willing to cooperate with the UNDP and other partners of *Greening the Logistics Industry in Zhejiang Province* project in China over a period of 4 years and to utilize these funds as baseline contributions *Greening the Logistics Industry in Zhejiang Province* project in China.

The China Government's support to the project is described in detail in the Project Document and associated budget. We assume that all of its direct costs associated with producing outputs described in the Project Document qualify as the project's co-financing.

Sincerely yours,



Mr. Qian Juyuan  
Finance Department of Zhejiang Province

CC: International Department, MOF

Mr. Manuel Soriano UNDP-GEF Regional Technical Advisor, Asia and the Pacific Region

---

### Co-Financing Letter

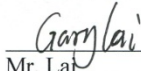
Dear Mr. Alain Noudehou

Resident Representative of UNDP China

This is to confirm that the Fuyang Hangzhou Transfar Logistics Base Co. Ltd. is committing co-financing support amounting to US\$ 3850000 to the implementation of the *Greening the Logistics Industry in Zhejiang Province* project in China. Fuyang Hangzhou Transfar Logistics Base Co. Ltd. is committing funds in Cash amounting to US\$ 210000 for the implementation of Local Consultants, Training, Workshops and Conference. The in-kind portion of these co-financing amounts to US\$ 3640000 will be used for Equipment and facilities. The Fuyang Hangzhou Transfar Logistics Base Co. Ltd is willing to cooperate with the UNDP and other partners of *Greening the Logistics Industry in Zhejiang Province* project in China over a period of 4 years and to utilize these funds as baseline contributions *Greening the Logistics Industry in Zhejiang Province* project in China.

The Fuyang Hangzhou Transfar Logistics Base Co. Ltd's support to the project is described in detail in the Project Document and associated budget. We assume that all of its direct costs associated with producing outputs described in the Project Document qualify as the project's co-financing.

Sincerely yours,



Mr. Lai

Fuyang Hangzhou Transfar Logistics Base Co. Ltd.



CC: International Department, MOF

Mr. Manuel Soriano UNDP-GEF Regional Technical Advisor, Asia and the Pacific Region



### Co-Financing Letter

Dear Mr. Alain Noudehou

Resident Representative of UNDP China

This is to confirm that the Zhejiang Fuyang Port International Logistics Co., Ltd. is committing co-financing support amounting to US\$ 4550000 to the implementation of the *Greening the Logistics Industry in Zhejiang Province* project in China. Zhejiang Fuyang Port International Logistics Co., Ltd. is committing funds in Cash amounting to US\$ 2730000 for the implementation of informationization service and facilities. The in-kind portion of these co-financing amounts to US\$ 1820000 will be used for informationization service, Equipment and facilities. The Zhejiang Fuyang Port International Logistics Co., Ltd. is willing to cooperate with the UNDP and other partners of *Greening the Logistics Industry in Zhejiang Province* project in China over a period of 4 years and to utilize these funds as baseline contributions *Greening the Logistics Industry in Zhejiang Province* project in China.

The Zhejiang Fuyang Port International Logistics Co., Ltd.'s support to the project is described in detail in the Project Document and associated budget. We assume that all of its direct costs associated with producing outputs described in the Project Document qualify as the project's co-financing.

Sincerely yours,

Mr. Xu  
Zhejiang Fuyang Port International Logistics Co., Ltd.



CC: International Department, MOF  
Mr. Manuel Soriano UNDP-GEF Regional Technical Advisor, Asia and the Pacific Region



9 March 2015

Dear Dr. Ishii,

**Subject: Proposed Co-financing Commitment Letter from UNDP for GEF project  
“Greening the Logistics Industry in Zhejiang Province”**

Through the use of PPG fund, UNDP China developed a GEF project on “Greening the Logistics Industry in Zhejiang Province”. The project’s aim is to widespread application of energy efficient green logistics techniques and practices in the logistics industry in Zhejiang Province.

This proposed GEF Project also closely corresponds to the on-going United Nations Development Assistance Framework (UNDAF) 2011-2015 as expressed in the Country’s UNDAF document signed by both UNDP and the Government of China in March, 2010. This document provides details of UNDP assistance for “Government and other stakeholders ensure environmental sustainability, address climate change, and promote a green, low carbon economy.” UNDP expects to achieve this important outcome through the following relevant outputs:

- Enhanced Government capacity to promote a low carbon economy through energy efficiency, renewable energy, and technological innovation.
- Government policies, and public and private enterprises, contribute to the creation of a green economy and green jobs.

To strengthen our assistance towards achievement of these development objectives, we confirm that the UNDP CO will contribute USD 250,000 co-financing to the project. We are looking forward to the timely approval of this GEF project.

Yours sincerely

Christophe Bahuet  
Country Director  
UNDP, China

Dr. Naoko Ishii  
CEO, Global Environment Facility  
Washington DC  
U.S.A.

Copy to: Ms. Adriana Dinu, UNDP-GEF Executive Coordinator  
2 Liangmahe Nanlu, Beijing, China, 100600, Tel: 86-10-85320800 Fax: 86-10-85320900 www.undp.org.cn  
中国北京亮马河南路二号 邮编: 100600

### Annex III: Description of Project Demonstrations

Demonstration of Green Logistics techniques are to be conducted in Component 2 with the Outcome 2: *Improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang Province*. This will address the barrier of low level of confidence of the logistics industry on the viability of green logistics applications and infrastructures. This is caused by absence of on-the-ground applications and models of such new system (and its associated components) as well as good practices and models thus affecting the acceptability by LSPs and users as well as investors regarding new approaches to improve energy efficiency and enhance environmental protection in the logistics industry. The activities that will be carried out under this component will be in cooperation with the Fuyang City Government and logistic companies that are interested in the application of green logistics technologies/techniques in their operations.

Demo Host	Demonstration Activity
Fuyang City Government	Demonstration of applications of green logistics technologies (techniques and practices) in logistics operations in Fuyang City. It will also include relevant capacity development activities on green logistics techniques. Fuyang City Government in cooperation with the ZPDRC shall spearhead the resource mobilization and investment in the required demonstration facilities for green logistics in the materials management and physical distribution, including combined road and water transport.
Zhejiang Fuyang Port International Co. Ltd.	Demonstration of green logistics applications in materials management operations and related capacity development. This will involve the installation and operation of the specific requirements in modernizing and equipping the system on reliable information technology application in various phases of operations by increasing the container full-load rate from the current low load rate. Also, by relying on the Dong Zhou dockland and water resources, this scheme will transfer land transport into waterway transport thereby reducing pressure on roads, as well as reduce energy consumption.
Fuyang Hangzhou Transfar Logistics Base Co., Ltd.	Demonstration of green logistics applications in physical distribution operations and related capacity development. This will involve the systematic and efficient scheduling of transport modes and combined road and water transport in a centralized platform by addressing the problem of asymmetric information, and improve goods-vehicles matching efficiency, reduce truck empty-loaded rate based on highway port network information platform, thus advocating widespread use of empty trucks on return trip

These projects will demonstrate China's drive and commitment to further pursue a highly complementary project on improving energy efficiency in the logistics industry. This will involve the documentation of the demonstration results and the energy performance and environmental impacts of each demonstrations, as well as action planning for sustainability of the green logistics system demonstration program.

## Annex IV: Summary of Allocation of Incremental GEF Funds for Component 2

(In response to GEFSec Comments)

The table below summarizes what the incremental GEF funds allocated for Component 2 will be used for.

Activity	Incremental GEF Support
<b>Output 2.1: Completed designs and plans of demonstrations of green logistics techniques in materials management in the logistics industry in Zhejiang Province.</b>	
2.1.1: Conduct of feasibility analyses on the application and operation of energy efficient materials management system in the logistics industry.	Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best materials management system option that employs green logistics techniques to be demonstrated. [Inv]
2.1.2: Design of the modified materials management system (including the associated facilities and infrastructures) in the Zhejiang Province logistics system projects.	Incremental funds for the design and implementation of the energy efficient materials management demos, particularly for accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services from qualified national and international experts. [Inv]
2.1.3: Development of the implementation plans (including financing arrangements) for each demonstration energy efficient materials management system in the logistics industry.	Incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the materials management demonstrations. [Inv]
<b>Output 2.2: Completed designs and plans of demonstrations of green logistics techniques in physical distribution in the logistics industry in Zhejiang Province.</b>	
2.2.1: Conduct of feasibility analyses on the application and operation of energy efficient physical distribution systems in the logistics industry.	Incremental demo project development funds for conducting the feasibility study, which will also involve technical work for the selection and adoption of the best physical distribution system option to demonstrated, including the combined road-water transport system. [Inv]
2.2.2: Design of the physical distribution system (including the associated facilities and infrastructures for energy efficient water and water/road freight planning and management schemes) in the Zhejiang Province logistics system projects.	Incremental funds for accessing advanced technology and management experience from other countries with state-of-the-art designs and advanced software and model applications and services in physical distribution from qualified national and international experts, including those technologies and management experiences on combined road-water transport systems. Related support will be provided by the co-financing government agencies and the private groups which will be selected for the demonstration activity. [Inv]
2.2.3: Development of the implementation plans (including financing arrangements) for each demonstration EE physical distribution systems in the logistics industry.	Incremental funds for the detailed planning, which is part of the pre-engineering work for the demonstrations, to facilitate the incorporation of the green logistics aspects in the physical distribution demonstrations. [Inv]
<b>Output 2.3: Installed and fully operational centralized logistic facility for demonstrating energy efficient materials management system.</b>	
2.3.1: Installation of the demonstration energy efficient centralized logistic facility.	Incremental funds for the installation of the green logistics elements (i.e., energy efficiency technology software and hardware) of the demonstration centralized logistics facility. [Inv]
2.3.2: Operation of the demonstration centralized logistics facility in Zhejiang Province.	Incremental funds for the operation of the energy efficiency technology software and hardware that will be incorporated in the demo centralized logistic facility. This will also include funding for the capacity development of the centralized logistics

	facility personnel on the operation of these additional EE systems and equipment installed to make the facility operate in a green manner. [Inv]
<b>Output 2.4: Installed and fully operational centralized freight transport facility for demonstrating energy efficient physical distribution system in Zhejiang Province</b>	
2.4.1: Installation of the demonstration energy efficient centralized freight transport facility.	Incremental funds for the installation of the green logistics elements (i.e., energy efficiency technology software and hardware) of the demonstration centralized freight transport facility. [Inv]
2.4.2: Operation of the demonstration centralized freight transport system in Zhejiang Province.	Incremental funds for the operation of the energy efficiency technology hardware that will be incorporated in the demo centralized freight transport system. This will also include funding for the capacity development of the centralized freight transport facility personnel on the operation of these additional EE equipment and systems to be installed to make the facility operate in a green manner. [Inv]
<b>Output 2.5: Documented annual evaluation reports on the energy performance and environmental impacts of each demo projects, and documented and disseminated demo project results.</b>	
2.5.1: Evaluation of the energy performance and environmental impacts of each demo EE materials management project.	Incremental technical assistance required in the evaluation of the performance and impacts of the implemented materials management demo projects. [TA]
2.5.2: Documentation and dissemination of the results of each demo EE materials management project.	Incremental funds for technical services required for the documentation and dissemination of demonstration results of results. [TA]
2.5.3: Evaluation of the energy performance and environmental impacts of each demo EE physical distribution project.	Incremental funds for technical assistance required in the evaluation of the performance and impacts of the implemented physical distribution demo projects. [TA]
2.5.4: Documentation and dissemination of the results of each demo EE physical distribution project.	Incremental funds for technical services required for the documentation and dissemination of demonstration results. [TA]
<b>Output 2.6: Developed action plan for sustainability of the green logistics system demonstration program</b>	
2.6.1: Development of the action plan for sustainability of the green logistics system demonstration program.	Incremental funds for technical assistance required in the development of sustainable follow-up plan related to this activity. [TA]



## **Annex V: Detailed Summary of the Component 3 Outputs**

(In response to GEFSec Comments)

Component 3 will address the barriers related to the low level of capacity, knowledge and skills of and cooperation among the relevant government entities, manufacturing and logistics industries on the application, design and operationalization of green logistics systems, as well as in the application of energy conservation and operational efficiency in the logistics industry and the lack of an effective information platform to share the successful experiences in the design, development and operation of green logistics system. The expected outcome from the delivery of the expected outputs under this component is the increased application and utilization of energy efficient technologies (techniques and practices) in the materials management and physical distribution operations in the logistics (and manufacturing) industries in Zhejiang Province.

It will build on current plans of the Zhejiang Provincial Government on promoting improved energy utilization performance in the provincial industry sector, in general, and in the logistics industry, in particular. The province has its Zhejiang Province Green Logistics Plan (ZPGLP) that intends to promote the application of “green logistics” technologies/techniques in the industry to make the operations of the logistics service providers (LSPs) more sustainable, energy efficient, and environment-friendly. Some of the big LSPs in the province have their own programs (ongoing and planned) with objectives that are by and large in line with that of the ZPGLP. For the development of green logistics information sharing system, the GLIZP Project will build on the current activities of Zhejiang Province Initiatives in Information Exchange Center for Purchasing and Inventory Management of Logistics Resources. After obtaining agreement from the implementers of these baseline projects, some of their activities were either subsumed into GLIZP, or modified/enhanced with the addition of incremental features (mainly those relevant to green logistics principles) or replaced with something that conform with green logistics techniques. For the baseline activities on the enhancements of technical capacity, knowledge and skills in the application of EC&EE technologies and/or techniques in the logistics industry, incremental features (mainly in line with green logistics principles) have been added. These, including the incremental activities on removing barriers, and the expansion of coverage of the beneficiaries of the capacity development activities, and the incremental one-on-one technical assistance in enhancing the capacity of small-to-medium size LSPs, are the ones that the incremental funding from GEF will be used for. The whole essence of Component 3 is to enhance the knowledge and awareness of the LSPs about the green logistics approach. This is the reason why the proposed activities under Component 3 focuses on capacity development, promotion and outreach to the various LSPs, especially the small-to-medium size LSPs, to encourage them to adopting and practice green logistics techniques.

The following table summarizes the aim, target audience, activities, GEF incremental support and anticipated impacts of each output.

<b>Output 3.1: Completed assessment report on capacity development needs in the area of green logistics and developed green logistics capacity building program</b>	
Purpose/Aim	Clearer understanding of the current level of knowledge and the capacity needs of the Zhejiang Province logistics industry in the area of green logistics. This output is used for formulating the capacity development program on the cost-effective and proper application of green technologies in the materials management and physical distribution aspects of the logistics industry thereby making it operate in an energy efficient and environment-friendly manner.
Target Audience	Logistics service providers and logistics services customers; Government authorities in-charge of the logistics industry
Activities	Assessment of the capacity development needs in the area of green logistics; Development and adoption of green logistics capacity building program in Zhejiang;
GEF	Technical assistance required for the design and conduct of surveys and interviews and

Incremental Support	the analysis of findings for the capacity needs assessment, and in the preparation of the green logistics capacity building program.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>Implementation of appropriate actions for the enhancement of the level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province</li> <li>Energy savings and associated GHG emission reductions in the logistics industry</li> </ul>
<b>Output 3.2: Completed green logistics training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang Province.</b>	
Purpose/Aim	Enhancing the stand-alone corporate training programs of partner logistic companies into a major capacity development program to include green logistics principles (planning and applications) practices, techniques and methodologies
Target Audience	Provincial government officials that are involved in the logistics industry; small-to-medium size LSPs and logistics service customers
Activities	Development of materials and scheduling of the green logistics training courses; Conduct of training courses for government authorities and relevant stakeholders in the logistics and manufacturing industries in Zhejiang;
GEF Incremental Support	Technical assistance required for the design and development of training course materials; organization and conduct of the training courses.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>Increased level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province</li> <li>Energy savings and associated GHG emission reductions in the logistics industry</li> </ul>
<b>Output 3.3: Completed technical assistance program for assisting small-to-medium size LSPs on the application of green logistics systems</b>	
Purpose/Aim	Enhancement of the EC&EE programs of the big LSPs and that of the Zhejiang Provincial Government with the design, development and dissemination of web-based tools for the application of green logistics techniques and technologies; and provision of actual technical assistance in the application of green logistics technologies/techniques in the partner LSPs and selected small-to-medium LSPs.
Target Audience	Partner LSPs and selected small-to-medium LSPs
Activities	Publication of the technical guidance documents; Planning and dissemination of published technical documents and other relevant materials on green logistics including workshops, web-based tools, etc. for information dissemination and promotion on green logistics.
GEF Incremental Support	Technical assistance and resources for the publication and dissemination of the technical guidance documents in close coordination with ZPDRC and Fuyang City Government.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>Increased level of technical capacity and competitiveness of some small-to-medium size LSPs in the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>More cost-effective, energy efficient and environment-friendly operations in materials management and physical distribution by the logistics and manufacturing industries in Zhejiang Province</li> <li>Energy savings and associated GHG emission reductions in the logistics industry</li> </ul>
<b>Output 3.4: Conducted promotional workshops and/or activities to enhance awareness and</b>	

<b>knowledge in green logistics systems</b>	
Purpose/Aim	Enhancement of knowledge and awareness on green logistics in the different sectors of the national and local economy.
Target Audience	LSPs and the general public (e.g., logistics services customers; provincial logistics office personnel)
Activities	Conduct of promotional workshops and related promotional activities for the dissemination of reference documents and knowledge products on the green logistics demonstration; Codify, document and disseminate lessons learned, benefits derived from the application of smart, sustainable, energy efficient and environment benign technologies in materials management and physical distribution in the logistics industry.
GEF Incremental Support	Technical and logistical services required in the design and implementation of the promotional workshops and related activities.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>Increased level of knowledge and understanding by the logistics industry and logistics services customers about the economic, energy saving and environmental benefits of the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>Enhanced energy and environmental performance of the logistics industry in materials management and physical distribution operations</li> <li>More competitive logistics industry in China.</li> <li>Energy savings and associated GHG emission reductions in the logistics industry</li> </ul>
<b>Output 3.5: Completed and fully evaluated program for the promotion and capacity building on green logistics systems</b>	
Purpose/Aim	For the improvement and the sustenance of the capacity development program on green logistics. The results of the evaluation are then used as guide in the redesign or modification of the capacity development program to make it more in line with the capacity development needs.
Target Audience	Provincial government authorities in-charge of the logistics industry; LSPs, logistics services customers
Activities	Design and development of standards and tools for monitoring and evaluating the impacts of the promotion and capacity building activities and outputs of the project; Monitoring and evaluation of the capacity building and promotion of green logistics systems.
GEF Incremental Support	Technical assistance and materials for the development and adoption of the evaluation standards and tools; and conduct of the evaluation and preparation of reports.
Impacts	<u>Immediate:</u> <ul style="list-style-type: none"> <li>Implementation of appropriate actions for the enhancement of the level of knowledge of the logistics industry about the cost-effective application of EC&amp;EE in the planning, management and operation of logistics systems</li> </ul> <u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u> <ul style="list-style-type: none"> <li>Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province</li> <li>Energy savings and associated GHG emission reductions in the logistics industry</li> </ul>
<b>Output 3.6: Designed, endorsed and implemented an energy performance rating program and green logistics information sharing system for LSPs in Zhejiang Province</b>	
Purpose/Aim	Provide basis and benchmarks among LSPs for measuring the effectiveness of the green logistics program for Zhejiang Province.
Target Audience	Provincial government authorities in-charge of the logistics industry; National government authorities on trade, industry and commerce; LSPs
Activities	Design of an energy performance rating program for LSPs in Zhejiang Province, including the rating scheme and energy database; Development and establishment of a green logistics information sharing system.
GEF Incremental Support	Technical assistance in the design and development of the energy performance rating scheme, and the green logistics information sharing system; initial implementation of the rating program and information sharing system, in close cooperation and resource

	inputs from ZPDRC.
Impacts	<p><u>Immediate:</u></p> <ul style="list-style-type: none"> <li>• Potential increased level of competitiveness among LSPs; Improved motivation among LSPs to improve level of quality of services provided leading to more energy efficient and environment-friendly planning, management and operation of logistics systems</li> </ul> <p><u>Medium to Long Term (if sustained, and together with other Component 3 Outputs)</u></p> <ul style="list-style-type: none"> <li>• Increased level of competitiveness among LSPs all over China; Improved level of quality of services provided by LSPs nationwide; More cost-effective, energy efficient and environment-friendly operations in materials management and physical distribution by the logistics and manufacturing industries in China</li> <li>• Energy savings and associated GHG emission reductions in the nationwide logistics industry</li> </ul>

## **Annex VI: GHG Emission Reduction Estimates**

The logistics industry has already been identified as an area to reduce costs and manage risk. Initiatives include increasing the energy efficiency of operations, increasing the use of less-carbon intensive fuels, and improving the design and capacity of vehicles, aircrafts and vessels through partnerships with manufacturers.

These actions can directly improve profitability through lower fuel costs, higher utilization rates, and faster service for the industry and its customers. Improvements in energy efficiency, especially if they decrease overall reliance on fossil fuels—given the volatility of prices—can also mitigate risks related to supply chain disruptions.

While engine-efficiency technology continues to improve, the growth of the transportation and logistics industry threatens to undermine progress in reducing total energy consumption. For this reason, strategic investments in rail infrastructure and intermodal facilities are required to facilitate a switch from highly energy-intensive modes of transport, such as truck and air, to the more efficient options of rail or ship. Since modal speed improvements tend to be marginal, it is at the intermodal or trans-modal facilities that most of the time and cost benefits are achieved.

Logistics is the integrated management of all the activities required to move products through the supply chain. For a typical product this supply chain extends from a raw material source through the production and distribution system to the point of consumption and the associated reverse logistics. The logistical activities comprise freight transport, storage, inventory management, materials handling and all the related information processing. Logistics involves the movement, storage and handling of products as they travel from farms, factories and ports to the shops. These activities are essential in economic terms, but can have a damaging effect on the environment.

### **1. Basic Assumptions**

The basic assumptions in the calculation of the impacts on energy saving and emission reductions of the GLIZP Project are discussed below. Anyone with experience in the measuring of the carbon footprint of logistics knows that this can be complicated, not the least because up to now there has been no standard way of doing it. A standardized calculation methodology will benefit industry, facilitate communication on the results and enable comparisons of energy consumptions and GHG emissions of different transport operations realized by companies. Accordingly, a mere transfer of goods transport from the road to alternative modes of transport will not be sufficient to mitigate large quantities of GHG emissions. It is the combination of a number of measures taken by industry that will eventually lead to a significant reduction in GHG emissions. The calculation of GHG emissions in goods transport and logistics is the first step to understanding and subsequently reducing emissions. This will support in further advancing reduction or avoidance strategies.

The Baseline Scenario (without GLIZP) is the prevailing situation with the energy consumption and carbon emission estimated based on the existing development trend (or the existing development plan for the next years). The Alternative Scenario (with GLIZP) is: the increments brought about by the new project in energy and environmental efficiency improvements, plus the prevailing development as influenced by new policies and regulations adopted by the provincial government of Zhejiang and city government of Fuyang and other participating cities.

The two companies mainly involved in the GLIZP project, namely: Hangzhou Fuyang Chuanhua Logistics Base Co., Ltd., and the Zhejiang Fuyangkouan International Logistics \Co. Ltd., constitute around 80% of the logistics industry in the province. Therefore, GLIZP focused on these two major companies and the impacts of the project intervention through green logistics demonstration will be significantly based on the baseline and alternative scenario for the two companies.

On the overall, the present level of energy efficiency in Zhejiang Province is low compared to international standards. According to the expert consultation, a 10-percent improvement of energy consumption rates in materials management and physical distribution from current level in the entire logistics industry is achievable during the four year project duration.

The GLIZP Project is composed of Materials Management (in warehouses and terminals) and Physical Distribution (by road transport and combined road and waterways transport).

The local logistics industry will take four priority actions to become more energy efficient and to advance its business opportunities in the sustainable energy market:

- Improve operations of the materials handling facilities and systems and the transport vehicles (e.g. on scheduling, empty-load rates, etc.) to optimize the energy and environmental performance of the logistics industry.
- Maximize the use of intermodal and trans-modal transfer systems to increase overall energy efficiency
- Shift to improved design and energy performance of transport vehicles
- Upgrade fleet to enable use of alternative, if possible, less carbon-intensive fuels as part of long term plans

## 2. Estimation of Annual Energy Consumption

### A. Materials Management

The energy used in materials management is mainly electricity for warehousing, cold storage, packaging and waste handling in terminals, warehouses and offices and a small portion of diesel or gasoline for in-plant movements. The energy consumption data are converted into standard tons of oil equivalent (*toe*) and is estimated based on annual materials handled in tons (*t*), operating hours or distance travelled (*D*) and average specific energy consumption (*SEC*) per ton handled. Since they are taken in averaged annual values, the specific parameters on capacity utilization, operating hours and area of the facilities are not taken into account in this calculation and projection for simplification but should be monitored in the M&E system during the implementation.

The following table shows the assumed baseline figures on weight of materials handled under the Project which represent 50% of the estimated weights in 2013 in Zhejiang Province based on the estimated average SEC for each aspect in materials management:

	2013 Weight of Materials Handled (tons)*	2013 Estimated Annual Energy consumption (toe/year)**
Warehousing	1,380,496,000	1,584,046
Cold storage	1,139,500	1,308
Packaging	144,000,000	165,232
Waste handling, etc.	8,000,000	9,180

\*These weights of materials handled are the baseline figures for the Project, which represent around 50% of the actual weights of materials handled by the logistics industry in 2013 in Zhejiang Province.

\*\* These annual energy consumption for the major sections of the materials handling services were estimated by the local experts obtained by data gathering, on-site monitoring and measurement in selected key logistic companies and extrapolated according to the total volume handled, in the absence of consolidated data in the province.

For purposes of target setting for the project, the annual energy consumption projection for 2013-2035 in various aspects of materials handling is estimated from the 2013 reference annual energy consumption which would increase at the rate by which the annual weight of materials handled is increasing and would decrease at the rate of improvement in energy utilization efficiency, as expressed in the formula below:

$$\text{Annual Energy Consumption}_{\text{YEAR } y} = \text{AEC}_{\text{YEAR } (y-1)} \times \text{CF}_{\text{WIEGHT}} \times \text{CF}_{\text{EFFICIENCY}}$$

$$\text{AEC}_{\text{YEAR}} = \text{Annual energy consumption for the year (toe)}$$

$$\text{CF}_{\text{WIEGHT}} = \text{Correction factor due to rate of increase in weight of materials handled}$$

$$= (1 + r_{\text{WIEGHT}})_{\text{YEAR } y}$$

$$\text{CF}_{\text{EFFICIENCY}} = \text{Correction factor due to rate of improvement in energy consumption efficiency expressed as percent rate of reduction in consumption of previous year}$$

$$= (1 - r_{\text{EFFICIENCY}})_{\text{YEAR } y}$$

For the projections, the following are the growth rates for weight increase/decrease ( $r_{\text{WIEGHT}}$ ) and the rate of reduction in energy consumption ( $r_{\text{EFFICIENCY}}$ ) assumed:

	$r_{\text{WIEGHT}}$ (% increase)	$r_{\text{EFFICIENCY}}$ (% reduction)		
	BAU & ALTERNATIVE	BAU	ALTERNATIVE	
Period covered	2016-2035	2016-2035	2016-2019	2020-2035
Warehousing	5.0%	0	2.50%	2.00%
Cold storage	5.0%	0	2.00%	3.00%
Packaging	5.0%	0	3.00%	2.00%
Waste handling, etc.	5.0%	0	3.00%	2.00%

## B. Physical Distribution

### • Road Transport

For physical distribution through road truck transport, the fuel used is mainly diesel and gasoline for vehicle transportation. During the project formulation, there are no available measured specific values on energy consumption for logistics in Zhejiang. The calculation done for this Project cannot take into account all possible transport services and cases. For the case of Zhejiang, the energy efficiency improvement in



transport services intended by the project focuses only in two modes: (a) road transport (using small, medium and large vehicles and (b) road-waterway combined transport for containers. Usually, the consumption information for the vehicles and vehicle round-trips nor details on the load utilization or proportion of empty trips is not available. In these cases, energy consumption values are often determined using the distance-based approach in which specific energy consumption values per ton-kilometer are used. Thus, for simplification, it must be noted that specific energy consumption values per 100 kilometer already take account of the load utilization and empty trips in this calculation as assumed made by the road vehicles. Admittedly, this approach is not sufficient and must have to be reconciled in actual M&E to be established by the Project during its implementation. In cases of incidental reported use of renewable such as blending of bio-fuels or electricity own-generation from wind or solar if they are used, the values are credited in their *toe* values. Thus, the energy consumption is estimated based on the annual average specific energy consumption:

$$AEC_{YEAR\ y} = [N_{YEAR\ y-1}] \times CF_{VEHICLES} \times D \times SEC \times CF_{EFFICIENCY}$$

AEC = Annual energy consumption in diesel or gasoline in liters (l) or kilogram (kg) converted into standard tons of oil equivalent (toe)

N = No. of road transport vehicles

D = Annual average distance travelled in kilometers (km) x 2 for 2-ways

SEC = Specific energy consumption, in *toe per 100 km*

$CF_{VEHICLES}$  = Correction factor due to rate of increase in number of vehicles  
 $= (1 + r_{VEHICLES})^{YEAR\ y}$

$CF_{EFFICIENCY}$  = Correction factor due to rate of improvement in energy consumption efficiency expressed as percent rate of reduction in consumption of previous year  
 $= (1 - r_{EFFICIENCY})^{YEAR\ y}$

The following table shows the assumed baseline figures in calculating annual energy consumption based on the 2013 number of transport vehicles in Zhejiang Province to be covered by the Project, average annual distance travelled per vehicle and specific energy consumption of each type of vehicle.

Road Transport	2013 No. of Vehicles, N	Average Annual Distance Travelled (Km per vehicle), D	Specific energy consumption (toe/100km), SEC
Large-size vehicle (14-100 ton)	149,522	63,451	31.89
Medium-size vehicle (6-14 ton)	46,836	64,953	25.48
Small-size vehicle (1.8-6 ton)	598,023	40,947	13.49

For the projections, the following are the growth rates for N increase ( $r_{VEHICLES}$ ) and the rate of reduction in energy consumption ( $r_{EFFICIENCY}$ ) assumed:

Road Transport	$r_{VEHICLES}$ (% increase)	$r_{EFFICIENCY}$ (% reduction)		
	BAU & ALTERNATIVE	BAU	ALTERNATIVE	
Period covered	2016-2035	2016-2035	2016-2019	2020-2035
Large-size vehicle (14-100 ton)	5.0%	0	2.00%	2.00%
Medium-size vehicle (6-14 ton)	5.0%	0	2.00%	2.00%
Small-size vehicle (1.8-6 ton)	5.0%	0	2.00%	2.00%

- **Combined Road and Waterways Transport**

*Baseline Energy Consumption*

The throughput in freight containers transported in Fuyang in 2014 was estimated to be 400,000 TEU, and is projected with an average annual growth of 5% yearly after 2015. The average one-way transport distance of containers from Shanghai port and Ningbo port to Fuyang is 220 kilometers. A container lorry contains a large container (equivalent to 2 TEU) and consumes diesel fuel at 45 liters per hundred kilometers on entirely road transportation mode.

The baseline case or original mode of transport is road transport for containers.

$$\text{BAU AEC}_{\text{YEAR } y} = [N_{\text{YEAR } y-1}] \times \text{CF}_{\text{TRUCKS}} \times D \times \text{SEC}$$

BAU AEC = Baseline Annual Energy Consumption for Year y

N = No. of trucks for Year y  
= Annual Container Volume in TEUs x 0.5  
(Each truck loads 2 TEUs (Twenty-foot Equivalent Unit))

$\text{CF}_{\text{TRUCKS}}$  = N (which is directly proportional with TEUs increases at the rate of 5% annually)

D = Total distance travelled per truck  
= Average distance travelled one-way x 2 for round trip  
= 220 km x 2

SEC = Specific energy consumption of the truck  
= 42 liters diesel / 100 km travelled

$$\text{BAU AEC}_{\text{YEAR } y} = [\text{TEU} \times 0.5]_{\text{YEAR } y} \times [220 \times 2] \times [42/100] \text{ liters diesel}$$

Where, Conversion Factor (ton of oil equivalent or toe) final energy:

$$\begin{aligned} 1 \text{ liter diesel} &= 0.832/1,000,000 \text{ kton diesel} \times 1.01 \text{ toe/ton diesel} \\ &= 0.84/1,000,000 \text{ ktoe} \end{aligned}$$

Simply,

$$\text{BAU AEC}_{\text{YEAR } y} = \text{TEU}_{\text{YEAR } y} * 0.5 * 2.2 * 2 * 42 * 0.84 / 1,000,000 \text{ ktoe}$$

For example, with the baseline 2014 volume of materials transported of 400,000 TEU (or equivalent to using 200,00 trucks), SEC of 42 liters diesel/100 km travelled and 220 km average distance travelled (one-way) per truck, the AEC(2014) is 36.96 million liters of diesel fuel used. Using the conversion factor to ton of oil equivalent or toe) of final energy: 1 liter diesel = 0.832/1,000,000 kilo ton diesel = 0.84/ 1,000,000 ktoe, the AEC<sub>2014</sub> is 31.05 ktoe.

#### *Alternative Fuel Consumption*

The implementation of this project is changing the existing transport logistics mode into an intermodal transportation system which will combine road and waterway modes instead of the baseline all road container transportation on a door-to-door basis. The alternative intermodal transport includes waterway transportation (which is from Shanghai port and Ningbo port to Dongzhou pier in Fuyang at an average travel distance of 250 kilometers each way) and the remaining road transportation (which is from Dongzhou pier for distribution to the factories averaging one-way distance of 25 kilometers). The waterway transportation portion uses inland river container ships which contains 36 TEU per ship and consumes diesel fuel at 375 liters per hundred kilometers. The road transport portion has the same TEU loading arrangement and fuel consumption rate described in the baseline original all-road transport modality with a reduced distribution distance.

Thus, for the Alternative Case, the energy consumption will be in two parts in serving the container volume: the major part will still be using the inland waterway transport as more users shift from original all-road transport mode each year into the intermodal transport system. Thus, the formula for estimating the Alternative Annual Energy Consumption (ALT AEC) for a given year will combine two portions:

$$\text{ALT AEC}_{\text{YEAR } y} = \text{AEC}_{\text{W YEAR } y} + \text{AEC}_{\text{R YEAR } y}$$

$\text{AEC}_{\text{R YEAR } y}$  = Annual energy consumption for road (R) transport for the year

$\text{AEC}_{\text{W YEAR } y}$  = Annual energy consumption for waterway transport for the year

Where, the annual energy consumption using original mode of road transport by container-truck is as follows:

$$\text{AEC}_{\text{R YEAR } y} = \text{N} \times \text{SEC}_{\text{TRUCK}}$$

Where **N** = No. of truck trips  
= Annual portion of Container Volume using road system in TEU x 0.5 x 2 for round trip

$\text{SEC}_{\text{TRUCK}}$  = 42 liter diesel per trip

$$\text{AEC}_{\text{R YEAR } y} = \text{TEU}_{\text{R YEAR } y} * 0.5 * 2.2 * 2 * 42 * 0.84 / 1,000,000 \text{ ktoe}$$

The annual energy consumption for the waterway container-ship is:

$$AEC_{W\ YEAR\ y} = [N_{W\ YEAR\ y-1}] \times CF_{SHIPS} \times D_{SHIPS} \times SEC_{SHIPS}$$

$AEC_{W\ YEAR\ y}$  = Annual Energy Consumption of ships in the intermodal transport for Year y

$N$  = No. of ship trips for Year y for the portion of the TEU for intermodal system  
 = Annual Container Volume in TEUs / 36  
 (Each ship loads 36 TEUs per trip)

$CF_{TRUCKS}$  =  $N$  (which is directly proportional with TEUs and increase at the rate of 5% annually)

$D$  = Total distance travelled per ship  
 = Average distance travelled one-way x 2 for round trip  
 = 250 km each way km x 2

$SEC$  = Specific energy consumption of the truck  
 = 375 liters diesel per hundred kilometers

$$AEC_{W\ YEAR\ y} = TEU_{W\ YEAR\ y} * 0.375 * 5 / (36 * 1,000) * 0.84\ ktoe$$

It will be noted that the X% use of intermodal transport of combined road and water way system will increase during the project implementation from 7% at the start to 20% at the end of the Project, or up to 38 % in 15 years after the project.

	Est. Year 0 (2015)	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)
<b>Baseline Container Volume</b> (using original transport mode)	420,000	441,000	463,050	486,202	510,513
<b>Alternative Container Volume</b>					
Portion using waterway intermodal system	30,000	40,000	60,000	80,000	100,000
Portion original road transport mode using intermodal system	390,000	401,000	403,050	406,202	410,513
% INTERMODAL	7%	9%	13%	16%	20%

During project implementation however, it is expected that actual energy consumption for transport modes used, loading rates and empty trips will be taken into account and measured as they are part of the success indicators to be closely monitored by the project towards establishing a standard.

### 3. Emission Factors

In calculating GHG reduction in terms of CO<sub>2</sub>, the following are the CO<sub>2</sub> emission factors used for materials management and physical distribution:

Electricity Mainly used for Materials Management*		Diesel fuel Mainly for used for Physical Distribution**		
EF (ton CO <sub>2</sub> /MWh)	EF (ton CO <sub>2</sub> /toe)	EF (kg CO <sub>2</sub> /kg diesel)	EF (kg CO <sub>2</sub> /liter diesel)	EF (kg CO <sub>2</sub> /kg oil equivalent)
<b>0.9074</b>	<b>10.551</b>	<b>3.115</b>	<b>2.67</b>	<b>3.084</b>

\*National Power Grid CO<sub>2</sub> Emission Factor (EF), country total CO<sub>2</sub> emissions and emissions due to Electricity Generation in 2013 as the average of the emission factors of the 6 major grids for the whole of China (Ref: NDRC)

\*\*CO<sub>2</sub> emission factor based on diesel fuel is: 74100 kg/TJ; Net calorific value of diesel fuel is: 42.038 TJ/Gg; Therefore, CO<sub>2</sub> emissions from complete combustion of unit mass of diesel fuel is:  $74.1 \times 42/1000 = 3.115$  kg CO<sub>2</sub>/kg diesel. The density of diesel fuel is 0.84. Since 1 kg diesel = 1.01 kg oil equivalent, then EF diesel is also 3.084 kg CO<sub>2</sub>/kg oil equivalent; or also 3.084 ton CO<sub>2</sub>/toe.

#### 4. Potential CO<sub>2</sub> Emissions Reduction Estimates for the Zhejiang Logistics Industry and Estimated level that could be Attributable to GLIZP

The calculations described above are for the entire logistics Industry in Zhejiang Province. But not all of the estimated energy savings and GHG emission reductions can be attributed to the GLIZP. Based on the industry estimation procedure described above using annual values and average energy consumption rates in Zhejiang Province, the total potential CO<sub>2</sub> emission reductions were estimated at the provincial level. However, based on the planned interventions of the GLIZP Project, the procedure is further adjusted to estimate the level of reduction values that could practically be attributable to the GLIZP Project. The following were assumed level of attribution conservatively as per the project design.

Logistics Operation	Percent attributable to GLIZP of the Zhejiang Province total potential
Materials management	50%
Road Transport	30%
Combined Road-Waterway Transport	80%

#### Direct CO<sub>2</sub> Emission Reductions

##### Baseline Scenario (No GLIZP Project)

- Projected Annual Energy Consumption of regular logistics operations at EOP = **10,397.73** ktoe/yr

##### Alternative Scenario (Attributable to GLIZP Project) at EOP –

- Projected Annual Energy Consumption with GLIZP intervention = 10,175.12 ktoe/yr
- Energy savings due to GLIZP project intervention = 80.06 ktoe/yr
- Direct CO<sub>2</sub> emission reductions (DER) = 471.36 kt CO<sub>2</sub>/yr
- Cumulative energy savings = 296.24 ktoe
- Cumulative CO<sub>2</sub> emission reductions = 1,749.27 kt CO<sub>2</sub> = DER<sub>EOP</sub>

#### Lifetime DER (DER<sub>TOTAL</sub>)

- Average lifetime of materials management facilities = 5 years; for transport vehicles 10 years
- $DER_{TOTAL}$  (all GEF-funded demos and directly assisted replications) =  $DER_{MATERIALS\ MGT} * 5 + DER_{TRANSPORT} * 10 = (Energy\ Savings_{MATERIALS\ MGT} \times EF \times 5) + (Energy\ Savings_{TRANSPORT} \times EF \times 10 = 5,904.10 + 5,576.38 = 11,480.49\ ktCO_2$

## Direct Post-Project CO<sub>2</sub> Emission Reductions (DPPER)

This results from the EC&EE and green logistics projects of selected small to medium size LSPs that will be assisted/supported by the GLIZP project through the pilot financial incentives scheme that will be implemented in Component 1 (Activity 1.2.2). The financial assistance is for the cost of the pre-investment requirements (e.g., data analysis, feasibility studies, energy audits, environmental impact assessments, etc.) for the LSP's green logistics or EC&EE projects that will be implemented towards, or after, the GLIZP project completion. There will be 20 LSPs that will be involved in the pilot financial investment scheme that are expected to result in EC&EE or green logistics project investments in materials management and/or physical distribution. The projects that the 20 LSPs will consider to develop and implement will be determined during the implementation of the Component 1 activities. Considering the estimated unit abatement cost (UAC) of about US\$ 1.67/ton CO<sub>2</sub> for the green logistics demonstrations in Component 2 that will be directly funded by the GLIZP Project, the estimated US\$130,000 allocation for the design and operations of the pilot financial incentives scheme, the estimated direct post project CO<sub>2</sub> emission reductions (DPPER) is about 77,844 tons. Assuming 50% of the projects are feasible and implemented, the estimated DPPER amounts to about 39,000 tons CO<sub>2</sub> or 0.039 kton CO<sub>2</sub>. This amount is for EC&EE and green logistics projects in materials management and physical distribution.

## Indirect CO<sub>2</sub> Emission Reductions

### Bottom-up Approach (BUA)

In estimating the Lifetime Indirect Emission Reductions using the bottom-up approach ( $IER_{BUA}$ ), the sum of the Lifetime DER and Lifetime DPPER is multiplied by a replication factor (RF). As a market transformation and demonstration project, the GEF prescribed RF value is 3. In this case:

$$IER_{BUA} = (\text{Lifetime DER} + \text{Lifetime DPPER}) \times 3 = [(5,904.10 + 5,576.38) + 0.039] \text{ ktCO}_2 \times 3 = 34,441.56 \text{ kt CO}_2$$

### Top-Down Approach

- Estimated Forecast Total Energy Savings from using green logistics technology during the 10 year influence period (2020-2029) for materials management and physical distribution, toe =  $ES_{TDA} = 623.13 + 2,213.05 + 52.60 = 2,788.77\ ktOE$
- Estimated Forecast Total CO<sub>2</sub> ERs from using green logistics technology during the 10 year influence period (2020-2029) =  $ER_{TDA} = 6,574.75 + 6,516.64 + 162.21 = 13,253.60\ ktons\ CO_2$
- The Causality Factor (CF) considering the: (a) enabling environment that the GLIZP project will create for the logistics industry; and, (b) total potential emissions reduction during the 10 year influence period is 0.5 (i.e., GEF contribution is modest, and substantial indirect emission reductions can be attributed to the baseline).

**IER<sub>TDA</sub> = Lifetime Indirect CO<sub>2</sub> Emission Reductions, tCO<sub>2</sub> = ER<sub>TDA</sub> \* CF = 13,253.60**  
**kt CO<sub>2</sub> x 0.50 (at Level 2) = 6,626.80 kt CO<sub>2</sub>.**

### **Summary of CO<sub>2</sub> Emission Reductions**

<b>CO<sub>2</sub> Emission Reduction Type</b>	<b>Quantity, ktCO<sub>2</sub></b>
End-of-Project Direct CO <sub>2</sub> Emission Reduction (DER <sub>EOP</sub> )	1,749.27
Lifetime Direct CO <sub>2</sub> Emission Reduction (DER <sub>TOTAL</sub> )	11,480.49
Lifetime Direct Post Project CO <sub>2</sub> Emission Reduction (DPPER <sub>TOTAL</sub> )	0.039
Lifetime Indirect CO <sub>2</sub> Emission Reduction - BU Approach (IER <sub>BUA</sub> )	34,441.56
Lifetime Indirect CO <sub>2</sub> Emission Reduction - TD Approach (IER <sub>TDA</sub> )	6,626.80

**Range of Lifetime Indirect CO<sub>2</sub> Emission Reduction: 6.63 – 34.44 million tons CO<sub>2</sub>**



## Annex VII: Annual Targets

Project Strategy	Objectively Verifiable Indicators					
	Indicator	Baseline	Year 1	Year 2	Year 3	Year 4 (EOP)
<b>GOAL: Reduction of greenhouse gas (GHG) emissions through the widespread application of Green Logistics in the Zhejiang Province</b>	• Cumulative CO <sub>2</sub> emissions reduction by end-of-project (EOP), <i>ktons</i>	• 0	• 404.31	• 829.95	• 1,749.27	• 1,749.27
	• Reduction in the annual growth rate of GHG emissions by EOP, %	• 3%	• 3%	• 3%	• 3%	• 3%
<b>OBJECTIVE: Widespread application of energy efficient green logistics<sup>27</sup> techniques and practices in the logistics industry in Zhejiang Province</b>	• Cumulative fuel savings due to project intervention by EOP, <i>ktoe</i>	• 0	• 68.23	• 140.23	• 216.18	• 296.24
	• No. of new jobs created with the application of green logistics techniques in the logistics industry in Zhejiang Province by EOP	• 0	• 100	• 500	• 800	• At least 1,000
<b>• COMPONENT 1: POLICY AND REGULATORY SUPPORT FOR GREEN LOGISTICS</b>						
Outcome 1: Established and enforced policy and regulations on the application and operation of green logistics systems in the logistics industry in Zhejiang Province	• No. of new provincial government legislation and policies that provide an enabling environment to support green logistics by EOP	• 0	• 0	2	2	• At least 3
<b>• COMPONENT 2: GREEN LOGISTICS SYSTEMS DEMONSTRATION</b>						
Outcome 2: Improved energy efficiency in the materials management and physical distribution activities in the logistics industry in Zhejiang	• % empty load rate of freight transport in Zhejiang Province by EOP	• 50%	• 45%	• 10%	• 10%	• 10%
	• Annual fuel savings due to project intervention by EOP, <i>ktoe/yr</i>	• 0	• 68.23	• 72.00	• 75.94	• 80.06

• <sup>27</sup> Supply chain management practices and strategies that reduce the environmental and energy footprint of freight distribution, and focuses on material handling, waste management, packaging and physical distribution (i.e., freight transport).

Project Strategy	Objectively Verifiable Indicators					
	Indicator	Baseline	Year 1	Year 2	Year 3	Year 4 (EOP)
Province	- Materials management, ktoe/yr	• 0	• 25.97	• 27.26	• 28.63	• 30.06
	- Physical distribution, ktoe/yr	• 0	• 42,26	• 44.74	• 47.32	• 50.00
	• Annual GHG emission reduction by EOP, ktons CO2	• 0	• 404.31	• 425.64	• 447.97	• 471.36
	- Materials management, ktons CO2	• 0	• 273.96	• 287.66	• 302.05	• 317.15
	- Physical distribution, ktons CO2	• 0	• 130.35	• 137.97	• 145.92	• 154.21
<b>• COMPONENT 3: CAPACITY BUILDING AND PROMOTION OF GREEN LOGISTICS SYSTEMS</b>						
Outcome 3: Increased application and utilization of energy efficient materials management and physical distribution techniques, technologies and practices in the logistics and manufacturing industries in Zhejiang Province	• No. of logistics companies actively employing green logistics technologies and techniques in their materials management operations by EOP	• 0	• 5	• 50	• 75	• 100
	• No. of logistics companies in Zhejiang that employ and practicing green logistic techniques and technologies in their physical distribution by EOP	• 0	• 5	• 10	• 30	• At least 50



## **Annex VIII: Terms of Reference**

### **Project Director, Project Management Unit (PMU)**

**Level of Effort:** 30 person-months over 4 years

**Scope of Work:**

The GLIZP Project is a 4-year project designed to facilitate the widespread application of energy efficient green logistics techniques and practices in the logistics industry in Zhejiang Province. The day-to-day operational management of the Project will be the responsibility of the PMU based within the designated Executing Agency of ZPDRC for the project. A Project Steering Committee (PSC) will be established to act as a Project Board for overall guidance and approval of key project activities including fund commitments and co-financing arrangements. It shall be the role of the PMU to undertake the following activities under the PMU Director's direct responsibility:

- Coordination with the PMUs of other related on-going projects for the purpose of facilitating the implementation of top management's decision on delineation of project thrusts and direction
- Preparation of work plans, budget, and TORs of consultants, trainers, and subcontractors;
- Assist ZPDRC in the selection and hiring of other national professionals, administrative staff and subcontractors needed in the Project;
- Monitoring and evaluation of progress of project activities;
- Arranging of regular review meetings and ensuring effective coordination of project activities;
- Preparation and dissemination of project reports and other information materials. The primary goal of this activity will be to enhance the transparency of project implementation.
- Oversee the financial record-keeping and internal control management of the PMU and the Project as a whole;
- Submission of timely and accurate financial reports and progress reports to UNDP
- Provide technical and administrative support for the initial operation of the PSC.

The Director of the PMU will take responsibility for the management and administration of the GLIZP Project. He/she will report directly to the ZPDRC and UNDP in the overall operation and management of the Project with the following functions:

- Be ultimately responsible for the fiscal management of the project
- Manage the PMU staff and be responsible for ensuring high staff performance and motivation
- Directly and indirectly manage and coordinate multi-faceted local and international consultant contracts to ensure their timely completion and high quality
- Manage the monitoring and evaluation of both the overall project and its components
- Be responsible for ensuring that project objectives are being met in terms of budget and project outputs and must be prepared to recommend changes to the PSC to ensure that all outputs are realized over the project life
- Be the primary project advocate and representative and meet regularly with stakeholders from the public, the logistics industry, relevant agencies of Government of China and international donors to further project objectives.

Specific responsibilities will include:

- Regular reporting to ZPDRC and PSC on the status of the project activities;

- Synthesis of the works and outputs of consultants and subcontractors to identify potential issues and problems
- Chairing of the quarterly Project Monitoring Committee meetings;
- Preparation of quarterly financial and project progress reports;
- Preparation of annual work plans (AWP), annual project reports (APR), Project Implementation Review (PIR) and others as required by the UNDP.

**Qualifications and Experience:**

- A university graduate of business, science or engineering course
- At least 10 years of proven track record of project management experience preferably in the area of energy efficiency;
- Senior management reporting skills;
- Excellent English communication skills, both written and verbal. Skilled presenter of ideas in one-on-one situations, conferences and meetings;
- Proven track record of experience in successful contract management;
- A self-motivated individual with good leadership skills capable of planning, initiating and managing multi-disciplinary activities within the context of a multi-donor international project;
- An understanding of and links with the Chinese logistics industry.

## **Position: Chief Technical Advisor**

**Level of Effort:** 10 person-months over 4 years

### **Scope of Work:**

To provide technical oversight and assistance to the Project Management Unit (PMU) through the PMU Director. The CTA will:

- Advise the PMU on the implementation of the project so as to ensure that it satisfies its objectives and targets and meets the requirement of the ZPDRC as Executing Agency and UNDP and GEF;
- Provide advice and technical inputs in the review of outputs by consultants hired under the component activities;
- Actively participate in Technical Working Groups (TWGs), various teams and other ad-hoc task forces for the conduct of specific activities and tasks under the Project;
- Provide technical inputs in the preparation of annual work plan (AWP), annual project reports (APR), project implementation review (PIR), and others as required by the UNDP and PMU Director;
- Provide technical inputs to the conduct of the project Mid-Term Review and Terminal Evaluation and drafting and implementation of the Action Plan to address the Terminal Evaluation Recommendations;
- Act as PMU deputy in various meetings, workshops and other activities, as may be instructed by PMU Director;
- Provide suggestions for resolving problems and barriers as they emerge in the process of implementation, especially in external communications, and in meeting various aspects of UNDP working processes and practice;
- Provide other support services as may be required by PMU Director.
- Conduct synthesis of the works, reports and other outputs of consultants and subcontractors involved in the Project;
- Assist PMU to organize and arrange international workshops, conferences and surveys.

### **Required Deliverables:**

- An inception report identifying key issues, tasks and schedules for the project;
- In-country trip reports at the completion of each visit to China;
- Annual reports complete with strategies to address key issues to be addressed.

### **Qualifications and Proven Experience:**

- Having a Master or Doctorate degree in engineering, economics or other scientific/technical field with relevance to energy efficiency;
- More than 5 years working experience in energy efficiency area, particularly in green logistics application;
- Having extensive experience in energy efficiency program development and implementation;
- Demonstrated experience in capacity development initiatives in developing countries, notably at the systemic, institutional and technical levels;
- Having technical knowledge on energy efficiency of typical products;
- Understanding well the project participating countries' economic, energy and environment situation;
- Strong existing relationships with energy efficiency institutions as well as a ready-network of international experts;
- Strong coordinative capability with international and domestic experts;
- Excellent spoken and written English capability;
- Outstanding speaking, reading and writing skills in English

## **Position: Component Coordinators**

**Duration:** 4 years

### **Responsibilities:**

There will be three (3) Component Coordinators. He/She will report directly to the PMU Director and be responsible for:

- Providing support in the smooth operation of the GLIZP Project by being directly responsible for the oversight management of various aspects of the Project Component assigned to him/her as required and for the regular monitoring and reporting of progress to the PMU Director
- The promotion of Component activities and services amongst existing and potential green logistics services providers;
- The production and dissemination of educational and information materials relevant to overcoming the main barriers to green logistics application;
- The planning and programming of events under the project;
- The promotion of the GLIZP mechanisms, capacity building and technical support to green logistics service providers and users;
- Other responsibilities that may be assigned by the PMU Director towards the effective delivery of outputs under the Component.

### **Qualifications and Experience:**

- A relevant degree in business, engineering or economics;
- With working knowledge in computer-aided management;
- Proven experience and background in energy efficiency project implementation;
- Proven experience with the planning and development of promotional materials
- Ability to understand and communicate technical and financial issues to an audience and project management.



## **Annex IX: Service Agreement between UNDP and IP**

### **STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND THE GOVERNMENT FOR THE PROVISION OF SUPPORT SERVICES**

Dear Mr.LiYanYi

Director General of Zhejiang Provincial Development and Reform Commission

1. Reference is made to consultations between officials of the Zhejiang Provincial Development and Reform Commission and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and Zhejiang Provincial Development and Reform Commission hereby agree that the UNDP country office may provide such support services at the request of Zhejiang Provincial Development and Reform Commission through its institution designated in the relevant programme support document or project document, as described below.

2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Zhejiang Provincial Development and Reform Commission-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.

3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme/project:

- (a) Identification and/or recruitment of project and programme personnel;
- (b) Identification and facilitation of training activities;
- (c) Procurement of goods and services;

4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document or project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a programme or project, the annex to the programme support document or project document is revised with the mutual agreement of the UNDP resident representative and the designated institution.

5. The relevant provisions of the Standard Basic Assistance Agreement between the Government of China and the United Nations Development Programme in China signed on January 29 1979 (the "SBAA"), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the programme support document or project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

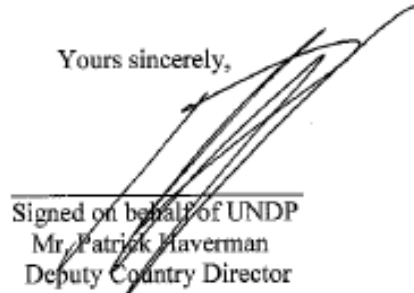
7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the programme support document or project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

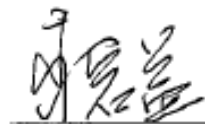
9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,

  
Signed on behalf of UNDP  
Mr. Patrick Haverman  
Deputy Country Director

Date: \_\_\_\_\_



For the Government

Mr. LiYanYi

Director General of Zhejiang Provincial Development and Reform Commission

Date: 2015.11.16

Attachment

**DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES**

1. Reference is made to consultations between Director General of Zhejiang Provincial Development and Reform Commission, the institution designated by the Government of China and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed programme: Greening the Logistics Industry in Zhejiang Province. The objective of the project is to widespread application of energy efficient green logistics techniques and practices in the logistics industry in Zhejiang Province.

2. In accordance with the provisions of the letter of agreement and the programme project document, the UNDP country office shall provide support services for the Programme as described below.

3. Support services to be provided:

Support services (insert description)	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1. Recruiting 4 specialists	As per AWP	As Per UPL	Estimated amount: US\$ 5,265.60
2.			
3.			

4. Description of functions and responsibilities of the parties involved is as per the project document. UNDP country office will provide the services as stated above upon the request of Zhejiang Provincial Development and Reform Commission. The reimbursement of the UNDP support cost will be recorded as per transactions based on the established UNDP financial regulations and rules.

## Annex X: UNDP-GEF Social & Environmental Screening

### Project Information

<b>Project Information</b>	
1. Project Title	<b>Greening the Logistics Industry in Zhejiang Province (GLIZP)</b>
2. Project Number	PIMS 5238
3. Location (Global/Region/Country)	China

### Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

<p><b>QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?</b></p>
<p><b><i>Briefly describe in the space below how the Project mainstreams the human-rights based approach</i></b></p> <p>The GLIZP Project is within the integrated approach of improving human living conditions by reducing CO<sub>2</sub> emissions that endanger life due to climatic changes. The project will involve manufacturing industries, transport groups, port and materials handling facilities and the consumers in the logistics sector in Zhejiang Province initially by bringing about the necessary changes in enhancing the logistics operations to be more energy efficient and environmentally acceptable in line with the green logistics concept. These will ultimately redound to human social and environmental well-being.</p>
<p><b><i>Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment</i></b></p> <p>GLIZP may not have direct involvement in enhancing gender equality and women's empowerment. With better logistics facilities and transport in terms of less pollution and less energy consumption, people including women in the homes, streets, manufacturing sites and overall public areas will benefit from the project by the improved air condition, savings in energy utilization and lower cost of goods delivered to consumers. These almost always involve women to a greater especially in the home and institutions in performing their family-rearing domestic responsibilities and tasks in the jobs if employed. The project will open opportunities for involving more women in the logistics sector which could offer better living for women.</p>
<p><b><i>Briefly describe in the space below how the Project mainstreams environmental sustainability</i></b></p> <p>This barrier removal project will, as part of the interventions to facilitate and enable the widespread application of "green logistics" technologies/techniques and practices, shall support the elaboration of relevant sub-national/local-level strategies, policies, and plans of the provincial government of Zhejiang and the city government of Fuyang. Obviously, these will be done with the aim of avoiding negative environmental and social impacts to the province itself, and its cities and towns.</p> <p>The objective of the project is to transform the logistics industry into one that operates based on the 3 basic pillars for urban-based green logistics: mobility, sustainability and livability. It involves the interplay of operational efficiency, environmental friendliness and energy efficiency/conservation which are vital for ensuring sustainable operation and development of the logistics industry. The project will mainstream the results of its pilot/demonstrations in Fuyang and other key cities of Zhejiang which will bring about overall sustainability by serving as basis for more replication in other provinces and cities. Rather, these baseline projects will spur further development that will contribute to the socio-economic development of province's cities and towns and in effect improve the livelihood, well-being and welfare of the citizenry.</p>

## Part B. Identifying and Managing Social and Environmental Risks

<b>QUESTION 2: What are the Potential Social and Environmental Risks?</b> <i>Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any “Yes” responses). If no risks have been identified in Attachment 1 then note “No Risks Identified” and skip to Question 4 and Select “Low Risk”. Questions 5 and 6 not required for Low Risk Projects.</i>		<b>QUESTION 3: What is the level of significance of the potential social and environmental risks?</b> <i>Note: Respond to Questions 4 and 5 below before proceeding to Question 6</i>		<b>QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?</b>
<b>Risk Description</b>	<b>Impact and Probability (1-5)</b>	<b>Significance (Low, Moderate, High)</b>	<b>Comments</b>	<b>Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.</b>
Manageable and minimal risks identified.	I = 2 \ P = 1	Low		<p>The demonstration components of the proposed GEF project are mainly the planned and budgeted logistics projects of the province, which would be enhanced by the proposed GEF project with the incorporation of “green logistics” features. These baseline projects have been designed in line with the approved plans of Fuyang City, and have undergone the necessary environmental and social impact assessments. Moreover, the governments of Fuyang City and Zhejiang Province have already, as part of the impact assessments and the technical and financial feasibility analyses of these baseline projects have already ascertained that in general there will be no adverse negative impacts and consequences in their implementation and operation. The environmental and social concerns that may arise from the project appear to be easily controlled during the project design. In that regard, during the detailed design of the proposed GEF project, the existing environmental impact assessments of the baseline projects that will be showcased were revisited to ensure that the resulting “enhanced baseline projects” will not only bring about positive impacts, but also will be designed in such a way that the emergence of potential negative impacts are brought to the minimum, if not completely avoided. The potential downstream impacts were also assessed as to the likelihood of these happening, and also determined the factors that would contribute to them from happening. The project design (particularly during the logical framework analysis) has taken</p>

				<p>into consideration such factors and where possible and applicable came up with the relevant activities that will adequately address them.</p> <p>Moreover, the Project will involve enhancement green logistics measures that are already tested and adopted in many parts of the world. These experiences will serve as bench marks for assessment and management towards achieving economic and environmental benefits of the project as they are included and linked in its M&amp;E plan.</p>
	<b>QUESTION 4: What is the overall Project risk categorization?</b>			
	<b>Select one (see <u>SESP</u> for guidance)</b>		<b>Comments</b>	
	<i>Low Risk</i>	<input checked="" type="checkbox"/>		
	<i>Moderate Risk</i>	<input type="checkbox"/>		
	<i>High Risk</i>	<input type="checkbox"/>		
	<b>QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?</b>			
	Check all that apply		<b>Comments</b>	
	<i>Principle 1: Human Rights</i>	<input type="checkbox"/>		
	<i>Principle 2: Gender Equality and Women's Empowerment</i>	<input type="checkbox"/>		
	<i>1. Biodiversity Conservation and Natural Resource Management</i>	<input type="checkbox"/>		
	<i>2. Climate Change Mitigation and Adaptation</i>	<input type="checkbox"/>		
	<i>3. Community Health, Safety and Working Conditions</i>	<input type="checkbox"/>		
	<i>4. Cultural Heritage</i>	<input type="checkbox"/>		
	<i>5. Displacement and Resettlement</i>	<input type="checkbox"/>		
	<i>6. Indigenous Peoples</i>	<input type="checkbox"/>		
	<i>7. Pollution Prevention and Resource Efficiency</i>	<input type="checkbox"/>		

### Final Sign Off

Signature	Date	Description
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD),

		Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have “cleared” the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

## SESP Attachment 1. Social and Environmental Risk Screening Checklist

<b>Checklist Potential Social and Environmental Risks</b>	
<b>Principles 1: Human Rights</b>	<b>Answer (Yes/No)</b>
1. Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2. Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? <sup>28</sup>	No
3. Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4. Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5. Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6. Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7. Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8. Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
<b>Principle 2: Gender Equality and Women's Empowerment</b>	
1. Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2. Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3. Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? <i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being</i>	No
<b>Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below</b>	
<b>Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management</b>	
1.1 Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? <i>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</i>	No
1.2 Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3 Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4 Would Project activities pose risks to endangered species?	No
1.5 Would the Project pose a risk of introducing invasive alien species?	No
1.6 Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7 Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8 Does the Project involve significant extraction, diversion or containment of surface or ground water? <i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</i>	No
1.9 Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting,	No

<sup>28</sup> Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.



commercial development)	
1.10 Would the Project generate potential adverse trans-boundary or global environmental concerns?	No
1.11 Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? <i>For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.</i>	No <sup>29</sup>
<b>Standard 2: Climate Change Mitigation and Adaptation</b>	
2.1 Will the proposed Project result in significant <sup>30</sup> greenhouse gas emissions or may exacerbate climate change?	No
2.2 Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3 Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? <i>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</i>	No
<b>Standard 3: Community Health, Safety and Working Conditions</b>	
3.1 Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2 Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3 Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4 Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5 Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, and erosion, flooding or extreme climatic conditions?	No
3.6 Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7 Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8 Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9 Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
<b>Standard 4: Cultural Heritage</b>	
4.1 Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2 Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
<b>Standard 5: Displacement and Resettlement</b>	
5.1 Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2 Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3 Is there a risk that the Project would lead to forced evictions? <sup>31</sup>	No

<sup>29</sup> These baseline projects have been designed in line with the approved land use plans of Fuyang City, and have undergone the necessary environmental and social impact assessments. Moreover, the governments of Fuyang City and Zhejiang Province have already, as part of the impact assessments and the technical and financial feasibility analyses of these baseline projects have already ascertained that in general there will be no adverse negative impacts and consequences in their implementation and operation.

<sup>30</sup> In regards to CO<sub>2</sub>, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

<sup>31</sup> Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were

5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
<b>Standard 6: Indigenous Peoples</b>		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? <i>If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.</i>	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
<b>Standard 7: Pollution Prevention and Resource Efficiency</b>		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or trans-boundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? <i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol</i>	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

---

occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

**SIGNATURE PAGE****Country: People's Republic of China****UNDAF Outcome (s)/Indicator (s):** *Link to UNDAF Outcome. If no UNDAF leave blank.***CPAP Outcome (s)/Indicator (s):** *Cumulative CO<sub>2</sub> emissions reductions from 2011-2015; Baseline: 2011 Zero; Target: 2015 under UNDP supported project at 70 million tons CO<sub>2</sub> reduction***CPAP Output (s)/Indicator (s):****Executing Entity/Implementing Partner:** UNDP

Implementing entity/Responsible Partner:

Programme Period:	<u>2015-2019</u>	Total resources required	<u>\$ 15,043,700</u>
Atlas Award ID:		Total allocated resources:	
Project ID:	<u>00094666</u>	• GEF	<u>\$</u>
PIMS #	<u>5238</u>	• <u>2,913,700</u>	
Start date:	January <u>2016</u>	• Others:	
End Date	December <u>2019</u>	○ Government	<u>\$ 3,000,000</u>
Management Arrangements		○ Private Industry	<u>\$ 2,940,000</u>
PAC Meeting Date		○ UNDP	<u>\$ 250,000</u>
		Sub-total	<u>\$ 6,190,000</u>
		In-kind contributions	<u>\$ 5,940,000</u>

**Agreed by (Government):**

NAME	SIGNATURE
Date/Month/Year	

**Agreed by (Executing Entity/Implementing Partner):**

NAME	SIGNATURE
Date/Month/Year	

**Agreed by (UNDP):**

NAME	SIGNATURE
Date/Month/Year	