

Terms of Reference of Feasibility and Associated Studies for Transmission Grid Enhancement and Modernization Project of PGCB

1. Background

Electricity plays a pivotal role in the socio-economic development of a country. In recent years Bangladesh has experienced booming economic growth, rapid urbanization, and increased industrialization. The Government of Bangladesh has taken immediate, short, medium, and long-term power generation plans to fulfill the government's vision and commitment giving courageously to be in the rank of middle-income countries; her economy is experiencing noteworthy progress in various sectors.

Bangladesh has achieved milestones in implementing the government's pledge to bring 100 percent of people under electricity coverage. The government's SDG goal is to deliver an affordable and quality energy supply for all. The demand for quality and uninterrupted electricity is growing day by day. The transmission system plays a key role in supplying reliable power to each corner of Bangladesh. In addition, to enhance reliable electricity supply to urban, suburban, and rural areas, some new transmission lines and substations of various voltage levels are found essential.

Electricity demand in Dhaka City and its adjacent industrial areas is growing rapidly. As Dhaka is the main load center, a fortified reliable high voltage capacity transmission lines and grid around Dhaka (formation of a Dhaka Ring, which is still absent) is a prerequisite for a secure and reliable transmission system.

Payra Sea Port is the third seaport of Bangladesh located in the Patuakhali district. As per the plan, the associated facilities like the establishment of EEZ, Airport, Port city, Dockyard/Shipyard, Echo Tourism, etc. centering in the port area. It is also one of the potential areas for renewable energy (wind, solar, tidal, etc.) generation in Bangladesh. To cater to the above upcoming demand in Patuakhali and Payra area in near future, a reliable power transmission network in that area is very essential. Also, strengthening the transmission grid network in the Southern region is essential to accommodate all upcoming renewable generation capacity as per the current plan of the Bangladesh Power Development Board (BPDB) and others.

Due to a lack of local generation and long electricity transmission lines, the Rangpur zone usually faces unexpected low voltage problems. To meet the growing demand and ensure quality power and supply reliability, a high-voltage grid system is mandatory for this zone.

The Rangpur zone is one of the most potential areas for renewable energy generation. Strengthening the transmission grid network in this region to harness the renewable energy generation potential of the country's northern region is also essential to accommodate all upcoming renewable generations including regional imports from Nepal and Bhutan. To enhance reliable electricity supply to different Zones of Bangladesh, some new substations and transmission lines are found mandatory.

2. Objectives of the study

The Consultant shall prepare the Project's Feasibility Study Report, Topographic Survey, and Route Survey for tentatively known route, Environmental and Social Management Framework (ESMF), RPF and related framework documents. However, they will also carry out the Environmental and Social Impact Assessment (ESIA), and Resettlement Action Plan (RAP) for preliminary identified subprojects. In accordance with the requirements of ESF along 10 standards. The objectives of the project are described below but are not limited to:

- i. Analysis of the technical features of the national transmission grid network for the projected scope of works to understand the status of the existing system regarding load flows, voltage levels, and short circuit levels. Review the system performance with and without the proposed projects.
- ii. In furtherance to the system studies above, the consultant shall identify the system requirements for the high voltage transmission network in the Central, Southern, and Northern regions to ensure reliable electricity supply with expected demand growth, using three load demand scenarios – 2027, 2030 and 2035.
- iii. Review the World Bank Environmental and Social Framework (ESF) and all relevant guidance note along with government policies, rules and acts.
- iv. Describe the alternative analysis procedure for framework and carry out alternative analysis of transmission line RoW and optimal substation location and suggest the preferred alternative from the Environment and social perspective. The analysis will propose at least 03 (three) alternative routes for each TL lines and optimal substation locations. Conduct a comparative analysis and recommend the best suitable route considering optimum cost, complexity, and minimum environmental impact.
- v. The analysis shall also determine the potential financial, social and environmental implications/scoping of the proposed system requirements in the three regions mentioned above (ii). This shall also include detailed Technical, economic, financial, environmental, and social analyses with related assumptions. Prepare project cost estimation showing foreign and local costs of all the major items and spread them over the implementation period of the project
- vi. The analysis shall also determine the potential financial and environmental implications/scoping of the proposed system requirements in the three regions mentioned above (ii). This shall also include detailed Technical, economic, financial, environmental, and social analyses with related assumptions. Prepare project cost estimation showing foreign and local costs of all the major items and spread them over the implementation period of the project
- vii. Visit the sites for existing/planned/proposed substations and analyze available drawings and determine technical particulars of relevance for preparing technical specifications of the equipment to be procured.
- viii. Perform sensitivity analysis for both Financial and Economic considerations & recommend the best Financial and Economic model for the project.

- ix. Recommend contract packages considering market potential and geographical location; prepare an implementation schedule in the form of a bar chart for each contract package and show various activities and their duration.
- x. Prepare a standard and quality report acceptable for funding institutions, summarizing findings and recommendations with a generic description of the various features of the program, outlining technical and financial considerations, ranking the various program components as per economic merits and performance targets of reducing transmission losses and specified voltage range in targeted areas of the network.
- xi. Consider and analyze the possibility of obtaining carbon credits from the energy supply and efficiency improvement projects, to enable design and development accordingly.
- xii. Comprehensive Reports on (ESF which include Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Environmental and Social Impact Assessment (ESIA) and prepare Environmental and Social Management Plan (ESMP), Environmental and Social Commitment Plan (ESCP), Resettlement Action Plan (RAP), Labour Management Procedures, Biodiversity Management Plan (if require and if ESIA recommends), Indigenous Peoples Planning framework (if identified during screening), GAP and SEA/SH Action plan and Stakeholder Engagement Plan.
- xiii. Topographic survey report, sub-soil investigation report, pre-section measurement of existing ground level and highest flood level and nearest public road level is needed for calculating the probable cost of foundation, land filling quantity, slope protection or retaining wall issue. Recommendation about surface drainage system (especially discharge of water from the substation area to outfall point) is needed for effective discharge of rain water from substation area.

3. Scope of Works:

The rationale behind the project is to expand the reliable transmission system of the project areas to cater to future electricity demand and to promote clean energy growth. This project aims to strengthen and contribute to efficient power transmission in Bangladesh and eliminate the existing operational bottlenecks.

The Consultant shall undertake investigations to assess the technical and economic justification of the planned transmission system expansion and provide the feasibility study report according to the Government Prescribed format which shall also encompass the following services:

3.1 Brief review of the context of the power sub-sector in project areas

Brief review and update of the power sector information with its characteristics including power plants, transmission and distribution network expansion, electricity supply and consumption patterns, load forecast, losses, availability of electricity, amount of power cuts and load shedding; critical review of PGCB's load growth forecast in project area.

3.2 Assessment of the power sector in the project areas: network analysis

The assessment shall be conducted based on the existing Load flow calculations which are undertaken by the PGCB. Owing to the volatility of such information, the load flow calculation shall be updated with current data in PSS/E model and cover a time frame of up to the year 2035 (including a short circuit calculation) of the project area. PGCB shall contribute to such services by

providing all system-relevant data in coordination with the consultant. The Consultant shall make observations on the load flow calculation. The Consultant shall also analyze the needs for possible network compensation measures.

3.3 Finalizing the scopes of the projects and specifications

Identification of the requirements of the components for the extra high voltage transmission network in the Central, Southern, and Northern regions concerning the projected scopes to fulfill the client requirements. The consultant shall finalize the scopes of the project and locations & identify the components through detailed technical, financial, and environmental studies. Accordingly, the consultant shall propose a detailed technical specification of the final scope of the project considering the technical, financial, and environmental aspects. In this regard, PGCB shall provide the present standard technical specification of equipment being followed in its other bid document.

3.4 Assessment of expected benefits on the socio-economic situation of the populations in the project areas

Based on the review of the power supply and the load forecasts in the Project Area as well as the network analysis, the Consultant shall assess the potential benefits of the program measures to the target group in the Project Area.

The assessment should be based on a baseline (business as usual scenario) and a scenario in which the program is implemented as planned. By comparison of the scenarios, the Consultant shall assess the effects on economic development in the region, poverty reduction, and improvement of livelihoods via an improved energy supply on a household level and agricultural development via improved operation of irrigation pumps and husking machines.

Benefits of the program shall be quantified where feasible and reasonable (such as the number of connections that are facilitated by the increased transmission capacity, the number of households benefitting from the improved supply, and the percentage of households in rural areas benefitting from the improved supply).

3.5 Preliminary transmission line route identification

Preliminary transmission line route identification in sufficient detail shall be conducted in close collaboration with PGCB as a basis to estimate its cost. The transmission line routes are those indicated in the scope of work of the project identified based on the study. Electricity Act-2018 and Electricity Rules-2020 and subsequent amendments in 2022 should be followed to find out the tower footing compensation.

Drone based aerial survey data for all three routes shall be provided by the Consultant. Transmission Line Cost estimates shall not be done based on per km cost basis. For cost estimate, preliminary plan, profile (preferably in PLSCAD) and tower schedule shall be prepared by the consultant for best route to determine required tower extensions and other necessary parameters. All the river crossing of the line shall be thoroughly studied by the Consultant to find out any special requirement for the route. All the railway, road, metro and highway crossing of the line shall be thoroughly studied by the Consultant to find out any special requirement for the route taking into consideration of the statutory clearances to be maintained.

A detailed line route survey shall be conducted as per the requirement of **Attachment-4**.

3.6 Preliminary survey of substation areas

In coordination with PGCB, the Consultant shall propose new substation areas. Therefore, site visits shall be conducted to each of the areas requiring the selection of new land. Before the site visit, the Consultant shall acquaint himself, in consultation with PGCB about the usual procedures of land acquisition in Bangladesh for project purposes. It shall be kept in mind that all documentation that will be part of the Feasibility Study shall be used by PGCB in the process of land acquisition.

A detailed substation survey shall be conducted as per the requirement of **Attachment-3**.

3.7 Analysis for Switchgear type and Transformer Sizing

The technical study shall be complying the following analysis:

The consultant must describe the proper justification for proposing Air-insulated Switchgear (AIS) or Gas Insulated Switchgear (GIS, indoor/outdoor) for constructing a new grid substation. Such justification shall include technical, and financial analysis, land scarcity conditions of Bangladesh, etc. The consultant shall also propose optimum transformer size for the grid substation comprising necessary analysis.

3.6 Layout and design on feasibility level for the transmission lines, construction of new substations, extension of existing substations

Line Optimization and Tower Spotting

Within the Feasibility Study, the Consultant shall propose a layout of the transmission line based on configuration, type and size of the conductor, and tower design. Current standard designs for transmission lines within PGCB shall be scrutinized. The layout shall prove that all line design parameters selected are optimized as far as possible, and further, that various configurations of conductor and tower type, shield wire selection (including the use of OPGW), shielding angle, conductor clearances, and insulation requirements, ground clearance and tower grounding have been considered and analyzed to obtain the least cost solution.

Substation Design

Substation design shall involve the following.

- a) Electrical works
- b) Communications and SCADA
- c) Civil, structural, and architectural works
- d) Access to the area,

a) Electrical Works

Based on the confirmation of the suitability of the substation areas, basic drawings shall be developed for the new substations as well as the extension of existing substations including but not limited to the following:

- Single line diagrams indicating the station arrangement, equipment layout, etc stating the bus scheme voltage level wise, short circuit level.
- Layout drawings including sections and elevations showing, in general, the substation site, line termination positions and requirements, connections to existing facilities if any, bus work and provisions for future expansion, etc.

- Protection, control, and metering drawings shall be developed and shall indicate types of protection, zones of protection and timing requirements, re-closing requirements, signaling and communications requirements, schematic drawings showing the equipment protection to be provided, etc.
- Panel arrangements in the control room and extensions to the room, electrical auxiliaries, DC batteries or extensions of DC battery banks, etc.
- Provision of necessary RTUs to allow integration of the substations into PGCB's remote control system.

The level of detail to be shown on the drawings shall be sufficient to allow the determination of required equipment for further use during the preparation of Tender Documents.

b) Communications and SCADA

Communication and SCADA systems shall be provided for the new substations that shall have proper compatibility with the NLDC. Amongst others, the required signaling facilities, data transmission and communication channel requirements, telephone systems, and SCADA facilities shall be considered. Fiber Optical Communication System based on Optical Ground Wire (OPGW) on the new transmission lines shall be considered.

Concerning the extension of existing substations, the Consultant shall review the existing communication and SCADA system and if found adequate, extend the existing system to cover the new equipment. PLC extension may be more advantageous for the extension of existing substation systems.

In any case, the data transmission shall consider the requirements for the integration of the new or extended network components into the PGCB's NLDC. System compatibility and a description of all control integration work into the NLDC shall be addressed by the Consultant to safeguard the functionality and compatibility with the existing PGCB systems on transmission networks.

c) Civil, structural, and architectural works

Preliminary and tentative layout drawings shall be prepared for all civil, structural engineering, and architectural works and equipment including site improvements, access roads, fencing, drainage, grading, water supply, sewage, and waste disposal, and equipment foundations for the substation extensions and proposed new substations. If it is deemed necessary, for an extension of the control building or/and room in the existing substations, the Consultant shall prepare the design and drawings for the extension works.

General foundation requirements and structure outlines shall also be indicated on the drawings. Particular interest shall be given to the water drainage system. Due to the prevailing climatic conditions, excessive rainfall or flood water needs to be evacuated. The civil works substation design on a feasibility study level shall take into account that requirement. Rainwater harvesting and installation of roof top solar panel shall be taken into consideration while preparing the layout.

The level of detail to be shown on the drawings shall be sufficient to allow for the determination of the scope of works by a contractor.

For substations, the following information is needed to be included in the feasibility study report.

- i) Topography survey report of the proposed substation area;
- ii) Sub-soil investigation report;
- iii) Location of approach road;

- iv) Recommendation about culvert requirement in the approach road;
- v) Pre-section measurement data of existing ground level;
- vi) Nearest public road level;
- vii) Highest flood level (HFL) of that area and
- viii) Recommendation about surface drainage system (especially discharge of water from the substation area to outfall point).

d) Site access

Access roads to the substations site are very important, especially for transportation and installation of heavyweight equipment such as Power transformers and other HV equipment. The Consultant shall bear these aspects in mind when studying the project.

3.7 Capability Statement related to Training aspects

PGCB operates a countrywide network of transmission lines and substations. The Consultant shall investigate, in collaboration with PGCB, potential needs in training covering technical particularities of transmission network planning, design, operation & maintenance. Tentative training measures especially for specific training on future challenges of PGCB (Example: Substation's GIS equipment maintenance, Underground Cable maintenance, FACTS Device Study, Stability Analysis etc.) to deal with high voltage systems.

3.8 Cost estimate, economic and financial analysis

Cost estimates

Investment and maintenance costs, categorized into foreign and local costs, shall be estimated for the transmission line and the substations components considering all costs, such as plant & equipment erection and commission, civil works (structure foundations, approach and internal road, electrical works, auxiliary installations, and other necessary related works), services (transport and installation, scheduled and non-scheduled maintenance, technical and administrative operation, etc.). Price and physical contingencies shall also be foreseen and explicitly shown in the estimate.

To identify the need for external funding, the Consultant is to present a tabular cost estimate showing unit costs, local and foreign components, and the total equipment and project cost, separated between transmission line components and substation components.

Economic and financial analysis

The financial and economic performance of the project shall be assessed over the economic life of the assets. Benefits and costs over time will be projected and compared with a scenario arising if the present situation would continue i.e., current and future customers supplied either through the existing transmission system, as far as still possible, or through additional network components, thus identifying the profitability of the project.

Based on the projections the indicators will be calculated and assessed:

- i) Economic Net Present Value (ENPV) and the Economic Internal Rate of Return (EIRR). The economic analysis may consider the benefits of avoidance of CO² due to reduced transmission and distribution losses.
- ii) Financial NPV and the Financial Internal Rate of Return.

iii) Dynamic unit costs of energy transmitted.

The cost breakdown should indicate the details per component/ equipment and the local and foreign component. A sensitivity analysis shall be conducted for high or low load growth, for a variation in capital costs, and changes in wheeling charges.

3.8 Market Study Report

The objective of market research and analysis is to develop an appropriate understanding of the market sectors that have been identified as having the potential to bid for the goods, services, and/or works required for a contract within a Project. The Consultant should explain how a market works and how this impacts the Client's approach to the market. It should look at the market from both the perspective of the Client and suppliers operating in that market, simply to determine, what will motivate the right suppliers to participate in the procurement.

The market analysis will include:

- Market capability to meet the Client's needs, including typical experience levels, package sizes, and financial performance. If the market analysis requires early market engagement, this deliverable will provide inputs into the Market Engagement Strategy.
- Previous experience in the market by the Borrower and other customers, including World Bank and non-World Bank projects as appropriate.
- Market view of the Client's (from a supplier's perspective) in terms of attractiveness for contracting with (e.g., reliability of payment, procurement capability, complaints handling) i.e., are they likely to bid Noting, in some Bank procurements no suppliers bid, or indeed possibly only one may bid due to either concern about capacity and/or onerous conditions imposed.
- Modification of requirements (if needed) to align it to the market's capability or influence the marketplace so that it is willing and able to meet the requirements.
- Current practice procuring from the market includes pricing methods, risk allocation, and performance and cost benchmarks.

3.9 Expected Outcome of Study

The services for Feasibility Study, Topographic survey, Route Survey and World Bank's Environmental and Social Framework (ESF) on ESIA, RAP, LMP, ESCP & SEP of the consultant as required under this contract may be described as follows and a consultant will maintain all liaisons with DOE (Department of Environment) of PGCB for getting necessary clearance of the project.

In that context, the scope of proposed consultant services includes more specifically the following:

- i. Feasibility Study shall be submitted as per the attached format (Attachment-2). Services mentioned in ToR shall be included in the report as Additional Chapters if not mentioned in Attachment 2.
- ii. Topographic survey report shall be submitted as per the attached format (Attachment-3)

- iii. Route Survey report shall be submitted as per the attached format (Attachment-4)
- iv. World Bank ESF (ESIA, WB ESS1) Directives including the Environmental and Social Assessment (ESIA) report shall be submitted as per the attached format (Attachment-6). Bengali Translation of Executive Summary of ESIA Report
- v. ESMF shall be submitted according to the guidelines of ESF (ESS 1-8 and ESS 9)
- vi. Resettlement Policy Framework shall be submitted according to the guidelines of ESS 5 and relevant policies
- vii. Resettlement Action Plan (WB ESS5) report shall be submitted as per the attached format. The RAP shall follow the WB ESS5 as per the attached format (Attachment-7). Bengali Translation of Executive Summary of RAP Report
- viii. Labour Management Procedures (WB ESS2) report shall be submitted as per the attached format, which follows WB ESS2. (Attachment-8)
- ix. Stakeholder Engagement Plan (WB ESS10) report shall be submitted as per the attached format, which follows WB ESS10. (Attachment-11)
- x. Environmental and Social Commitment Plan (ESCP) according to the recommended format by WB. Format will be shared with the selected firm.

Tentative project components are attached (Annexure-1)

3.11 Contribution of PGCB

PGCB shall provide all existing information, data, reports and maps as far as available and will provide the Consultant administrative support in obtaining any other relevant information and materials from governmental institutions and state authorities as far as possible based on practical situations.

However, it is the duty of the Consultant to check availability, quality and suitability of this information. The information, data, reports etc. as mentioned above will be available for the Consultant's unlimited use during execution of the proposed services. Due provision shall be made in the Consultant's bid to enable him to procure maps, meteorological and geological data, and any other information he considered necessary for proper completion of this assignment. The provisions should be adequate to enable him carry out the procurement of these information at his own cost.

In general, PGCB will provide administrative support facilitate all staff permits, authorizations and licenses required for performance of the Consultant's services in Bangladesh. PGCB will also provide administrative support to assist the Consultant in customs clearance of all equipment, materials and personal effects to be imported (and re-exported upon completion of his assignment) for the purpose of the study.

PGCB will nominate for the purposes of Feasibility Study a member of his staff as Project Director or Liaison Officer with the Consultant. It will be the Consultant's duty to maintain close contact with him on all aspects of work. As a matter of principle all formal communications relating to the work will be directed to the attention of the Liaison Officer.

4. Draft project execution and time frame, draft procurement plan

4.0 Tentative Implementation and Procurement Plan

Considering the geographical separation, technical characteristics of equipment and works packages, and expected foreign currency of different procurement packages, the Consultant shall draft a tentative procurement/tendering plan indicating project components regrouped into lots or packages. The Consultant shall identify the major contracts. Procurement packaging, including contract lots, are designed to align with the target market; geographical locations and technical characteristics are important to reduce unavoidable risks associated with the logistical setup of project implementation.

A tentative detailed schedule related to the project execution shall be presented within the Feasibility Study.

4.1 Identification of potential risks during project implementation

Procurement risk analysis is the process of identifying and minimizing the likelihood of a risk occurring and minimizing the impact on the Client's Project Objective if the risk does occur. The Consultant shall create the Risk Management Plan by summarizing and recording the overall risk management analysis. To make the identification and analysis of procurement risk manageable, the Consultant should structure the assessment around eight (8) key areas, which are:

- i. Market complexity and competitiveness;
- ii. Delivery and supply security;
- iii. Suppliers and supplier relationships;
- iv. Borrower experience, capacity and capability;
- v. Cost trends;
- vi. Technical innovation – the degree and rate of change;
- vii. Sustainability (environmental, economic, social); and
- viii. Business and operating environment.

5. Duration:

The engineering consulting services and safeguard documentation shall be completed within 9 months from the signing of the contract.

6. Preparation and Submission of Report and Documentation

The Consultant has to prepare the following reports/documents:

- i. Consultant shall generate a separate report for Feasibility Study, Topographic survey, Route Survey, ESMF, RPF, GAP and SEA/SH action plan, ESIA, RAP, LMP, & SEP.
- ii. **Inception Report:** It should describe detailing the work plan, expected problems in the implementation of the study if any, a review of the available power sector information, and the power supply situation encountered in the project area. The firm shall submit the Inception Report in hard Copy (Three copies) and soft copy / Digital format (One copy) within 01 months after commencement of services.

- iii. **Interim Report:** 03 months after commencement of services in five copies; the report shall summarize the technical, financial, and economical findings of the conception works, in particular the results of the tasks mentioned in 3.0.
- iv. **Draft Topographic survey, Route Survey, and E&S framework documents:** Firm shall submit the draft ESMF, RPF, GAP and SEA/SH action plan, SEP, LMP and ESCP within 4 months of contract effectiveness and final report of the same within 5 months of the contract effectiveness. The draft ESIA, and RAP needs to be submitted within 7 months. Firm shall submit a draft Topographic survey, Route Survey, reporting hard Copy (Three copies) and soft copy/ Digital format (One copy) within 06 (six) months from the effectiveness of the contract. The draft Topographic survey & Route Survey drawings shall be made in standard sizes such as A3.
- v. **Draft Feasibility Study:** The firm shall submit a draft feasibility study report in hard Copy (Three copies) and soft copy/ Digital format (One copy) within 07 (six) months from the effectiveness of the contract.
- vi. **Final Feasibility Study:** The firm shall submit the final feasibility Study report in hard Copy (five copies) and soft copy/ Digital format (One copy) within 09 (nine) months from the effectiveness of the contract.
- vii. **Final Topographic survey, Route Survey, ESIA, RAP:** Firm shall submit the final Topographic survey, Route Survey, ESIA, & RAP report in hard Copy (five copies) and soft copy/ Digital format (One copy) within 8 (eight) months from the effectiveness of the contract. The final Topographic survey & Route Survey drawings shall be made in standard sizes such as A3.

7. Payment Schedule

Sl. no	Milestones (Submission and acceptance of reports under Scope of Services)	Payment (% of the contract price)	Cumulative (% of the of respective items' price)	Remarks
i.	Contract Signing	-		
ii.	Inception Report (Feasibility Study Reports)	0%		Payments against the draft reports shall be paid after comments on the draft reports are provided from PGCB. All reports should be approved by PGCB and World Bank. Final bill shall
iii.	Interim Feasibility Study Report	10% of Feasibility Study Report		
iv.	Draft ESIA, RAP Report	30% of ESIA and RAP Report		
v.	Draft Topographic survey, Route Survey, ESMF, ESCP, RPF, SEA/SH Action plan, LMP, & SEP	40% of Respective Item		
vi.	Draft Feasibility Study Report	30% of Feasibility Study Report		
vii.	Final Topographic survey, Route Survey, ESMF, RPF, ESCP,	60% Respective Item	40%+60% = 100%	

	SEA/SH action plan, LMP, & SEP			be paid after reports are accepted by PGCB.
viii.	Final Feasibility Study Report	60% Respective Item	10%+30%+60% = 100%	
ix.	Final ESIA and RAP Report	60% ESIA and RAP report		
x.	DOE Clearance (If needed)	10% of ESIA report	30%+60%+10% = 100%	